Witch Hazel Village South

Local Wetlands Inventory

APPROVED LOCAL WETLANDS INVENTORY
5/9/2022 JB
OREGON DEPARTMENT OF STATE LANDS

Prepared for

City of Hillsboro

150 E Main Street

Hillsboro, OR 97123

Prepared by

DAVID EVANS AND ASSOCIATES INC.

2100 S River Parkway

Portland, Oregon 97201

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1. INTRODUCTION

This Local Wetlands Inventory (LWI) has been conducted for the City of Hillsboro Witch Hazel Village South (WHVS) area. The LWI study area is shown in Appendix A, Figure 1. The current tax lots in the LWI study area are shown in Figure 2, and they are color coded by whether site access was available (having site access allowed DEA to use on-site wetland inventory methods, which are more accurate than offsite methods).

This LWI is intended to support planning-level decision making and is not intended to replace more detailed site-level wetland delineation work needed for compliance with local, state, and federal regulations governing wetlands and surface waters. The Oregon Administrative Rules (OAR) state that the LWI purpose and applicability, are as follows:

> ***OAR 141-086-0180 Purpose***
>
> *Pursuant to Oregon Revised Statute (ORS) 196.674 pertaining to the Statewide Wetlands Inventory (SWI), these rules establish a system for uniform wetland identification and comprehensive mapping. These rules also establish wetlands inventory standards for cities or counties developing a wetland conservation plan (WCP) pursuant to ORS 196.678. A Local Wetlands Inventory (LWI) is developed for all or a portion of a city or county according to the standards and guidelines contained in these rules (OAR 141-086-0180 through 141-086-0240).*
>
> ***OAR 141-086-0185 Applicability***
>
> *(1) Once approved by the Department of State Lands (Department), the LWI must be used in place of the National Wetlands Inventory (NWI) and is incorporated into the SWI.*
>
> *(2) The approved LWI must be used by cities and counties in lieu of the NWI for notifying the Department of land use applications affecting mapped wetlands and other waters (ORS 215.418 and 227.350).*
>
> *(3) An LWI fulfills the wetlands inventory requirements for Goal 5 and Goal 17 (OAR 660-015 and 660-023). An LWI that meets the additional WCP requirements specified in these rules must be used as the wetlands inventory basis for a WCP.*
>
> *(4) A wetland function and condition assessment of mapped wetlands must be conducted as part of the LWI using the Oregon Freshwater Wetland Assessment Methodology (OFWAM) published by the Department in 1996. An equivalent functional assessment methodology may be used or adjustments may be made to OFWAM upon written approval by the Director. The assessment results are used to determine the relative quality (functions, values, and condition) of the mapped wetlands and to designate significant wetlands (OAR 141-086-0300 through 141-086-0350) as required for Goal 5, or to assess wetland functions and values for a WCP.*
>
> *(5) An LWI is used by the Department, other agencies and the public to help determine if wetlands or other waters are present on particular land parcels.*
>
> *(6) An LWI provides information for planning purposes on the location of potentially regulated wetlands and other waters such as lakes and streams, but is not of sufficient detail for permitting purposes under the state Removal-Fill Law (ORS 196.800 through 196.990). Smaller wetlands may not be mapped, and wetlands may be missed due to lack of onsite access, tree canopy cover and other constraints. A wetland delineation or determination report may be needed for parcels without LWI-mapped wetlands. A Department-approved wetland delineation report for wetlands identified in an LWI is usually needed prior to site development.*
>
> *(7) All wetlands inventory procedures and products are subject to review and approval by the Department before the products:*
>
> > *(a) Are incorporated into the SWI;*
> >
> > *(b) Can be used in lieu of the NWI for Wetland Land Use Notification purposes; or*
> >
> > *(c) Can be used by a city or county for Goal 5, Goal 17 or WCP purposes.*

2. WETLAND INVENTORY PROCESS

OAR 141-086-0220(2)(b): A description of the wetland inventory process including the public involvement process; the inventory methods including the date(s) and scale(s) of source maps and aerial photos used; the offsite and onsite wetland determination procedures including procedures used for visual confirmation and probable wetland identification; and all mapping and map transfer procedures used.

2.1 GENERAL

Methods included a review of study area background materials and drive-by and on-site field reconnaissance visits. Field work was conducted on February 23, 2021. Wetland inventory was conducted at a reconnaissance level of accuracy suitable for LWI documentation and City planning purposes (see Section 2.3 for accuracy details).

This LWI follows the Oregon Department of State Lands (DSL) rules, specifically OAR 141-086. All wetlands one-half acre in size or larger were mapped as wetlands, while smaller wetlands were generally mapped as "probable wetlands." However, for this project, probable wetlands were mapped as polygons because site access was available. For the few tax lots where small portions of larger wetlands were not accessible due to access restrictions, Light Detection and Ranging (LIDAR)-derived two-foot contours were used to inform wetland boundaries within floodplains. Mapping of probable wetlands as polygons helps planning processes, as these features will likely need to be avoided and/or encroachment minimized. A single sample plot documenting typical conditions for each confirmed wetland was completed and boundaries were mapped using a global positioning system (GPS). No plot was taken for TR11-PW since it was a probable wetland. Data collection and wetland inventory 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 (Corps 2010) regional supplement ("Supplement"). This method requires that wetlands have hydrophytic vegetation, hydric soils, and positive wetland hydrology present at the same time.

2.2 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:

- DSL records request for past actions (e.g., wetland delineations) in the study area (2022) (search revealed no records for the study area)
- City of Hillsboro Witch Hazel Village Community Plan (2004)
- Environmental Science & Assessment, LLC Witch Hazel Village South SNR Assessment (2021)
- ESRI ArcGIS Online World Imagery aerial photo imagery for ArcGIS (2018)
- Metro Regional Land Information System (RLIS) Geographic Information System (GIS) wetlands layer, tax lots layer, and GIS streams layer (2021)
- Oregon Department of Fish and Wildlife (ODFW) Oregon Fish Habitat Distribution and Barriers (2021)
- Oregon Department of Geology and Mineral Industries (DOGAMI) LIDAR-derived two-foot contours (2014)

- Oregon Explorer Oregon Rapid Wetland Assessment Protocol (ORWAP) and Stream Function Assessment Method (SFAM) Map Viewer (an internet tool for ORWAP and SFAM assessment support, McCune et al. 2019) and supporting website (Rempel et al. 2018)
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) for Washington County, Oregon (2020)
- U.S. Fish and Wildlife Service National Wetland Inventory Wetland Mapper (2020)
- U.S. Geological Survey (USGS) National Hydrographic Database (NHD) high-resolution GIS streams layer, https://www.usgs.gov/core-science-systems/ngp/national-hydrography/nhdplus-high-resolution (2021a)
- U.S. Geological Survey (USGS) Subwatershed HUC-12 Boundary layer, downloaded from USDA NRCS, https://nrcs.app.box.com/v/huc/folder/39640323180 (2021b)

2.3 MAPPING PROCEDURES AND ESTIMATED ACCURACY

Mapping of LWI features was supported through use of high-resolution color aerial photography (ESRI 2018), the USGS NHD high-resolution streams layer (USGS 2020), and two-foot LIDAR contour data provided by DOGAMI (2014). Metadata for the LIDAR data is as follows:

> *The DOGAMI Lidar Viewer was used to download the standardized set of lidar data in ESRI grid format, tiled to USGS 7.5-minute quadrangles (Hillsboro) and referenced to Ohio Code (45122-E8). Acquisition dates were 2005-2014. Contours were created from the LiDAR grid using ESRI's ArcGIS Pro software.*

Ground truthing occurred on tax lots where access permission was granted as well as from publicly accessible viewing areas (i.e., roadway right of way). In-office review using aerial and LIDAR contours was conducted using GIS technology, which allowed for viewing information at various scales. This included the minimum photo scale of 1 inch = 200 feet as required by OAR 141-086-0210(2)(g).

The Metro-RLIS wetlands layer was used as a starting point for mapping wetland resources within the study area (RLIS 2021). Obvious wetland boundary adjustments were made based on review of the ESRI (2018) aerial photography and roadside reconnaissance. All wetlands were assigned a Cowardin class (i.e., vegetation type such as forested, emergent, etc.) and a hydrogeomorphic (HGM) class (i.e., slope, depression, etc.). Assigning of Cowardin and HGM classes was typically based on field verification where possible, or review of aerial photo and LIDAR contours.

Cowardin class (Federal Geographic Data Committee, 2013) was developed for use with the National Wetland Inventory (NWI). It classifies both wetland and deepwater habitats, often treated separately in other classifications. Primary ranks ("Systems") are: Marine, Estuarine, Riverine, Lacustrine, and Palustrine. Units are defined by hydrology (source of water), substrate, and non-specific structure of dominant vegetation (aquatic bed, emergent herbaceous, moss-lichen, scrub-shrub, or forested). Additional attributes define water regimes and man-made alterations. Classification by this method is fairly straightforward because it is based on vegetation structure that is easily identified, often from aerial photography, and water regimes can often be inferred by knowledge of local or regional conditions.

The Hydrogeomorphic Approach to assessing wetland functions, or HGM Approach, is a method to assess the functional condition of a specific wetland referenced to data collected from wetlands across a range of physical conditions. It was developed as an alternative to vegetation-based classifications. It utilizes a wetland classification system based on geomorphic position (landscape position) and hydrologic characteristics (source of water) to group wetlands into seven different wetland classes. Hydrologic types used in HGM are Riverine, Depressional, Mineral Soil Flats, Organic Soil Flats, Slope, Lacustrine Fringe, and Estuarine Fringe (Adamus 2001).

For properties in which site access was available (see Appendix A, Figure 2), wetland and waterway mapping was supported through use of ESRI ArcCollector mapping software linked to a Trimble R1 GPS unit with an accuracy tolerance of one meter or better set for this LWI effort. Representative boundary and sample plot locations were collected and then exported to GIS format (i.e., Esri shapefile format). Although typical GPS accuracy for this project is considered one meter or better, the mapping accuracy of field verified wetlands should be considered to be five meters (16.4 feet) or better, since the wetland boundaries were mapped using LIDAR where access was blocked by blackberry or poison oak.

Streams and other waters were mapped in accordance with OAR 141-086-0210(19), which states that "Streams and other waters must be mapped, but no further documentation such as wetland summary sheets or OFWAM assessment is required. If an existing stream geospatial dataset is used, it may be necessary to adjust the layer to align with riparian or other linear wetlands."

For WHVS LWI stream mapping, DEA started with the USGS NHD high-resolution streams GIS layer. Generally speaking, these corresponded well with LIDAR contours (DOGAMI 2014) and only one adjustment was needed where NHD stream lines were modified based on field observations, as described in Section 3.

GIS data produced by DEA was originally created using the State Plane, Oregon North Coordinate System, North American Datum of 1983 (NAD83) horizontal datum, HARN, International Feet, for consistency with other Community Plan mapping. A version of this data was then reprojected into the Lambert system to comply with Oregon statewide wetland mapping standards (Oregon Lambert conformal conic [Datum: NAD 83; Units: International feet: 3.28084; Spheroid: GRS1980]).

2.4 OFWAM FUNCTIONAL ASSESSMENT

Wetland functions were evaluated for wetlands larger than one-half acre using the Oregon Freshwater Wetland Assessment Method (OFWAM). OFWAM results are used to determine if any of the wetlands qualify as "locally significant wetlands" in accordance with criteria in OAR 141-086-0350. Probable wetlands are generally not evaluated using OFWAM. However, one wetland smaller than 0.5 acre was evaluated using OFWAM because it is hydrologically connected to a larger wetland downslope. It was mapped as a separate wetland (rather than combined with the larger wetland) because it was not similar in character to the larger wetland. It should also be noted that the inclusion of the study area in the urban growth boundary (UGB) required that an OFWAM characterization question relating to existing zoning designation was answered "urban" (#20), whereas questions describing existing habitat conditions were answered "rural" (#22, 26, 52), consistent with the area's current land uses. Finally, it was found during the OFWAM field assessment and documentation that wetlands inventoried as part of this LWI are of type, size, and condition commonly found throughout the region.

2.5 PUBLIC INVOLVEMENT PROCESS

Landowners within the study area with the potential to have wetlands or waterways on their property (e.g., situated along known riparian corridors and/or mapped hydric soils) were contacted by the City to inform them of the LWI project. The City requested that property owners grant access to allow DEA to perform on-site wetland determination work. As shown on Figure 2 of Appendix A, access was granted to eleven out of fifteen tax lots, which constitutes the vast majority of acreage within the study area. Table 1 provides a list of tax lots, acreage, and access permission within the WHVS study area.

Table 1: List of Tax Lots and Access Permission within the WHVS Study Area

Tax Lot	Acreage	Access Granted? Yes/ No
1S216A000100	18.3	Yes
1S216A000200	31.5	Yes
1S216A000300	2.5	No
1S216A000400	2	No
1S216A000500	0.7	No
1S216A000600	2	Yes
1S216A000700	3.4	No
1S216A000800	1.4	No
1S216A000801	7.6	Yes
1S216A000804	7.7	Yes
1S216A000806	19.4	Yes
1S216A000809	3.7	Yes
1S216A000810	1.5	Yes
1S216D000100	24.5	Yes
1S216D000101	18	Yes
1S216D000199	0.2	Yes

The City of Hillsboro Planning Division held a WHVS Community Meeting #1 on March 30, 2021 to provide a project overview and discuss next steps. Approximately 40 participants joined this virtual meeting. During Community Meeting #1, participants were encouraged to check the WHVS Comprehensive Planning project webpage (*www.hillsboro-oregon.gov/WHVS*) in approximately two weeks' time to review the draft LWI to be posted there. The draft LWI was posted to this project webpage on April 16, 2021. The webpage's Next Steps section encouraged the public to provide input on the draft LWI to Dan Rutzick, the project manager, by May 14, 2021.

On April 16, 2021, a letter was mailed to the twelve WHVS property owners letting them know the draft LWI had been posted to the project webpage for their comment. The letter let property owners know they could request a mailed paper copy of the draft LWI rather than reviewing an electronic version. City staff mailed a color paper version of the draft LWI to one WHVS property owner following their request.

The April 16, 2021 letter also encouraged property owners to schedule a virtual or in-person socially distanced meeting with Hillsboro Planning staff to ask questions and share comments and concerns directly on the project, such as regarding the draft LWI. The City participated in meetings with two separate property owners who both asked staff to clarify the draft LWI but had no suggested edits. The largest property owner within WHVS, who owns or has options on over 80% of the plan area, emailed that their consultant had reviewed the draft LWI and had no suggested edits. City staff did not receive input on the draft LWI from the larger community during this time.

A draft WHVS Community Plan and Implementation Strategy document will be shared during WHVS Community Meeting #2 to be held in October 2021, as well as posted on the project webpage. The draft WHVS Community Plan and Implementation Strategy document will include a section highlighting the presence of the identified wetland areas, along with the wetland areas determined to be locally significant, for input from the public.

A final draft WHVS Community Plan and Implementation Strategy document will be shared during WHVS Community Meeting #3 to be held in February 2022, as well as posted on the project webpage. The final draft WHVS Community Plan and Implementation Strategy document will include a section highlighting the presence of the identified wetland areas, along with the wetland areas determined to be locally significant, for input from the public. Following public input, including comments from project partners and stakeholders, the City will update the LWI report with a summary of the outreach process, complete coordination with the Department of State Lands, finalize the LWI, and adopt the LWI. Adoption is scheduled for June 2022.

3. RESULTS

LWI results documentation has been prepared in accordance with OAR 141-086-0220 (LWI Reports) and is provided herein.

3.1 STUDY AREA DESCRIPTION

OAR 141-086-0220(2)(a): A general description of the study area including a description of the landscape setting

The WHVS study area is located directly south of the current Hillsboro City limits. The study area includes the entire WHVS UGB expansion from 2018. The study area is bound by SW River Road to the west, current Hillsboro City limits to the north, and the Reserve Golf Club to the east. The entire study area is located within the Tualatin River drainage basin, and as such, the watersheds all ultimately feed the Tualatin River. In this stretch, the Tualatin River flows generally southward quite closely nearby; even at normal flows, the river is found flowing as close as 200 feet from SW River Road.

The study area contains scattered rural residences spread across a relatively flat landscape that is used primarily for farming, forestry, and small-scale livestock grazing. The study area drains to the west-southwest, ranging from 172 feet North American Vertical Datum (NGVD) of 1983 in elevation in the northeast corner to 134 feet NGVD in elevation where Gordon Creek flows off site through a culvert under SW River Road. Gordon Creek flows east to west through the middle of the study area, within a steep, primarily forested riparian area down to a relatively wide floodplain.

Riparian forest extends along the main Gordon Creek segment and portions of the northern tributary to Gordon Creek. Other riparian forest habitat is located along the edges of linear wetlands in the central portion of the site and along Tributary 10 in the southeastern portion of the site. Agriculture and scattered residences are the dominant land uses in the northern portion of the study area. The majority of the southern portion of the study area was cleared of its coniferous forest within the past few years, resulting in herbaceous vegetation and slash piles surrounding relatively narrow riparian areas. The dominant land uses in the watershed upstream from the study area are the Reserve Golf Course and Witch Hazel Elementary, as well as rapidly urbanizing previously agricultural, forested, and rural residential areas ("Witch Hazel Village") in the City of Hillsboro. Land covers south of the study area consist of farm and forest.

Three Clean Water Services (CWS) small subbasins (CWS) drain the LWI study area (approximately 147 acres), which lies within the larger "Davis Creek-Tualatin River" watershed, which represents the 6th-level (12-digit) hydrologic unit boundaries (HUCs) from the Watershed Boundary Dataset (WBD) layer for Oregon. The "Davis Creek-Tualatin River" watershed is identified by a HUC-12 number 170900100404. Table 2 and Figure 5 (Appendix A) show Clean Water Services (CWS) "stream sheds" and associated sub-basins that occur within the watershed boundary occupied by the LWI study area.

Table 2: Streamsheds, Subbasins, and Water Body Names within the WHVS Study Area

CWS Stream Shed[1]	CWS Subbasin ID[2]	Water Body Names[3]	Water Body ID[3]
Gordon Creek	GN1	Gordon Creek	GN1
	GN1	Unnamed tributary to Gordon Creek	GN2
Unnamed Tributaries to the Tualatin River	TR10	Unnamed tributary to Tualatin River	TR10
	TR11	Unnamed tributary to Tualatin River	TR11

[1] Data from "CWS_SmallSubBasins" GIS shapefile, "STREAMSHED" data field
[2] Data from "CWS_SmallSubBasins" GIS shapefile, "IDALL" data field
[3] Water body ID assigned by DEA for the WHVS LWI project

Water Body ID GN2 (second line, last column) is the only new water body name assigned by DEA for the project. This tributary to Gordon Creek (GN1) was renamed since it's a tributary to Gordon Creek but shares the same subbasin name as Gordon Creek GN1). The headwaters of this tributary (GN2) first forms a channel displaying flow at the northern boundary of Wetland GN2-W1. North (upslope of where this channel forms), a narrow saturated-only swale (which is part of Wetland GN2-W2) connects the tributary to the wider body of Wetland GN2-W2 near the northern boundary of the study area. Within the study area, the Gordon Creek subbasin has the most area (76.4 acres), followed by the Tualatin River tributary subbasin TR10 to the south (54.9 acres), the Tualatin River tributary subbasin TR11 to the northwest (15.5 acres). The average slope of the subbasins is approximately 5.3 percent, with lower-gradient slopes occurring in the southern/lower portion of the study area and steeper slopes in the northern/upper portion. Slope was calculated by dividing the rise in elevation from the lowest to highest point by the distance between these two points.

The streams in the study area have been relatively unmodified by incision, channelization, or other manipulations for agriculture. No streams within the study area (or upstream) are listed as water-quality limited according to DEQ 2018/2020 Integrated Report Database (DEQ 2018), although the Tualatin River downstream of the project is listed for dissolved oxygen and bacteria. For the most part, water is not being taken out of the streams through diking, drainage, or irrigation districts in the watershed upstream of the study area, but most of the upstream areas to the north and east are being rapidly urbanized under the Witch Hazel Village and South Hillsboro Community Plans, with associated increases in impervious cover and diversion of stormwater from natural drainages to manmade drainage systems. The Reserve Golf Course immediately to the east has also greatly altered habitats upstream.

3.2 WETLAND INVENTORY PROCESS

OAR 141-086-0220(2)(b): A description of the wetland inventory process including the public involvement process; the inventory methods including the date(s) and scale(s) of source maps and aerial photos used; the offsite and onsite wetland determination procedures including procedures used for visual confirmation and probable wetland identification; and all mapping and map transfer procedures used

See methods discussion above.

3.3 SUMMARY OF INVENTORY RESULTS

OAR 141-086-0220(2)(c): A summary of the inventory results including the total acreage of the study area and the total number and acreage of wetlands identified within the study area, excluding the acreage of deepwater habitat and artificially created wetlands such as detention ponds or aggregate extraction ponds

The study area is approximately 147 acres in size. It contains an estimated 10.65 acres of wetlands and one very small Probable Wetland (PW), which are displayed in Figure 5 (Appendix A). Table 3 provides a list of individual wetlands, their sizes, and their HGM and Cowardin classifications (which are defined in the Section 2.3 of this report). Representative sample plots for each wetland are provided in Appendix B, and summary sheets describing each wetland are provided in Appendix C. No deepwater habitat or artificially created wetlands were present.

Table 3: LWI Wetland Summary Results

Wetland ID[1]	Cowardin Class[2]	Cowardin Class Modifiers[3]	HGM Class/ Subclass	Size (acres)
GN1-W1	PFO1	C, b	Riverine/ Flow-through	4.02
GN1-W2	PEM1	C	Riverine/ Flow-through	1.87
GN2-W1	PFO1	J	Riverine/ Flow-through	0.67
GN2-W2	PEM1	B	Slope/ Headwater	0.22
TR10-W1	PFO1	B	Slope/ Headwater	1.41
TR10-W2	PFO1	B	Slope/ Headwater	1.13
TR10-W3	PFO1	J	Riverine/ Flow-through	1.32
TR11-PW	PEM1	B	Slope/ Headwater	<0.01
	Probable Wetland Acreage			**<0.01**
	Wetland Acreage			**10.65**
	Grand Total			**10.65**

[1] "W" = wetland, "PW" = probable wetland
[2] PEM1 = Palustrine Emergent, Persistent
PFO1= Palustrine Forested, Broad-leaved Deciduous
[3] B = Saturated, C = Seasonally Flooded,J = Intermittently Flooded, b = Beaver

The following summarizes wetland resources identified within the study area. More detailed descriptions are provided in the Appendix C summary sheets. One Probable Wetland was present, and one wetland smaller than 0.5 acres. Six wetlands larger than 0.5 acres occur in the study area, all relatively long and linear-shaped wetlands that follow Gordon Creek and other tributaries and headwaters to the Tualatin River. The majority of wetland acreage supports relatively intact forested and scrub-shrub wetlands typically dominated by native plant species. Only two wetlands are substantially degraded: Wetland GN2-W2 lies within a previously cleared, ruderal area adjacent to and within a cow pasture and is dominated by non-native Kentucky bluegrass (*Poa pratensis*). GN1-W2 is dominated by reed canarygrass (*Phalaris arundinacea*) and has minimal shrub or tree structure.

NHD mapping shows Tributary GN2 extending north past the northern boundary of the study area. However, that area has been converted to residences and an elementary school, and whatever hydrology previously entered from the north appears to be conveyed to the City's constructed stormwater conveyance system. No culvert outlet draining southward to GN2 was found, and no indication of flow from the north was observed. The ruderal habitat on the north end of the wetland swale was saturated and ponded in places during the site visit, which indicates that groundwater still flows through the wetland, but signs of intermittent flow do not appear until the swale meets the north end of Wetland GN2-1.

3.4 OFWAM PROCESS AND RESULTS

OAR 141-086-0220(2)(d): A discussion of the OFWAM assessment process (e.g. how assessment units were defined) and the results

Table 4 provides a summary of wetland functional assessment (OFWAM) results for the five wetlands that are one-half acre or greater in size. OFWAM yields "high, medium and low" levels of each function, although they are described in various ways such as "diverse, intact, or degraded", among others. The general character of each wetland assessed using OFWAM, as well as other information required by DSL, is provided in the wetland summary sheets in Appendix C. The Wetland Assessment Answer Sheets showing the answers to individual OFWAM questions are provided in Appendix D. A discussion of factors affecting the wetland functional assessments is provided below.

As discussed above, although not required, DEA opted to assess one wetland by OFWAM (GN2-W2) that is smaller than 0.5 acre because it is hydrologically connected to a larger wetland downslope (GN2-W1) and it has good potential for enhancement. It was mapped and assessed as a separate wetland (rather than combined with the larger wetland) was because it was not similar in character to the larger wetland, as it is lacking wetland structure, is historically cleared and disturbed, and is dominated by non-native grasses.

Weeds are minimal in most wetlands except GN1-W4 and the majority of GN2-W2. Agriculture and scattered residential are the dominant land uses in the northern portion of the study area, while the majority of the primarily coniferous forested areas in the southern portion of the study area were cleared within the previous few years, resulting in herbaceous vegetation and slash piles surrounding relatively narrow riparian areas.

Steelhead and other native fish, such as cutthroat trout, occur in the Tualatin River. According to ODFW's Oregon Fish Habitat and Distribution online database (ODFW 2021) and the Stream Functional Assessment Methodology online database (McCune, et. al 2019), the SW River Road crossing of Gordon Creek is passable to fish, which indicates that native fish from the Tualatin River could move up into Gordon Creek (stream GN1) and its tributary (stream GN2). Stream TR10 is small (approximately two feet wide), and mapped as intermittent by the National Hydrography Dataset, and there was minimal flow during the wettest part of the wet season (as indicated by the field visit on February 23, 2021). Therefore, stream TR10 is assumed to lack the conditions to support steelhead presence, although other fish may be present. GN2-W2 and TR10-W1 and -W2 were not assessed for fish because they do not border or contain a channel within them and do not have a surface water connection to streams.

Although riparian habitats throughout the study area have been degraded and greatly reduced from their historic extents, most of the waterways and wetlands are shaded by vegetation to some degree. Little woody debris was present in general, but cover of submerged and surface wetland vegetation was extensive, which caused the scores of all three TR10 subbasin wetlands, as well as the degraded portion of Gordon Creek (GN1-W2) to remain 'Intact' for fish habitat.

Wetland GN1-W1 was the largest, most diverse, and most intact wetland within the study area; it scored high for all functions except Water Quality. Interestingly, Water Quality function for all wetlands was Degraded or Not Present, primarily due to the relatively small size of the wetlands and the lack of Water Quality Limited streams upstream of the study area (DEQ 2018), which reduced scores for this function. The OFWAM Water Quality function increases scores for two reasons; first, does the wetland have the opportunity to "clean" water passing through it- are pollutants in upstream waters entering the wetland. Second, if the wetland has the opportunity, does it also have the capacity to "clean" the water?

Vegetative Diversity and Wildlife Habitat function scored as Diverse in all wetlands (except GN2-W2 and GN1-W4), which seems appropriate, given the dominance of native vegetation and multilayered wetland structure within the highly functioning wetlands.

Table 4: Wetland Functional Assessment Results

Wetland ID	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Meets Locally Significant Criteria?
GN1-W1	Diverse	Intact	Degraded	Intact	Yes
GN1-W2	Some habitat	Intact	Degraded	Degraded	Yes
GN2-W1	Diverse	Intact	Degraded	Degraded	Yes
GN2-W2	Some habitat	n/a	Not present	Not present	No
TR10-W1 and TR10-W2	Diverse	n/a	Degraded	Degraded	Yes
TR10-W3	Diverse	Intact	Degraded	Degraded	Yes

3.5 SUMMARY OF LOCALLY SIGNIFICANT WETLANDS

OAR 141-086-0220(2)(e): A summary of Locally Significant Wetlands, if identified (may be in table format)

All wetlands except GN2-W2 met locally significant wetland criteria (i.e., at least one of the four functions evaluated rated highly). GN2-W2 did not meet locally significant wetland criteria, primarily because it does not provide fish habitat support, lacks vegetative diversity, and is fed by groundwater rather than overbank stream flows due to its higher position in its watershed. It is shown in crosshatch in Figure 5 to denote that it is not locally significant, while the locally significant wetlands shown in Table 5 lack crosshatching in Figure 5.

Table 5: List of Locally Significant Wetlands within the WHVS Study Area

Wetland ID	Wetland ID
GN1-W1	TR10-W1
GN1-W2	TR10-W2
GN2-W1	TR10-W3

4. PREPARERS AND CONTRIBUTORS

Phil Rickus, DEA Ecologist, and Valerie Thompson, DEA Environmental Specialist, performed the field work. Mr. Rickus is the primary author of this report, and Ethan Rosenthal, DEA Ecologist, and Sarah Bruce, Senior Planner, City of Hillsboro, provided quality control reviews. Corie Peters, DEA Project Assistant, provided editing assistance. Sara Gilbert, DEA GIS Specialist, conducted GIS analysis and prepared report figures.

5. BIBLIOGRAPHY

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6. APPENDICES

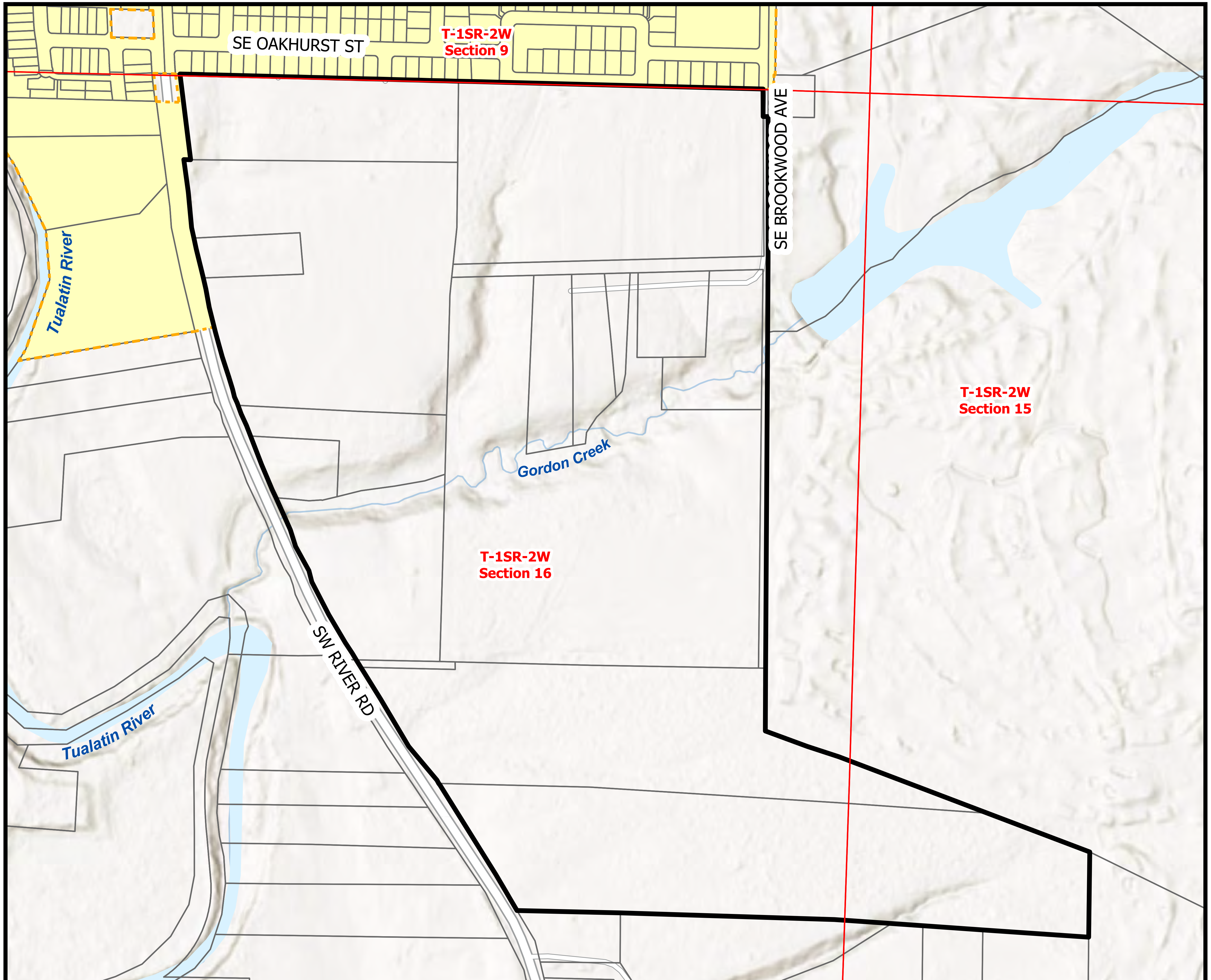
APPENDIX A: Figures

OAR 141-086-0220(2)(f) All figures, with the study area clearly outlined.

Figure 1
Vicinity Map

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY



- WHVS Study Area
- Hillsboro City Limits
- Washington County Tax Lot
- PLSS Section

0 250 500 Feet

Data Sources:
WHVS Study Area: City of Hillsboro, 2021
City Limits, PLSS, Streets: Metro RLIS 2022
Waterways: USGS NHD High Resolution, 2021
Tax Lots: Washington County (via Metro RLIS)

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

North

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March 2022

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March 2022

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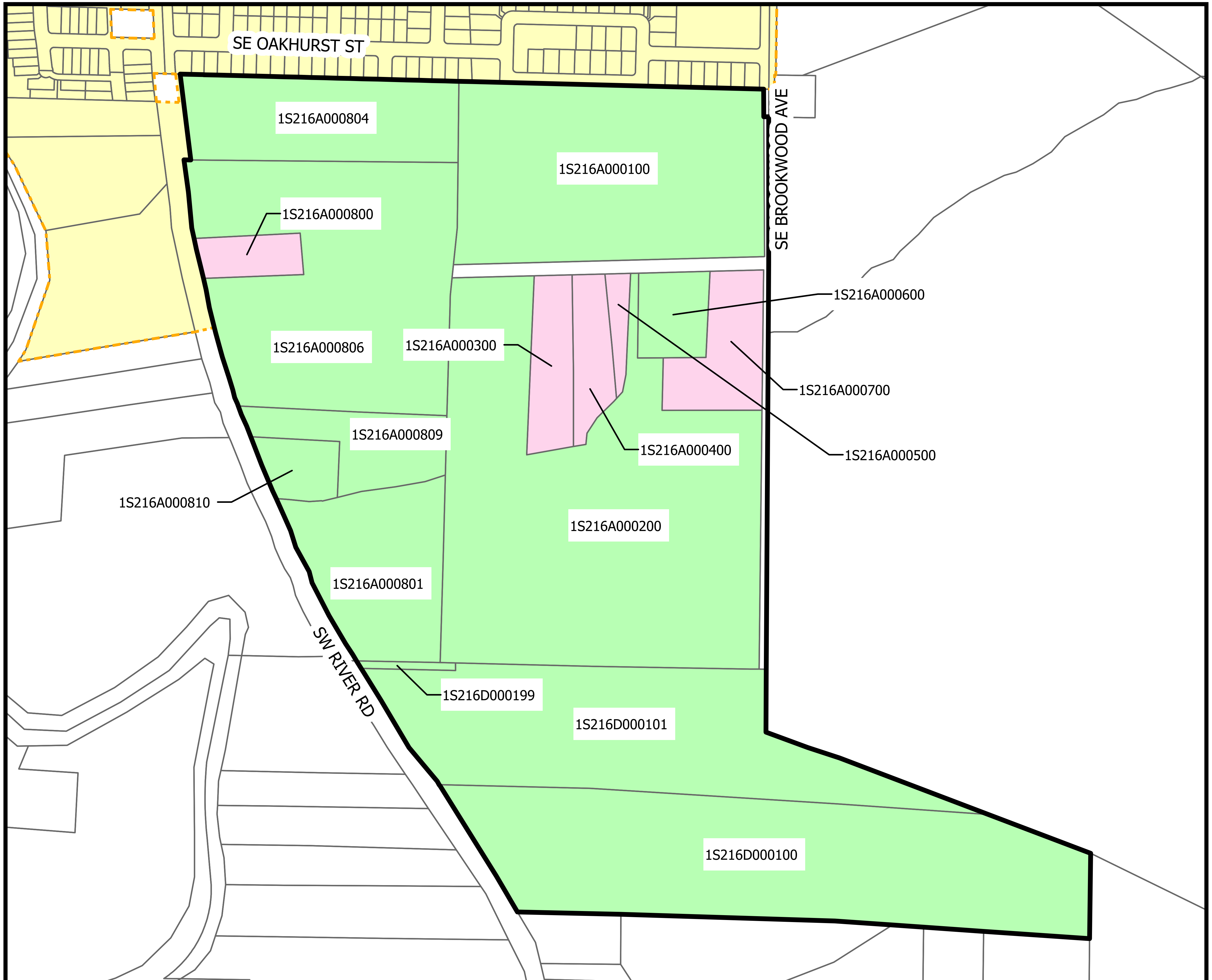
Figure 2
Tax Lots and Property Access Map

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY



- WHVS Study Area
- Hillsboro City Limits
- Washington County Tax Lot
- Property with Site Access
- Access not granted (as of March 8, 2021)

0 250 500 Feet

Data Sources:
WHVS Study Area: City of Hillsboro, 2021
City Limits, Streets: Metro RLIS 2021
Tax Lots: Washington County (via Metro RLIS)

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

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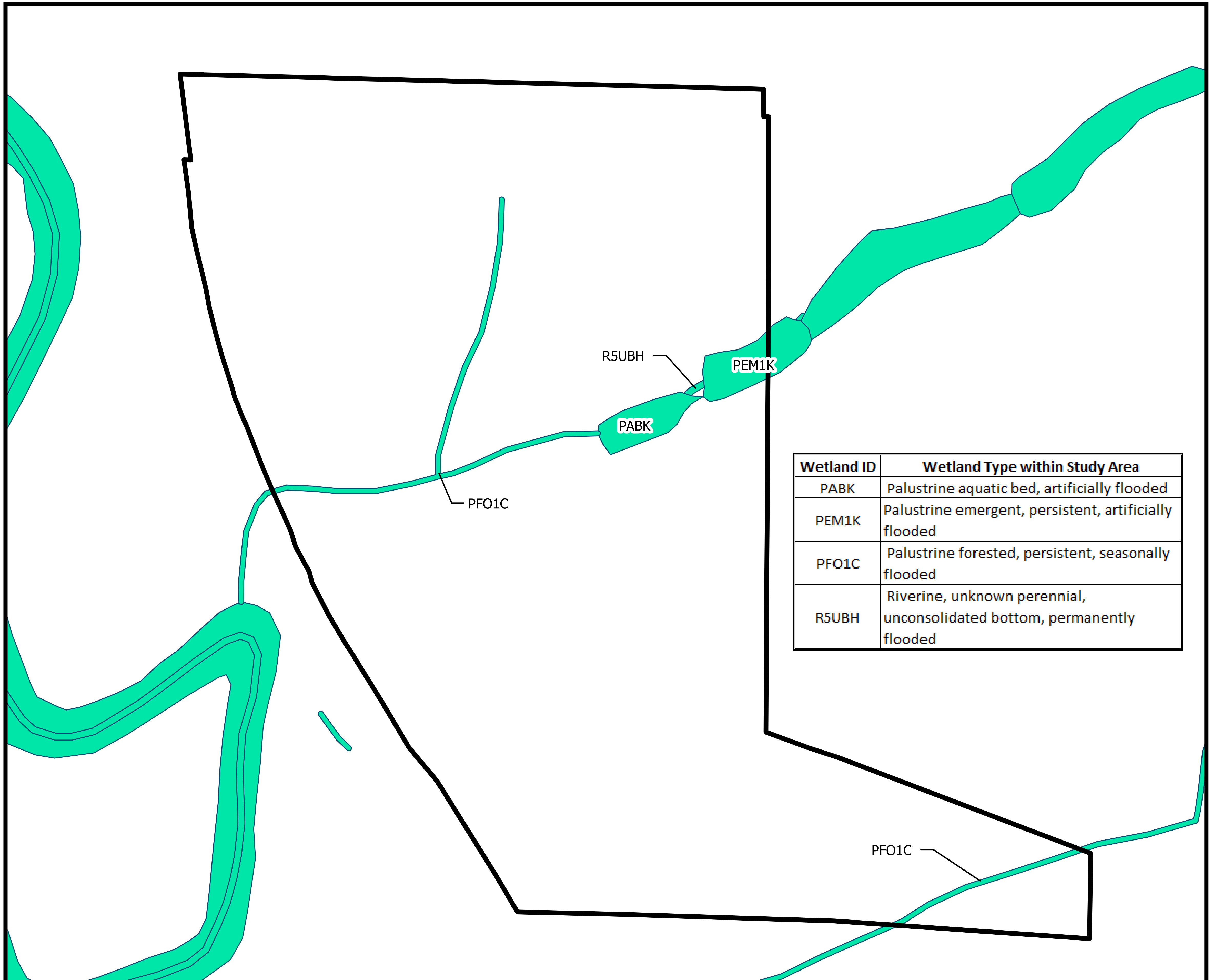
Figure 3
USFWS NWI Wetlands

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY



Wetland ID	Wetland Type within Study Area
PABK	Palustrine aquatic bed, artificially flooded
PEM1K	Palustrine emergent, persistent, artificially flooded
PFO1C	Palustrine forested, persistent, seasonally flooded
R5UBH	Riverine, unknown perennial, unconsolidated bottom, permanently flooded

WHVS Study Area
NWI Wetland

0 250 500 Feet

Data Sources:
WHVS Study Area: City of Hillsboro, 2021
Wetlands: USFWS National Wetlands Inventory, 2021

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

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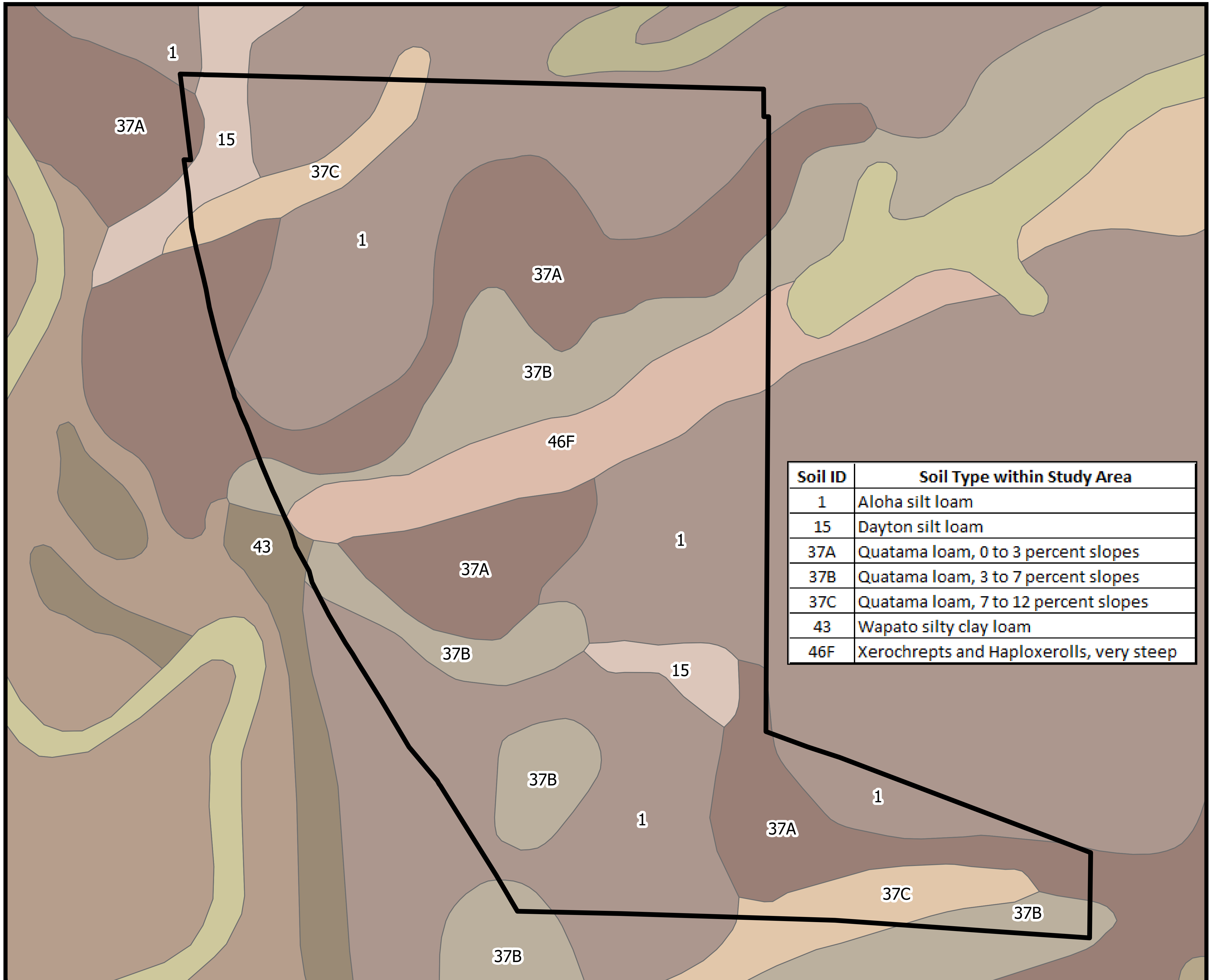
Figure 4
NRCS Soils Map

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY



Soil ID	Soil Type within Study Area
1	Aloha silt loam
15	Dayton silt loam
37A	Quatama loam, 0 to 3 percent slopes
37B	Quatama loam, 3 to 7 percent slopes
37C	Quatama loam, 7 to 12 percent slopes
43	Wapato silty clay loam
46F	Xerochrepts and Haploxerolls, very steep

WHVS Study Area
NRCS Soil Unit

0 250 500 Feet

Data Sources:
WHVS Study Area: City of Hillsboro, 2021
Soils: USDA NRCS, 2021

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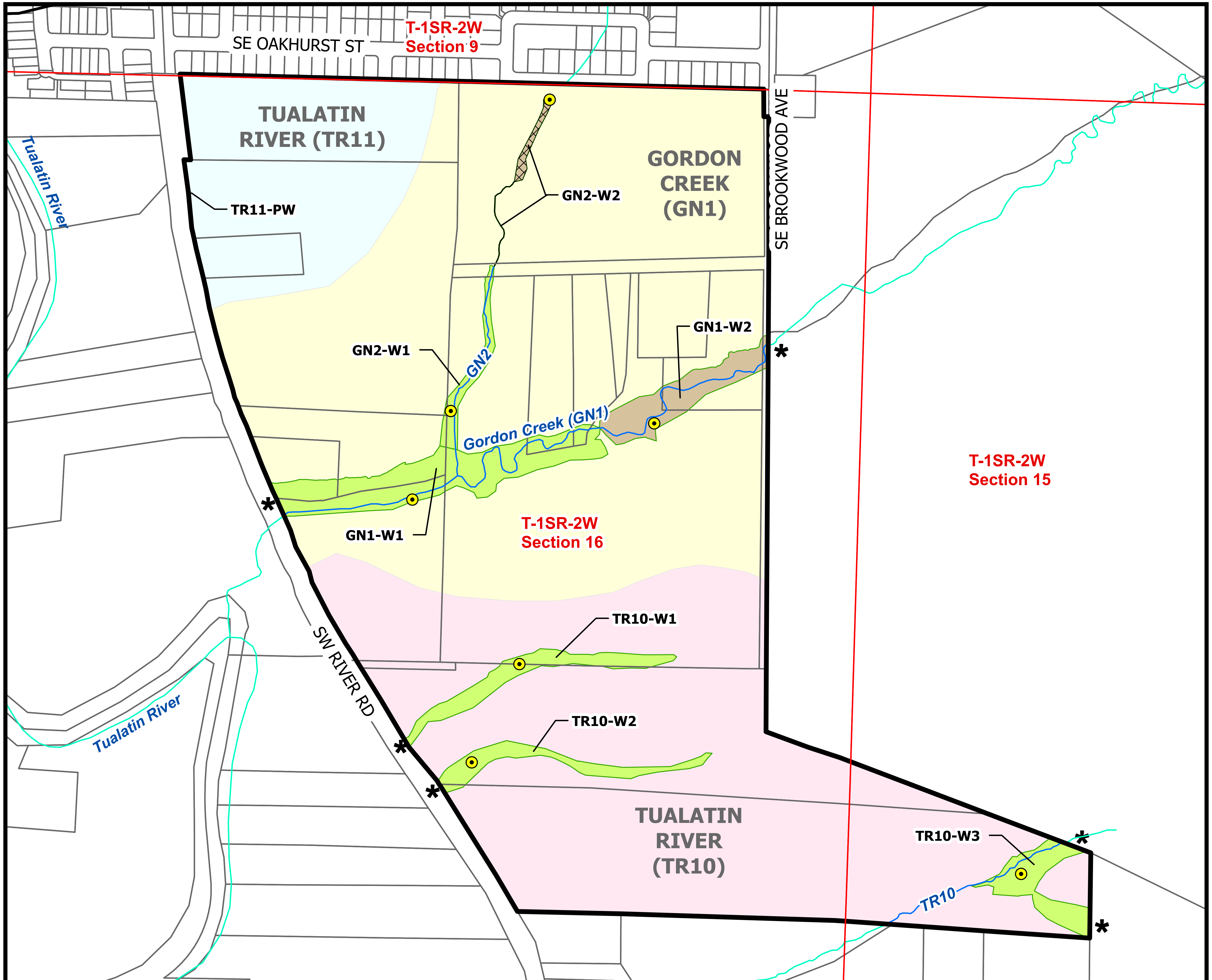

Figure 5, Sheet 1 of 5
Local Wetland Inventory Map

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY

- LWI Study Area (derived from County tax lot boundaries)
- LWI Stream
- Intermittent/Perennial Waterway
- Sample Plot
- Washington County Tax Lot
- * Wetland extends outside Study Area

LWI Wetlands *(see Note)*

- Palustrine Emergent (PEM1)
- Palustrine Forested (PFO1)
- NON Significant Wetland

Note:
W = Wetland
PW = Probable Wetland

12-Digit/6th-Level Watershed Boundaries

- Gordon Creek (GN1)
- Tualatin River (TR10)
- Tualatin River (TR11)
- PLSS Section Boundary

0 500 1,000 Feet

Data Sources:
WHVS Study Area: City of Hillsboro, 2021
LWI Wetlands: USFWS NWI Wetlands adjusted by DEA within WHVS Study Area in 2021 for WHVS LWI
LWI Streams: USGS NHD Streams adjusted by DEA within WHVS Study Area in 2021 for WHVS LWI
Waterways: USGS NHD High Resolution, 2021
Watershed Boundaries: Clean Water Services Stream Sheds (WBD OR HUC 12), 2021
Tax Lots: Washington County (via Metro RLIS), 2021
PLSS: Metro RLIS, 2021

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

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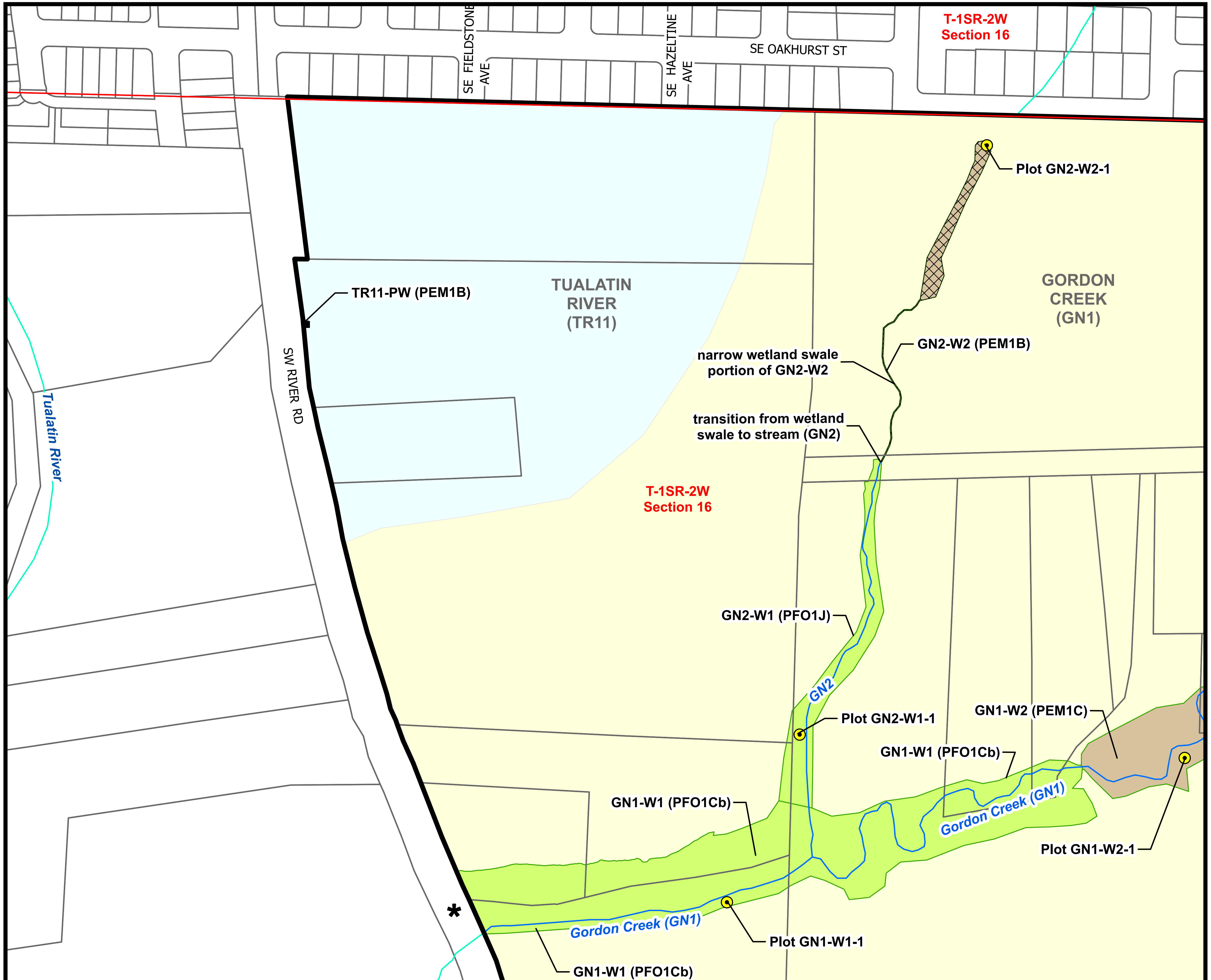

Figure 5, Sheet 2 of 5
Local Wetlands Inventory Map

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY

- WHVS Study Area (derived from County tax lot boundaries)
- LWI Stream
- Intermittent/Perennial Waterway
- Culvert
- Sample Plot
- * Wetland extends outside Study Area
- PLSS Section
- Washington County Tax Lot

LWI Wetlands *(see Note)*

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Note:
W = Wetland
PW = Probable Wetland

12-Digit/6th-Level Watershed Boundaries

- Gordon Creek (GN1)
- Tualatin River (TR10)
- Tualatin River (TR11)

0 125 250 Feet

Data Sources:
WHVS Study Area: City of Hillsboro, 2021
LWI Wetlands: USFWS NWI Wetlands adjusted by DEA within WHVS Study Area in 2021 for WHVS LWI
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Tax Lots: Washington County (via Metro RLIS), 2021
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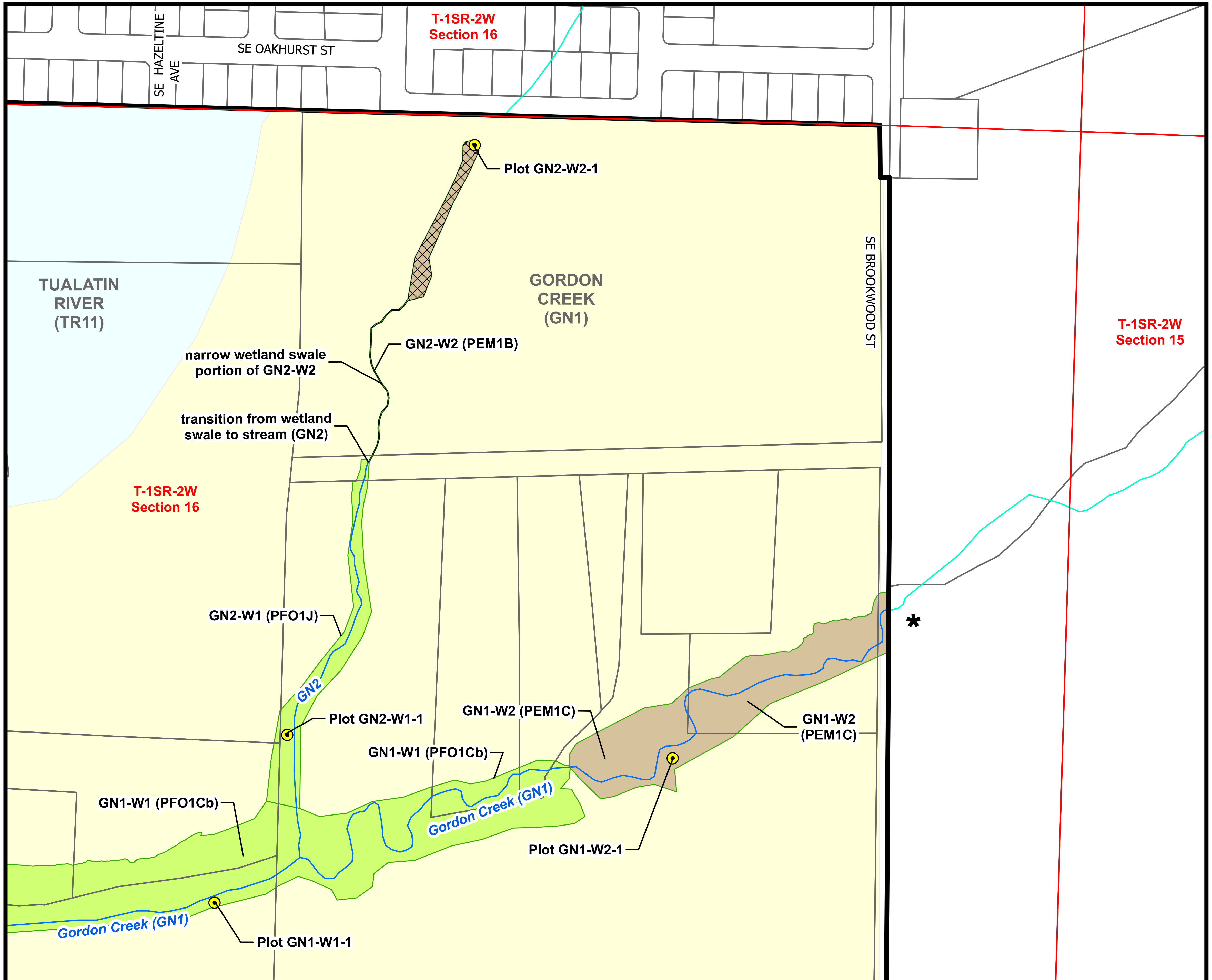

Figure 5, Sheet 3 of 5
Local Wetlands Inventory Map

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY

- WHVS Study Area (derived from County tax lot boundaries)
- LWI Stream
- Intermittent/Perennial Waterway
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- Sample Plot
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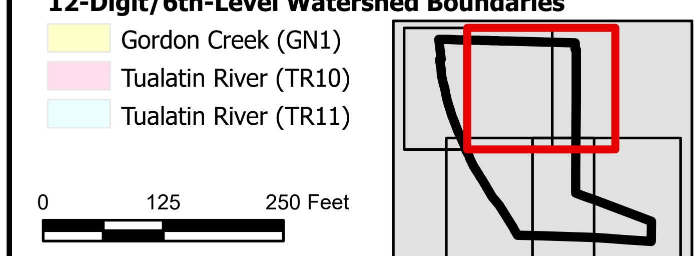
12-Digit/6th-Level Watershed Boundaries

- Gordon Creek (GN1)
- Tualatin River (TR10)
- Tualatin River (TR11)



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Watershed Boundaries: Clean Water Services Stream Sheds (WBD OR HUC 12), 2021
Tax Lots: Washington County (via Metro RLIS), 2021
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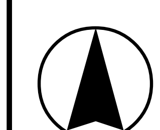

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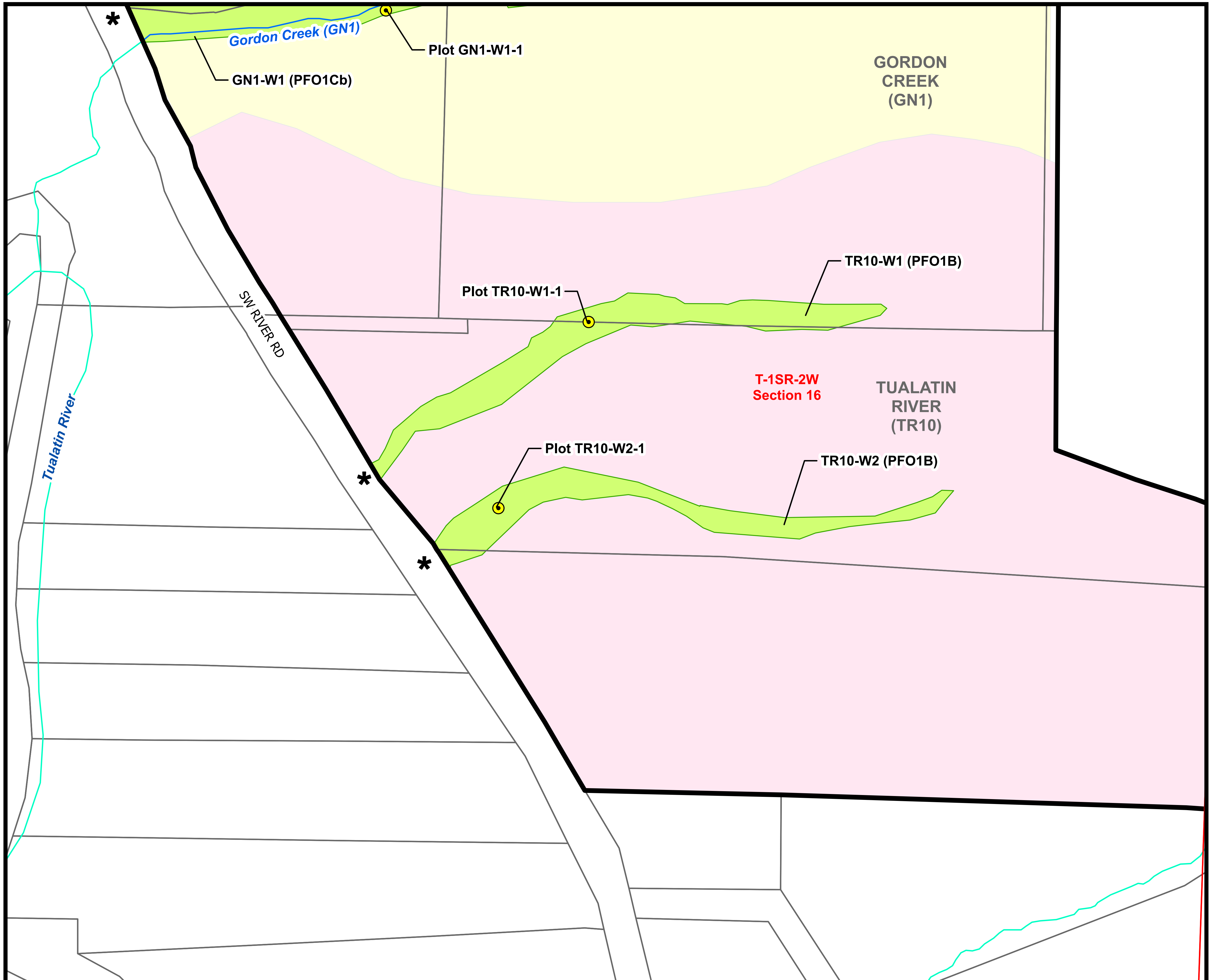

Figure 5, Sheet 4 of 5
Local Wetlands Inventory Map

City of Hillsboro
Witch Hazel Village South
Plan Area

LOCAL WETLANDS INVENTORY

- WHVS Study Area (derived from County tax lot boundaries)
- LWI Stream
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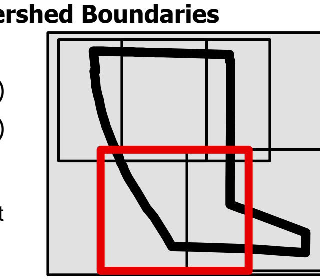
12-Digit/6th-Level Watershed Boundaries

- Gordon Creek (GN1)
- Tualatin River (TR10)
- Tualatin River (TR11)

0 125 250 Feet



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March 2022

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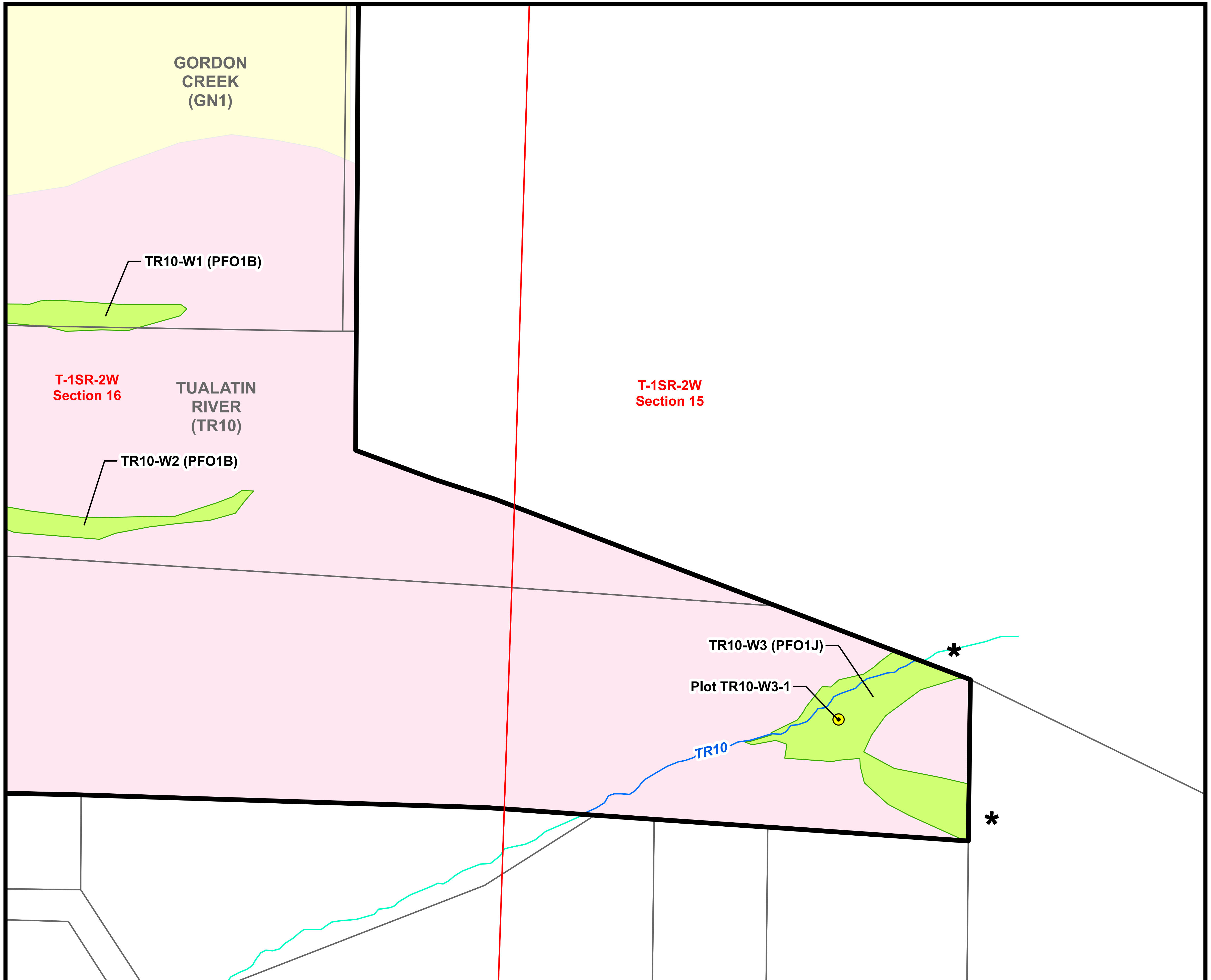
Figure 5, Sheet 5 of 5
Local Wetlands Inventory Map

City of Hillsboro
Witch Hazel Village South
Plan Area



LOCAL WETLANDS INVENTORY

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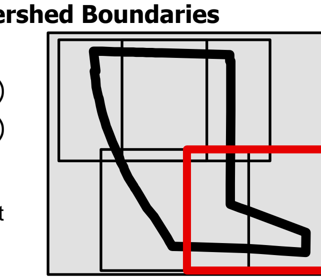

0 125 250 Feet

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LWI Streams: USGS NHD Streams adjusted by DEA within WHVS Study Area in 2021 for WHVS LWI
Waterways: USGS NHD High Resolution, 2021
Watershed Boundaries: Clean Water Services Stream Sheds (WBD OR HUC 12), 2021
Tax Lots: Washington County (via Metro RLIS), 2021
PLSS: Metro RLIS, 2021

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APPENDIX B: Sample Plot Data Forms

OAR 141-086-0220(3)(a) Sample plot data on standard field data forms per OAR 141-090 et seq.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Witch Hazel Village South LWI City/County: Hillsboro, Washington Co. Sampling Date: 2/23/2021

Applicant/Owner: City of Hillsboro State: OR Sampling Point: GN1-W1-1

Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S16

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): A Lat: 45.486590 Long: -122.935749 Datum: NAD83

Soil Map Unit Name: 46F: Xerochrepts and Haploxerolls, very steep NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___
Wetland Hydrology Present?	Yes ✔	No ___

Is the Sampled Area within a Wetland? **Yes** ✔ **No** ___

Remarks:

Plot is located in a riparian fringe wetland along Gordon Creek.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' r)			
1. Fraxinus latifolia	30	Y	FACW
2. Alnus rubra	35	Y	FAC
3.			
4.			
	65	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' r)			
1. Alnus rubra	15	Y	FACW
2. Symphoricarpos albus	5	Y	FACU
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. Lysichiton americanus	5	N	OBL
2. Oenanthe sarmentosa	60	Y	OBL
3. Urtica dioica	5	N	FAC
4. Phalaris arundinacea	20	Y	FACW
5. Ludwigia palustris	5	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: GN1-W1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	97	10YR 3/4	3	C	M	silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No ✔	Depth (inches): ___
Water Table Present?	Yes ✔	No ___	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes ✔	No ___	Depth (inches): at surface

Wetland Hydrology Present? **Yes** ✔ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shallow surface water in places throughout the swale.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Witch Hazel Village South LWI City/County: Hillsboro, Washington Co. Sampling Date: 2/23/2021

Applicant/Owner: City of Hillsboro State: OR Sampling Point: GN1-W2-1

Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S16

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): A Lat: 45.487783 Long: -122.931631 Datum: NAD83

Soil Map Unit Name: 46F: Xerochrepts and Haploxerolls, very steep NWI classification: PABK - Freshwater Pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ___	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ___
Hydric Soil Present?	Yes ✔ No ___	
Wetland Hydrology Present?	Yes ✔ No ___	

Remarks:

Plot is located in a riparian fringe wetland along Gordon Creek.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. Phalaris arundinacea	90	Y	FACW
2. Juncus patens	10	N	FACW
3. Scirpus microcarpos	10	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: GN1-W2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	97	10YR 3/4	3	C	M	silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
✔ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✔ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
✔ High Water Table (A2)
✔ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ✔ No ___ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): at surface

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Witch Hazel Village South LWI City/County: Hillsboro, Washington Co. Sampling Date: 2/23/2021

Applicant/Owner: City of Hillsboro State: OR Sampling Point: GN2-W1-1

Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S16

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): A Lat: 45.487537 Long: -122.935213 Datum: NAD83

Soil Map Unit Name: 37B: Quatama loam, 3 to 7 percent slopes NWI classification: PFO1C - Palustrine Forested

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___
Wetland Hydrology Present?	Yes ✔	No ___

Is the Sampled Area within a Wetland? **Yes** ✔ **No** ___

Remarks:

Plot is located in a riparian fringe wetland along a tributary to Gordon Creek.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	30	Y	FACW
2. Alnus rubra	10	Y	FAC
3. Populus balsamifera	15	Y	FAC
4.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' r)			
1. Rubus armeniacus	10	N	FAC
2. Cornus sericea	70	Y	FACW
3. Physocarpus capitatus	10	N	FACW
4.			
5.			
	90	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. Lysichiton americanus	5	N	OBL
2. Phalaris arundinacea	90	Y	FACW
3. Athyrium filix-femina	15	N	FAC
4. Urtica dioica	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	115	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: GN2-W1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	95	10YR 3/4	4	C	M	silt loam	
-	-	-	10YR 4/4	1	C	M	silt loam	
6-16	5Y 4/2	97	7.5YR 3/4	3	C	M	silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✔ No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ______	No ✔	Depth (inches): ______
Water Table Present?	Yes ✔	No ______	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes ✔	No ______	Depth (inches): at surface

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shallow surface water in places throughout the wetland.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Witch Hazel Village South LWI City/County: Hillsboro, Washington Co. Sampling Date: 2/23/2021

Applicant/Owner: City of Hillsboro State: OR Sampling Point: GN2-W2-1

Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S16

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 15

Subregion (LRR): A Lat: 45.490855 Long: -122.933870 Datum: NAD83

Soil Map Unit Name: 1: Aloha silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___
Wetland Hydrology Present?	Yes ✔	No ___

Is the Sampled Area within a Wetland? **Yes** ✔ **No** ___

Remarks:

Plot is located at the upper end of a headwaters wetland within planted pasture.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. Poa pratensis	85	Y	FAC
2. Holcus lanatus	5	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: GN2-W2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100	-	-	-	-	silt loam	
6-16	10YR 4/2	97	10YR 4/6	3	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✔ No ______

Remarks:

The 0-6" soil layer included organic matter from pasture grass cultivation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ______	No ✔	Depth (inches): ______
Water Table Present?	Yes ✔	No ______	Depth (inches): 2"
Saturation Present? (includes capillary fringe)	Yes ✔	No ______	Depth (inches): at surface

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shallow surface water lies in places throughout the wetland. A development to the north appears to have cut off historic inputs of water, and may have decreased hydrology overall, but saturation was still apparently present throughout the wetland during a normal wet season.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Witch Hazel Village South LWI City/County: Hillsboro, Washington Co. Sampling Date: 2/23/2021

Applicant/Owner: City of Hillsboro State: OR Sampling Point: TR10-W1-1

Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S16

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): A Lat: 45.48488705 Long: -122.934069 Datum: NAD83

Soil Map Unit Name: 37B: Quatama loam, 3 to 7 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?** Yes ✔ No ___
Hydric Soil Present?	Yes ✔	No ___	
Wetland Hydrology Present?	Yes ✔	No ___	

Remarks:
Plot is located in a wide forested wetland swale.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' r)			
1. Fraxinus latifolia	70	Y	FACW
2.			
3.			
4.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. Spiraea douglasii	50	Y	FACW
2. Rubus ursinus	5	N	FACU
3. Rosa nutkana	5	N	FAC
4. Populus balsamifera	10	N	FAC
5.			
	70 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. Carex obnupta	75	Y	OBL
2. Juncus patens	25	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 0			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: TR10-W1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	95	10YR 3/4	5	C	M	silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ✔ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ______	No ✔	Depth (inches): ______
Water Table Present?	Yes ✔	No ______	Depth (inches): 1"
Saturation Present? (includes capillary fringe)	Yes ✔	No ______	Depth (inches): at surface

Wetland Hydrology Present? **Yes** ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shallow surface water in places throughout the swale.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Witch Hazel Village South LWI City/County: Hillsboro, Washington Co. Sampling Date: 2/23/2021

Applicant/Owner: City of Hillsboro State: OR Sampling Point: TR10-W2-1

Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S16

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): A Lat: 45.483835 Long: -122.934739 Datum: NAD83

Soil Map Unit Name: 1: Aloha silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___
Wetland Hydrology Present?	Yes ✔	No ___

Is the Sampled Area within a Wetland? **Yes** ✔ **No** ___

Remarks:

Plot is located in a wide forested wetland swale.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' r)			
1. Fraxinus latifolia	70	Y	FACW
2.			
3.			
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' r)			
1. Spiraea douglasii	65	Y	FACW
2. Rubus ursinus	5	N	FACU
3.			
4.			
5.			
	70	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. Carex obnupta	80	Y	OBL
2. Juncus patens	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 10			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: TR10-W2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	95	10YR 4/4	5	C	M	silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ✔ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ______	No ✔	Depth (inches): ______
Water Table Present?	Yes ✔	No ______	Depth (inches): 2"
Saturation Present? (includes capillary fringe)	Yes ✔	No ______	Depth (inches): at surface

Wetland Hydrology Present? **Yes** ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shallow surface water was present in places throughout the swale.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Witch Hazel Village South LWI City/County: Hillsboro, Washington Co. Sampling Date: 2/23/2021

Applicant/Owner: City of Hillsboro State: OR Sampling Point: TR10-W3-1

Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S16

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): A Lat: 45.482832 Long: -122.926449 Datum: NAD83

Soil Map Unit Name: 37C: Quatama loam, 7 to 12 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks:

Plot is located in a flow-through wetland swale at the upper end of a small drainage.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' r)			
1. Fraxinus latifolia	50	Y	FACW
2. Populus balsamifera	20	Y	FAC
3.			
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' r)			
1. Spiraea douglasii	65	Y	FACW
2. Amelanchier alnifolia	10	N	FACU
3.			
4.			
5.			
	75	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. Carex obnupta	75	Y	OBL
2. Oenanthe sarmentosa	20	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 5			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ____

Remarks:

SOIL

Sampling Point: TR10-W3-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	95	10YR 3/4	5	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✔ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) (**except MLRA 1**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✔ No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- ✔ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		✔	
Water Table Present?	✔		1"
Saturation Present? (includes capillary fringe)	✔		at surface

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shallow surface water in places throughout the swale.

APPENDIX C: Wetland Summary Sheets

OAR 141-086-0220*(3)(b)* *A summary sheet for each wetland that must at a minimum include:*

(A) The unique wetland code;

(B) Street address or equivalent location description;

(C) Township, Range, Section, Quarter Quarter Section and tax lot(s) that contain the mapped wetland;

(D) Approximate wetland size (in acres);

(E) Cowardin classification(s);

(F) HGM classification(s);

(G) Mapped soil unit(s);

(H) Watershed boundaries at the 6th field Hydrologic Unit Code scale as defined by the US Geological Survey or finer;

(I) Sample plot numbers, if any;

(J) Department wetland determination or delineation file numbers, where applicable;

(K) Scientific and common names of dominant plant species;

(L) Primary hydrology sources;

(M) Sampling or visual confirmation date(s) and method;

(N) Locally Significant Wetland determination, if made; and

(O) Comments that describe the wetland, including topographic position, land uses and significant alterations (including agricultural).

LOCAL WETLANDS INVENTORY

Witch Hazel Village South, Wetland Summary Sheet

GENERAL INFORMATION			
Wetland Code:	GN1-W1(Locally Significant)	**Method:**	Onsite and Offsite
Wetland Size:	4.02 acres	**Field Date(s):**	February 23, 2021
Cowardin Class:	PFO1Cb	**Data Plot #s:**	GN1-W1-1
HGM Class:	Riverine Flow-through	**Investigators:**	PRR, VNT

LOCATION	
Street/landmark:	East of SW River Rd, western portion of Gordon Creek
Legal/tax map/lot(s):	1S2W16A 801, 200, 300, 400
LWI Watershed/ HUC12:	GN1 (Gordon Creek)/ 170900100404

WETLAND CHARACTERISTICS

Description: Gordon Creek flows east to west in a relatively wide floodplain through the middle of this wetland, within a steep-sided drainage. It is fairly well connected to the floodplain at high water. Wetland GN1 is dominated by a native tree and primarily native shrub layer, as well as by non-native reed canarygrass in the herb layer, combined with patches of native herbs. The plant community is typical of an Oregon ash forest. Vegetative diversity and wildlife use in the forested and shrub portions of the wetland was high, with excellent shading from the relatively intact forested riparian areas on both banks. Beaver use was noted in portions of the wetland, and small woody debris was present in places. Shallow surface water was present in patches within the floodplain during the site visit, and flooding and/or surface saturation likely occurs throughout most of the wetland during a normal water year.

Soils: Xerochrepts and Haploxerolls, very steep (Map Unit 46F).

Hydrologic Source: Flooding and seasonal storm runoff from the Reserve golf course to the east, and high seasonal groundwater from Gordon Creek.

Vegetation (Dominant Vegetation with an *)

Trees		Shrubs		Vines/Herbs	
Oregon ash*	*Fraxinus latifolia*	Red-osier dogwood*	*Cornus sericea*	Water parsley*	*Oenanthe sarmentosa*
Red alder*	*Alnus rubra*	Red alder*	*Alnus rubra*	Reed canarygrass*	*Phalaris arundinacea*
		Nootka rose	*Rosa nutkana*	Skunk cabbage	*Lysichiton americanus*

Potential Enhancement Opportunities:

-Reducing or eliminating cattle grazing in the riparian area would increase cover by native vegetation and benefit water quality.

-Weed removal and native plantings. There are many opportunities to expand riparian buffers to improve wildlife habitat and water quality. Protection of plantings from beaver would likely be needed.

-Oregon white oak and native prairie species in upland habitats would help fulfill Oregon Conservation Strategy (OCS) goals.

-Snag and downed wood creation would also benefit many Oregon Conservation Strategy (OCS) species, and would be especially useful for amphibians within the riparian habitat.

LOCAL WETLAND INVENTORY

Witch Hazel Village South, Wetland Summary Sheet

GENERAL INFORMATION

Wetland Code:	GN1-W2 (Locally Significant)	**Method:**	Onsite and Offsite
Wetland Size:	1.87 acres	**Field Date(s):**	February 23, 2021
Cowardin Class:	PEM1C	**Data Plot #s:**	GN-W2-1
HGM Class:	Riverine Flow-through	**Investigators:**	PRR, VNT

LOCATION

Street/landmark:	East reach of Gordon Creek, immediately west of the Reserve Golf Course.
Legal/tax map/lot(s):	1S2W16A 200 & 700
LWI Watershed/ HUC12:	**GN (Gordon Creek)**/ 170900100404

WETLAND CHARACTERISTICS

Description: Wide floodplain with wetland north and south of main stream channel along upper reach of Gordon Creek. Plant community is dominated by reed canarygrass and the NWI map shows the wetland as ponded. However, the dam that previously ponded the area has been breached and deeper water is now limited to flooding from and near the creek during the wet season. The wetland limits were topographically determined by steep banks, which were altered by grazing to the edge of the wetland. Portions of the adjacent riparian habitat have been altered by agriculture and clearing for power lines.

Soils: Xerochrepts and Haploxerolls, very steep (Map Unit 46F)

Hydrologic Source: Gordon Creek and high seasonal groundwater.

Vegetation (Dominant Vegetation with an *)

Trees	Shrubs	Vines/Herbs	
		Reed canarygrass*	*Phalaris arundinacea*
		Meadow foxtail	*Alopecurus pratensis*

Potential Enhancement Opportunities:

-Limiting cattle grazing and herbicide/fertilizer application on upslope pasture would help protect water quality.

-Old, breached dam could be converted back to wetland habitat, which might reduce ponding in the wetland during storm events and help decrease dominance of reed canarygrass.

-Weed removal and native plantings throughout. There are many opportunities to expand riparian buffers around agricultural wetlands to improve wildlife habitat and water quality.

-Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals. Snag and downed wood creation would also benefit many OCS species.

LOCAL WETLANDS INVENTORY

Witch Hazel Village South, Wetland Summary Sheet

GENERAL INFORMATION			
Wetland Code:	GN2-W1 (Locally Significant)	**Method:**	Onsite
Wetland Size:	0.67 acres	**Field Date(s):**	February 23, 2021
Cowardin Class:	PFO1J	**Data Plot #s:**	GN2-W1-1
HGM Class:	Riverine Flow-through	**Investigators:**	PRR, VNT

LOCATION	
Street/landmark:	Tributary north of Gordon Creek
Legal/tax map/lot(s):	1S2W16A 100, 200
LWI Watershed/ HUC12:	GN (Gordon Creek)/ 170900100404

WETLAND CHARACTERISTICS

Description: GN2-W1 lies adjacent to the southern portion of the Gordon Creek tributary (GN2) and receives occasional flooding from it. The headwaters of this tributary (GN2) first forms a channel displaying flow at the northern boundary of Wetland GN2-W1. North (upslope of where this channel forms), a narrow saturated-only swale (which is part of Wetland GN2-W2) connects the tributary to the wider body of Wetland GN2-W2 near the northern boundary of the study area. Wetland GN2-W1 joins wetland GN1-W1 and is hydrologically connected with it. Portions of the wetland are dominated by Himalayan blackberry, and others contain healthy stands of red-osier dogwood and other natives.

Soils: Xerochrepts and Haploxerolls, very steep (Map Unit 46F), Quatama loam (Map Unit 37A & 37B)

Hydrologic Source: Gordon Creek tributary and high seasonal groundwater.

Vegetation (Dominant Vegetation with an *)

Trees		Shrubs		Vines/Herbs	
Oregon ash*	*Fraxinus latifolia*	Red-osier dogwood*	*Cornus sericea*	Reed canarygrass*	*Phalaris arundinacea*
Red alder*	*Alnus rubra*	Pacific ninebark	*Physocarpus capitatus*	Lady fern	*Athyrium filix-femina*
		Himalayan blackberry*	*Rubus armeniacus*	Skunk cabbage	*Lysichiton americanus*

Potential Enhancement Opportunities:

-Weed removal and native planting, especially in the reed canarygrass-dominated portions of the floodplain. If the landowners are amenable, there are many opportunities to expand riparian buffers around agricultural wetlands to improve wildlife habitat and water quality.

-Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals.

-Snag and downed wood creation would also benefit many Oregon Conservation Strategy (OCS) species.

LOCAL WETLANDS INVENTORY

Witch Hazel Village South, Wetland Summary Sheet

GENERAL INFORMATION			
Wetland Code:	GN2-W2	**Method:**	Onsite
Wetland Size:	0.22 acres	**Field Date(s):**	February 23, 2021
Cowardin Class:	PEM1B	**Data Plot #s:**	GN2-W2-1
HGM Class:	Slope headwaters	**Investigators:**	PRR, VNT

LOCATION	
Street/landmark:	North of Gordon Creek Tributary
Legal/tax map/lot(s):	1S2W16A 100, 200
LWI Watershed/ HUC12:	GN (Gordon Creek)/ 170900100404

WETLAND CHARACTERISTICS

Description: Although smaller than 0.5 acre (and thus not required), DEA opted to include a summary sheet for this wetland because it has good potential for enhancement. GN2-W2 is a small, primarily emergent wetland north of the upper limit of Gordon Creek tributary (GN2), and it is hydrologically connected with it by a very narrow finger of wetland. Wetland GN2-W2 lies primarily within a previously cleared, ruderal area adjacent to and within a cow pasture and is dominated by Kentucky bluegrass (*Poa pratensis*) and other non-native pasture grasses, although patches of Oregon ash trees are also present. Grazing and livestock use has degraded the wetland and functions impacted. Enhancement potential is high.

The NHD mapping shows the source of Tributary GN2 extending north past the northern boundary of the study area. However, that area has been converted to residences, and whatever hydrology previously entered from the north appears to be detained in the stormwater system (no outlet was found and no indication of flow from the north). The ruderal habitat on the north end of the wetland swale was saturated and ponded in places during the site visit, which indicates that groundwater still flows through the wetland, but signs of intermittent flow do not appear until the swale meets Wetland GN2-1down slope.

Soils: Quatama loam (Map Unit 37A & 37B)

Hydrologic Source: High seasonal groundwater. Likely dries up completely in summer. Not assessed for fish because the wetland does not border or contain a channel and does not have a surface water connection to streams within the study area.

Vegetation (Dominant Vegetation with an *)

Trees		Shrubs		Vines/Herbs	
Oregon ash	*Fraxinus latifolia*	Himalayan blackberry	*Rubus armeniacus*	Kentucky bluegrass*	*Poa pratensis*
		Nootka rose	*Rosa nutkana*	Meadow foxtail	*Alopecurus pratensis*

Potential Enhancement Opportunities:

-Weed removal and native plantings. Excellent opportunities to plant native wetland vegetation and expand riparian buffers around agricultural wetlands to improve wildlife habitat and water quality.

However, it should be determined whether the hydrology that appears to be cut off from its previous source north of the study area will continue to support this wetland in the future.

-Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals. Snag and downed wood creation would also benefit many OCS species.

-Limiting grazing and herbicide/fertilizer application in adjacent pasture would further protect water quality.

-Water Quality improvements also may be made by increasing the width of the riparian corridor.

LOCAL WETLANDS INVENTORY

Witch Hazel Village South, Wetland Summary Sheet

GENERAL INFORMATION

Wetland Code:	TR10-W1 and TR10-W2 (Locally Significant)	**Method:**	Onsite
Wetland Size:	2.54 acres	**Field Date(s):**	February 23, 2021
Cowardin Class:	PFO1B	**Data Plot #s:**	TR10-W1-1, TR10-W2-1
HGM Class:	Slope Headwater	**Investigators:**	PRR, VNT

LOCATION

Street/landmark: East of SW River Rd, southwestern quadrant of the study area

Legal/tax map/lot(s): 1S2W16D 100 & 101, 1S216A 200

LWI Watershed/ HUC12: TR (Tualatin River, Tributary 10)/ 170900100404

WETLAND CHARACTERISTICS

Description: This resource consists of two narrow, shallow forested wetland swales that drain to the roadside ditch along the eastern edge of SW River Road. The ditch, located in the road right of way, was outside of the project study area. The ditch, located in the road right of way, was outside of the project study area. The roadside ditch is on the east side of River Road, and the wetlands are joined hydrologically by surface water within the ditch, and drain under the road and several hundred feet through a pasture before meeting the Tualatin River west of the study area. The plant community is typical of an Oregon ash forest, and the forested wetland community was historically bordered by a larger forested area, but the surrounding area was logged between 2016 and 2017. A representative plot was taken in each wetland (TR10-W1a and TR10-W2a), which are combined in the dominant vegetation listed below. Vegetative diversity and wildlife use in the forested portions of the wetland was high, with weeds present primarily only upslope of the wetland.

Soils: Dayton silt loam (Map Unit 15), Aloha silt loam (Map Unit 1). Quatama loam, 3 to 7 % slopes (Map Unit 37B).

Hydrologic Source: Seasonal storm runoff from adjacent uplands and high seasonal groundwater.

Vegetation (Dominant Vegetation with an *)

Trees		Shrubs		Vines/Herbs	
Oregon ash*	*Fraxinus latifolia*	Douglas spirea*	*Spirea douglasii*	Slough sedge*	*Carex obnupta*
		Nootka rose*	*Rosa nutkana*	spreading rush	*Juncus patens*
		Black cottonwood	*Populus balsamifera*		

Potential Enhancement Opportunities:

-Weed removal and native plantings throughout. If the landowners are amenable, there are many opportunities to expand riparian buffers around agricultural wetlands to improve wildlife habitat and water quality.

-Snag and downed wood creation would also benefit many Oregon Conservation Strategy (OCS) species.

LOCAL WETLANDS INVENTORY
Witch Hazel Village South, Wetland Summary Sheet

-Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill OCS goals and would build on existing mature oak habitat to expand wildlife corridors east.

-Limiting herbicide/fertilizer application on upstream farm fields would further protect water quality.

LOCAL WETLANDS INVENTORY

Witch Hazel Village South, Wetland Summary Sheet

GENERAL INFORMATION

Wetland Code:	TR10-W3(Locally Significant)	**Method:**	Onsite
Wetland Size:	1.32 acres	**Field Date(s):**	February 23, 2021
Cowardin Class:	PFO1J	**Data Plot #s:**	TR10-W3-1
HGM Class:	Riverine Flow-through	**Investigators:**	PRR, VNT

LOCATION

Street/landmark: West of The Reserve Golf Course, North of SW Rosa Rd.

Legal/tax map/lot(s): 1S2W16D 100

LWI Watershed/ HUC12: TR (Tualatin River, Tributary 10)/ 170900100404

WETLAND CHARACTERISTICS

Description: TR10-W3 is a headwaters wetland in the southeast corner of the study area split by a narrow intermittent stream channel (TR10). The wetland hydrology sources include high seasonal groundwater from TR10, which flows into the wetland from the Reserve golf course to the east and drains under SW River Road to the Tualatin River to the southwest. The plant community is typical of an Oregon ash forest, and it was historically bordered by a larger forested area, but the surrounding area was logged between 2016 and 2017. Vegetative diversity and wildlife use in the forested portions of the wetland was quite high.

Soils: Quatama loam, 3 to 7 % slopes (Map Unit 37B).

Hydrologic Source: High seasonal groundwater from TR10, with occasional flooding during larger storms.

Vegetation (Dominant Vegetation with an *)

Trees		Shrubs		Vines/Herbs	
Oregon ash*	*Fraxinus latifolia*	Douglas spirea*	*Spirea douglasii*	Slough sedge*	*Carex obnupta*
Black cottonwood*	*Populus balsamifera*	Nootka rose	*Rosa nutkana*	Water parsley*	*Oenanthe sarmentosa*

Potential Enhancement Opportunities:

-Expansion (creation) of wetland areas into the adjacent upland habitat to improve water quality flowing from the adjacent golf course.

-Weed removal, native plantings, and expansion of riparian buffers to improve wildlife habitat and water quality, which would offset losses from the logging that recently occurred.

-Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals. Snag and downed wood creation would also benefit many OCS species.

APPENDIX D: Wetland Functional Assessment Results

OAR 141-086-0220*(3)(c)* *OFWAM assessment results for each wetland assessment unit that must include:*

(A) Wetlands of Special Interest for Protection (OFWAM, Chapter Five);

(B) Wetland Characterization results (OFWAM, Appendix B);

(C) Assessment results represented in table format;

(D) Answer sheets for all wetland assessment questions (OFWAM, Appendix C);

(E) Function and condition summary sheets for fish habitat, wildlife habitat, water quality, hydrologic control and, if applicable, education and recreation (OFWAM, Appendix C); (education and recreation excluded per City request)

(F) Watershed summary sheet (OFWAM, Appendix C); and

(G) Technical staff members and qualifications.

Wetlands of Special Interest for Protection Questions: Answer Sheet						
Wetland Identifier	GN1-W1 (4.02 acres)	GN1-W2 (1.87 acres)	TR10-W1 and TR10-W2 (2.54 acres)	TR10-W3 (1.32 acres)	GN2-W1 (0.67 acres)	GN2-W2 (0.22 acres)
Question 1	a (steelhead may occur)	a (steelhead may occur)	b	b	a (steelhead may occur)	b
Question 2	b	b	b	b	b	b
Question 3	b	b	b	b	b	b
Question 4	b	b	b	b	b	b
Question 5	b	b	b	b	b	b
Question 6	b	b	b	b	b	b
Question 7	b	b	b	b	b	b
Question 8	b	b	b	b	b	b
Question 9	b	b	b	b	b	b
Question 10	b	b	b	b	b	b
*Meets WISP criteria**	yes	yes	no	no	yes	no

*Only one question out of the ten needs to be answered as "a" in order to meet WISP criteria.

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Valerie Thompson is a Wetland Biologist with over 8 years of experience

Wetland Characterization Questions: Answer Sheet						
Wetland	GN1-W1 (4.02 acres)	GN1-W2 (1.87 acres)	TR10-W1 and TR10-W2 (2.54 acres)	TR10-W3 (1.32 acres)	GN2-W1 (0.67 acres)	GN2-W2 (0.22 acres)
Question #						
1	Lower Willamette	Lower Willamette	Lower Willamette	Lower Willamette	Lower Willamette	Lower Willamette
2	1.32 sq mi.	1.17 sq mi.	0.05 sq mi.	0.15 sq mi.	0.12 sq mi.	0.11 sq mi.
3	2.22%	2.23%	1.45%	1.22%	1.31%	1.19%
4	c	c	c	c	c	a
5	b	b	b	b	b	a
6	b	a	b	b	b	a
7	b	b	b	b	b	b
8	a	a	a	a	a	a
9	c- salmonids possible	c- salmonids possible	f	f	c- salmonids possible	f
10	a- steelhead possible	a- steelhead possible	b	b	a- steelhead possible	b
11	a, c	a, c	a, c	a, c	a, c	a, c
12	b	b	b	b	b	b
13	b	b	b	b	b	c
14	b	b	b	b	b	b
15	2-b, 3-b	2-b, 3-b, 4-a	2-b, 3-b	2-b, 3-b	2-a, 3-c	2-b, 4-b
16	2-b, 3-b, 4-a	2-b, 3-b	2-a, 3-c	2-b, 3-b	2-b, 3-b	2-b, 3-b
17	b	b	b	b	b	c
18	a	a	a	a	a	b
19	a	a	b	b	a	b
20	4-c	4-c	4-c	4-c	4-c	4-c
21	1-n/a, 2-c, 3-c, 4-b	1-n/a, 2-a	1-n/a, 2-c, 3-c, 4-b	1-n/a, 2-c, 3-c, 4-b	1-n/a, 2-c, 3-c, 4-bc	1-n/a, 2-b, 3-c
22	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural
23	a	c	a	a	a	c
24	a	c	a	a	b	c
25	a	a	a	a	a	b
26	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural
27	a	a	a	a	a	
28	d	d	d	d	d	d
29	a	a	c	c	b	c
30	a	a	NA, no stream	a	a	NA, no stream
31	a	a	NA, no stream	a	a	NA, no stream
32	a	b	NA, no stream	a	b	NA, no stream
33	NA, no lake	NA, no lake	NA, no lake	NA, no lake	NA, no lake	NA, no lake
34	NA, no lake	NA, no lake	NA, no lake	NA, no lake	NA, no lake	NA, no lake
35	NA, no lake	NA, no lake	NA, no lake	NA, no lake	NA, no lake	NA, no lake
36	a	a	c	a	b	c
37	a, sediment deposits	a, sediment deposits	c	a, sediment deposits	b	c
38	b	b	b	b	c	c
39	a	a	NA	a	a	NA
40	a	a	b	a	a	a
41	b	b	b	b	b	b
42	b- steep bank	b- steep bank	b- poison oak	b- poison oak	b- blackberry	b- blackberry
43	a, forest and ag land	a, forest and ag land	a, forest and meadow	a, forest and ag land	a, forest and pasture	a, primarily pasture
44	b	b	b	b	b	a
45	b- steep bank	b- steep bank	b, rough ground	b, rough ground	b, rough ground	a
46	c	c	c	c	c	c
47	c	c	c	c	c	c
48	c	c	c	c	c	c
49	c	c	c	c	c	c
50	b	b	b	b	b	b
51	b	b	a	b	a	a
52	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural
53	b	b	b	b	b	b
54	NA, no visual detractor	NA, no visual detractors	NA, no visual detractor	NA, no visual detractor	NA, no visual detractors	a
55	a	a	a	a	a	a
56	b	b	b	b	b	b
57	c	c	c	b	b	a
58	a	b	b	b	b	c

Wetland Assessment Questions: Answer Sheet						
Wetland Identifier	GN1-W1 (4.02 acres)	GN1-W2 (1.87 acres)	TR10-W1 and TR10-W2 (2.54 acres)	TR10-W3 (1.32 acres)	GN2-W1 (0.67 acres)	GN2-W2 (0.22 acres)
Wildlife habitat						
Question 1	a	c	a	a	a	b
Question 2	a	c	a	a	a	c
Question 3	a	c	a	a	b	c
Question 4	c	c	c	c	c	c
Question 5	a	a	a	a	a	a
Question 6	a	a	a	a	a	b
Question 7	a	a	a	a	a	a
Question 8	b	b	a	a	b	b
Question 9	a	a	a	a	a	b
Assessment Descriptor	Diverse	Some habitat	Diverse	Diverse	Diverse	Some habitat
Fish habitat						
Streams and rivers			n/a			n/a
Question 1	a	b	-	b	b	-
Question 2	a	a	-	a	a	-
Question 3	a	b	-	a	b	-
Question 4	a	a	-	a	a	-
Question 5	b	b	-	a	b	-
Question 6	a	a	-	c	b	-
Lakes and ponds	n/a	n/a	n/a	n/a	n/a	n/a
Question 1	-	-	-	-	-	-
Question 2	-	-	-	-	-	-
Question 3	-	-	-	-	-	-
Question 4	-	-	-	-	-	-
Question 5	-	-	-	-	-	-
Question 6	-	-	-	-	-	-
Assessment Descriptor	Intact	Intact	n/a	Intact	Intact	n/a
Water quality						
Question 1	a	a	b	a	a	c
Question 2	a	a	c	a	b	c
Question 3	a	a	a	a	a	a
Question 4	b	b	b	b	b	c
Question 5	b	b	c	c	b	b
Question 6	c	c	c	c	c	c
Assessment Descriptor	Degraded	Degraded	Degraded	Degraded	Degraded	Not present
Hydrologic control						
Question 1	a	a	b	b	a	b
Question 2	a	a	c	a	b	c
Question 3	b	b	b	b	b	c
Question 4	b	b	b	b	c	c
Question 5	a	c	a	a	a	c
Question 6	b	b	c	c	b	b
Question 7	a	a	a	b	a	a
Assessment Descriptor	Intact	Degraded	Degraded	Degraded	Degraded	Not present

OFWAM Watershed Summary Sheet- Witch Hazel Village South

Watershed or community identification: Lower Willamette Drainage Basin

haracteristi	Description
Physical character of the watershed	Gently sloping west-facing watershed, ranging from 172 feet elevation in the northeast corner to 134 feet elevation where Gordon Creek meets SW River Road. Drains to the Tualatin River, with most of the watershed draining west via Gordon Creek (GN1). Gordon Creek originates east of the study area and flows through the Reserve Golf Course before entering the study area, where it passes through a relatively wide floodplain. The tributary to Gordon Creek (GN2) begins as a disturbed headwater wetland with no channel. Two narrow headwater wetlands lie in the center of the study area, and an un-named tributary to the Tualatin (TR10) crosses the southeast corner of study area, with associated wetlands. Although the surrounding uplands and riparian habitat have been harvested and modified by agriculture, streams are relatively intact, but upstream areas have been and are being rapidly urbanized. Three Clean Water Services (CWS) small subbasins drain the LWI study area (approximately 147 acres), with Gordon Creek draining the greatest area (76.4 acres) followed by the Tualatin River tributary TR10 to the south (54.9 acres), and the Tualatin River tributary TR11 to the northwest (15.5 acres), and a sliver of Gordon Creek (GN2) to the east (0.6 acres). The average slope of the watersheds is approximately 3 percent, with lower gradient slopes occuring in the southern/lower portion and steeper slopes occuring in the northern/upper portion. Streams in the watershed have been relatively un-modified by incision, channelization, or other manipulations for agriculture, although recent reduction in riparian habitat is apparent. For the most part, water is not being taken out of the streams through diking, drainage or irrigation districts in the watershed upstream of the assessment area, but most of the area to the north and east is being rapidly urbanized as a new part of the Urban Growth Boundary, with associated increase in stormwater runoff and diversion.
Land uses within the watershed	The dominant land use in the watershed upstream from the assessment area is the Reserve Golf Course and Witch Hazel Elementary, and rapidly urbanizing previously agricultural, forested, and rural residential areas. The area within the assessment area is dominated by scattered residences, remnant patches of forest, and agricultural land uses, including a mix of annual crops, pasture, and cattle grazing.

Water quality	No streams within the study area (or upstream) are listed as water quality limited according to DEQ 303(d) databases. A recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution was not available. It is assumed that most project stream reaches would be classified as "no data available" since they are relatively high in the watershed, and pass through dense forest and contain relatively intact riparian areas in spite of the presence of rural residences and agriculture. However, the upper portions of Gordon Creek are lacking substantial native vegetation, especially trees and shrubs, along stream reaches. This results in a lack of stream shading and affective water quality buffers to capture sediment from agricultural fields. These factors, and the presence of urbanization and a golf course immediately upstream likely lead to somewhat reduced water quality compared to more intact reaches. The relatively intact wetland systems in study area are valuable for filtering of upstream pollutants before the waters reach the Tualatin River.

Biological character of the watershed	Assessment area streams are perennial and intermittent, and drain to stream reaches that support an anadromous fishery, including designated Essential Salmonid Habitat within other portions of the Tualatin River. Fish are assumed to be present in Gordon Creek (and tributary), with listed species possible (though not mapped) since the SW River Road crossing of Gordon Creek is passable to fish. Native plant communities persist along drainages and in most wetlands, while in many areas they have largely been replaced by agricultural lands or non-native grasses in harvested forest areas. No sensitive wildlife or plant species are known to exist. Wildlife that persist or thrive in agricultural settings, such as deer, coyote, raccoon, etc. are present within the watershed. High quality native habitat exists primarily along Gordon Creek and near existing wetlands.

Narrative summary of watershed description

The Witch Hazel Village South (WHVS) Study Area is located directly south of the existing urban growth boundary (UGB), which is the southern edge of the current Hillsboro city limits. The study area is located in a relatively flat landscape and is used primarily for farming, forestry and small-scale livestock grazing. It lies within a gently sloping west-facing watershed, ranging from 172 feet elevation in the northeast corner to 134 feet elevation where Gordon Creek flows off site at a culvert in SW River Road. Gordon Creek extends east to west through the middle of the study area, with a steep, primarily forested riparian area down to a relatively wide floodplain.

The WHVS study area is bound by SW River Road to the west, residential development within current Hillsboro city limits to the north and the Reserve Golf Club to the east. The entire study area is located the Tualatin River drainage basin and all creek and tributaries drain to the river, located west of SW River Road. The study area consists primarily of relatively gentle slopes, although steep slopes border several areas along the lower segment of Gordon Creek and two smaller areas on the upper reach.

Riparian forest extends along the main Gordon Creek segment and the northern tributary. Other riparian forest habitat is located along the perimeter of the linear wetlands in the southern end of the site. Oregon ash dominated wetland forest occupies most wetlands within the study area, and Gordon Creek and its tributaries. Small patches of mid-to-late-mature Oregon white oak forest lie along the edges of much of this habitat, or interspersed within it. Most significantly, the majority of the primarily coniferous forested areas in the southern portion of the study area had been cleared within the previous few years. Although currently limited, the Oregon white oak habitat provides important and diverse wildlife habitat, and expansion of this and other riparian habitats would help maintain biological diversity and control flooding.

Technical Staff and Qualifications:

Phil Rickus is an Ecologist and Wetland Biologist with over 25 years of experience
Valerie Thompson is a Wetland Biologist with over 8 years of experience