Ecological Land Services

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WETLAND DELINEATION REPORT

February 23, 2018

3040 Jackson Highway

Lewis County, Washington

Corps Reference No. NWS-2016-1038

Prepared for

Hubbard and Sons
PO Box 1125
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Prepared by

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SIGNATURE PAGE

The information and data in this report were compiled and prepared under the supervision and direction of the undersigned.

Joanne Bartlett

Joanne Bartlett, PWS
Senior Biologist

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INTRODUCTION

Ecological Land Services, Inc. (ELS) has completed this wetland delineation report on behalf of the property owner, Hubbard and Sons Construction LLC for the construction of an 18-unit condominium complex. The property is zoned as an urban growth area and consists of Lewis County Tax Parcel 017840006000 located off Jackson Highway in Chehalis, Washington. ELS biologists conducted site visits on September 21, 2015, June 23, 2016, June 29, 2017, and January 19, 2018 to inventory site conditions for preparation of this wetland delineation report as required under *Lewis County Code (LCC) 17.35A.580.*

METHODS

The wetland delineation completed by ELS followed the Routine Determination Method according to the U.S. Army Corps of Engineers, *Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2.0)* (U.S. Army Engineer Research and Development Center 2010).

The Routine Determination Method examines three parameters—vegetation, hydrology, and soils—to determine if wetlands exist in a given area. Hydrology is critical in determining what is wetland but is often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps), as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by Lewis County.

ELS evaluated the subject property for wetlands on September 21, 2015, June 23, 2016, June 29, 2017, and January 19, 2018. Wetland I was identified and delineated during the 2015 site visit, a series of transects to provide additional documentation of onsite conditions were completed during the 2016 site visit, and small depressional wetlands were identified and delineated during the 2017 site visit. Data was collected during the 2018 site visit at the request of the Corps and Ecology to provide additional information regarding the delineation methodology and boundary determinations. In total, 43 test plots were conducted on this site during the 5 visits to this property to document conditions and support the current delineation (Appendix A).

Wetland I was originally delineated in October 30, 2015 and was determined to be entirely offsite. In the original version of the delineation report (January 13, 2016), this wetland was referred to as the Offsite Wetland. During the 2016 and 2017 site visits, it was determined that Wetland I did in fact cross the very southwest corner of this property. Two test plots were conducted on the property during the 2015 delineation site visit (Appendix A-1).

The June 2016 site visit involved collecting data at a series of transects, Transects A through F, that were conducted across the entire property to document site conditions (Appendix A-2). Each transect has three corresponding test plots (Figure 2). Data collected in Transects D through F overlaps with data collected in the small wetlands during the June 2017 delineation, and despite the overlap, data from the transects is included with this report. During this site visit, most of the property was determined to be upland but the small wetlands were observed and were not delineated at that time. Following a site meeting with the Corps and Ecology in May 2017, it was determined that each of the small wetlands were to be delineated.

During the 2017 site visit, 15 small wetland areas (Wetlands A through H and J through O) were delineated in the shallow depressions on the west half of the property. These small wetlands are nearly identical with regard to position in the landscape, vegetative conditions, and hydrologic regime so paired plots were conducted only for 12 of the 15 wetlands. Some wetlands are close together so a single upland plot was shared between two or more of the wetlands. Test plots were not conducted in Wetlands B, K, and L because of their small size and similarity with the other delineated wetlands. The wetland test plots (TP) are labeled TP-1A through TP-1O and the upland test plots are labeled TP-2A through TP-2O so that they are easily associated with their respective wetlands (Photoplates 2 through 12). Paired plots are included for the onsite portion of Wetland I. The January 2018 data was collected in Wetlands D, E, F, H, I, and O and each wetland has paired plots except Wetland E, which shares an upland plot with Wetland D (Appendix A-3 and A-4).

During review of the delineation, the influence by groundwater was addressed by the Corps and Ecology. To address this concern, several water table holes were dug from east to west across the property on January 19, 2018. Water level measurements were taken about 2 hours after they were dug in January and again in early February 2018. Additional measurements will be taken over the next two months to document water levels during the growing season.

The delineated wetlands are confined to shallow depressions in the topography and their individual boundaries are located at the top of the depressions. Water and/or evidence of wetland hydrology and cover by such wetland plant species as toad rush and reed canarygrass was present in the wetland and gave way to decreased hydrology and cover by such non-wetland plant species as oxeye daisy, trailing blackberry, evergreen blackberry, lupine, and hairy cat's ear. Hydric soil profiles were observed within the wetlands as well as the upland areas because the soil generally is composed of dense silt loam and clay, which often has depleted soil matrix chromas with redoximorphic features; therefore soils were not a reliable indicator for wetland boundary determination. In addition to topography, the wetland boundaries were identified where the presence of water or evidence of water and the presence of upland plant species ceased.

The location of wetland boundaries and test plots were identified using a Trimble handheld Global Positioning System (GPS) unit to accurately show them on the site map (Figure 2). Additionally, an agricultural ditch was identified along the southern property boundary and centerline was recorded during the 2015 site visit.

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SITE DESCRIPTION

The 2-acre subject property is located at 3040 Jackson Highway, Chehalis, Washington in a portion of Section 13, Township 13 North, and Range 2 West, of the Willamette Meridian. The property consists of an open field that lies southwest of the onsite home. It is bordered to the northwest by a small subdivision and single-family residences. Jackson Highway forms the northeast property line while another single-family residence forms the southeast border (Figure 2). The southwestern and western property boundaries consist of freshwater forested/shrub wetland. Site topography is relatively flat with an average site elevation above mean sea level of approximately 250 feet. It appears that the site had been plowed prior to the September 2015 site visit. In addition, it appears the property is also used as a recreational area for bicycles and possibly motorized two- and three-wheeled vehicles by the local residents. The property is also regularly mowed and had been mowed before ELS biologists conducted the site visit in June 2016 (Photoplate 1). The site was left un-mowed before the site visit in June 2017 so that vegetative species could be identified (Photoplates 2 through 9).

VEGETATION

Wetlands

The vegetation in Wetlands A through H and J through O is dominated by regularly mowed grasses and weeds that include such species as toad rush (*Juncus bufonius*, FACW), Kentucky bluegrass (*Poa pratensis*, FAC), velvet grass (*Holcus lanatus*, FAC), marsh cudweed (*Gnaphalium uglinosum*, FAC), reed canarygrass (*Phalaris arundinacea*, FACW), mowed Nootka rose (*Rosa nutkana*, FAC), and sweet vernal grass (*Anthoxanthum odoratum*, FACU). Additional species in these small wetlands include creeping buttercup (*Ranunculus repens*, FAC), hairy cat's ear (*Hypochaeris radicata*, FACU), and yellow parentucellia (*Parentucellia viscosa*, FAC). Vegetation observed within the offsite portions of Wetland I includes red-osier dogwood (*Cornus sericea*, FACW), hardhack (*Spiraea douglasii*, FACW), Sitka willow (*Salix sitchensis*, FACW), and reed canarygrass (*Phalaris arundinacea*, FACW). The small onsite portion of Wetland I has similar vegetation dominance as the small onsite depressional wetlands. See Photoplate 15 for close up photos of plants identified in the delineated wetland areas.

Uplands

The vegetation on the upland portions of the property are dominated by nearly identical species as found in the wetlands that include mowed Nootka rose, sweet vernal grass, Kentucky bluegrass, and tall fescue (*Schedonorus arundinaceus*, FAC). Additional species observed in the upland areas include hairy cat's ear, marsh cudweed, yellow parentucellia, velvet grass, ox-eye daisy (*Leucanthemum vulgare*, FACU), evergreen blackberry (*Rubus laciniatus*, FACU), Canada thistle (*Cirsium arvense*, FAC), trailing blackberry (*Rubus ursinus*, FACU), lupine (*Lupinus polyphyllus*, FACU); black medic (*Medicago lupulina*, FACU), white clover (*Trifolium repens*, FAC), Queen Anne's lace (*Daucus carota*, FACU), bull thistle (*Cirsium vulgare*, FACU), and mowed hardhack. See Photoplate 16 for close-up of plants identified in the upland areas of the property.

The indicator status, following the common and scientific names, indicates how likely a species is to be found in wetlands. Listed from most likely to least likely to be found in wetlands, the categories are:

- **OBL** (obligate wetland) – Almost always occur in wetlands.
- **FACW** (facultative wetland) – Usually occur in wetlands, but may occur in non-wetlands.
- **FAC** (facultative) – Occur in wetlands and non-wetlands.
- **FACU** (facultative upland) – Usually occur in non-wetlands, but may occur in wetlands.
- **UPL** (obligate upland) – Almost never occur in wetlands.
- **NI** (no indicator) – Status not yet determined.

SOILS

Soils on the project site are mapped as Lacamas silt loam, 0 to 3 percent slopes (118) as referenced on the U.S.D.A. Natural Resources Conservation Service (NRCS) website (Figure 3; NRCS 2017). Lacamas silt loam consists of very deep, poorly drained soils formed in mixed alluvium weathered from glacial and sedimentary sources found on glacial terraces and footslopes. Lacamas silt loam appears as hydric on the U.S.D.A. NRCS Hydric Soils List for Washington (2014). Mapped hydric soils do not necessarily mean that the area is a wetland; hydrology, wetland vegetation, and hydric soils must all be present to classify an area as a wetland. Conversely, wetlands may be found in areas where the soils are not mapped as hydric.

A total of 43 soil holes were completed on the property eighteen of which were conducted in north to south transects across the property in order to fully characterize the soil and to determine the presence of wetlands. The remaining 23 soil holes were conducted in pairs within 12 of the 15 delineated wetlands. Overall, the soil profiles in the wetland and upland areas were very similar with many of the upland holes meeting the criteria for hydric soil due to the depleted matrix chroma and the presence of redoximorphic features. Some of the soil holes revealed non-depleted matrix chromas with redoximorphic features present and these soil profiles were determined to not meet any of the hydric soil indicators. Generally, the soil data was not utilized to make the final wetland boundary determination because of the similarity of the profiles in the wetland and upland areas.

Wetland Soils

The wetland soil conditions were evaluated at 12 test plots conducted within Wetlands A, C, D, E, F, G, H, I, J, M, N, and O. The profiles revealed in the soil holes consisted of two to three layer profiles that have an 8- to 10-inch compacted silt loam surface layers with brownish-gray matrix chromas (2.5Y 2.5/1 to 2.5Y 3/1). The intermediate layers consisted of compacted silt loam that are roughly 2- to 4-inches thick and they have grayish brown to depleted matrix chromas (2.5Y 3/1 to 2.5Y 4/1). The lowest layers extend to a depth of 16 to 20 inches and each consisted of silty clay loam to clay loam with depleted matrix chromas (2.5Y 4/1 to 2.5Y 5/1). Redoximorphic features were present in the surface layer of the soil holes of Wetlands G, J, and N consisting of reddish brown concentrations in the matrix (10YR 4/6). Redoximorphic features were present in the underlying soil layers in each of the wetlands. The concentrations occurred in roughly 5 to 20 percent of the matrix and had reddish brown to bright red colors (10YR 4/4 to

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10YR 4/6). The soil profiles meet the criteria for A11 Depleted below dark surface, A12 Thick dark surface, or F3 Depleted matrix as noted on the data forms (Appendix A).

Upland Soils
The upland soils evaluated as part of the paired plots for Wetlands A, C, D, F, G, H, I, J, M, N, and O generally consist of two layer silt loam to silty clay loam profiles. The 9- to 16-inch surface layers have brownish-gray matrix colors (2.5Y 2.5/1 to 2.5Y 3/2) with no redoximorphic concentrations. The underlying layers have grayish-brown matrix colors (2.5Y 3/2 to 2.5Y 4/2) with faint redoximorphic concentrations over 5 percent of the matrix that have orange colors (10YR 4/4 to 10YR 4/6). The soil profiles at Test Plots 2A, 2C, 2M, and 2N meet the criteria for hydric soil indicators A11 Depleted below dark surface, A12 thick dark surface, and F3 Depleted matrix because the underlying grayish brown soil layer is considered depleted and redoximorphic features are present. The soil profiles at Test Plots 2G and 2J meet none of the hydric soil indicators because the grayish-brown or depleted matrix colors begin at a depth of 16 inches, which is too deep to be considered a hydric soil.

Transect Soils
The evaluated upland soils in the transects consisted of two to four soil layer profiles that generally match the profile description for Lacamas silt loam, 0 to 3 percent slopes. In general, the two layer silt loam profiles (Test Plots A3, B1, and B3) consisted of 12-inch surface layers that have brownish-gray colors (2.5Y 3/2) with no redoximorphic concentrations. The underlying layer consisted of silt loam with grayish-brown (2.5YR 4/2 to 2.5Y 5/2) matrix chromas. Redoximorphic features were present as concentrations over 10 to 20 percent of the matrix and have reddish brown colors (10YR 4/4 to 10YR 4/6). The three layer profiles (Test Plots A1, A2, B2, C1, and C2) consisted of silt loam with brown to yellowish brown (10YR 2/2 to 2.5Y 3/2) matrix chromas in the two upper layers. The lowest layers consisted of silt loam to clay loam that have grayish brown to yellowish-brown (2.5Y 4/1 to 2.5Y 5/4) matrix chromas. Redoximorphic features were present in the intermediate and lowest layers that had reddish brown (10YR 4/4 to 10YR 4/6) concentrations over 10 to 25 percent of the matrix. For the most part, the soil profiles within the transect test plots meet hydric soil indicators because of they are composed of clay and are likely not a result of continued soil saturation.

HYDROLOGY

Wetlands A through H and J through O are confined to shallow depressions that appear to have formed as a result of recreational use of the property by motor bikes and bicycles. Hydrology was not present in these areas during the June 2016 and 2017 site visits but evidence of hydrology was present as cracked soil surfaces, sparsely vegetated concave surfaces, and oxidized rhizospheres along live roots. Surface water to depths of 3 inches was present in each of the wetlands during the January 2018 site visit. The source of hydrology is primarily precipitation with runoff providing the source of water for wetlands along the north property line. There are no surface water outlets from any of the depressions and it appears that water evaporates after rain events cease.

The January 2018 site visit was conducted after a period of heavy precipitation that resulted in the presence of surface water in several of the upland areas. As discussed in an upcoming

section, there was greater than normal amounts of precipitation occurring in the month before the 2018 site visit that caused the delineated wetlands to overflow into adjacent upland areas. In addition, it appeared that during this same period, there was increased water in the agricultural ditch but did not flood to the level where it would have flooded the southern portion of the property. Areas on the east half that are lower in elevation and within Transect A did not contain surface water or saturation to indicate that there are positive indicators of wetland hydrology.

Wetland I is located in a depression south and west of the subject parcel and it has a permanently flowing surface outlet. The sources of hydrology to Wetland I include a shallow water table, runoff, and precipitation. It actively discharges water into the ditch during winter and spring months. Hydroperiods of Wetland I include seasonally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. No surface water or saturation was present in the wetland during the 2017 site visit but surface water was present to a depth of 2 inches during the January 2018 site visit.

The agricultural ditch is mapped as a Type Np (non-fish bearing, perennial) stream and flows from Jackson Highway, south along the south property line and then west toward the Newaukum Golf Course. The agricultural ditch receives runoff from roads and single family residences to the northeast. The agricultural ditch is approximately 2 feet wide and contained approximately 6 inches of water at the time of the June 2016 site visit. Water was not observed in the ditch during the June 2017 site visit. During the 2018 site visit, the ditch was examined and photos taken to determine if floodwaters within the ditch extend onto the property. The water level within the ditch was at least 2 feet below the elevation of the property (Photoplates 13) as of January 19, 2018 and there was no evidence to indicate that it had flooded onto the property.

Precipitation Data

Weather data was collected from the NOWData website at the Olympia Airport and the Mayfield Power Plant, which are the two weather stations closest to the Jackson Highway property, between December 19, 2017 and January 19, 2018 (Figure 7; Appendix C). Overall, the precipitation totals were similar at both weather stations so represents the totals that occurred at the Chehalis site. Precipitation data was compiled to document that above normal precipitation results in surface water within the wetlands and seasonally within the upper layers of the upland area soils.

Table 1: Mayfield Power Plant Precipitation Data

	December 2017	January 2018	Totals
Total Precipitation for the month	8.4"	10.47"	18.87"
Normal[1]	7.47"	7.60"	15.07"
Difference from Normal	+0.93"	+2.87"	+3.8"
Highest Daily Total[2]	1.95" (12/29)	0.80" (1/12)	--
Precipitation Amounts	6.97" (12/19 to 12/31)	5.4" (1/1 to 1/19)	12.37"[3]

[1] *normal precipitation totals from NOWData summary (Appendix C).*
[2] *prior to January 19, 2018*
[3] *December19, 2017 to January 19, 2018*

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Table 2: Olympia Airport Precipitation Data 12/19/17 to 1/19/18

	December 2017	January 2018	Totals
Total Precipitation	6.90"	9.87"	16.77"
Normal[1]	7.46"	7.84"	15.3"
Difference from Average	-0.50"	+2.03"	+1.47"
Highest Daily Total[2]	1.82" (12/29/17)	1.89" (1/11/18)	--
Precipitation Amounts	5.02" (12/19 to 12/31)	4.73" (1/1 to 1/19)	9.75"[3]

[1]*normal precipitation totals from NOWData summary (Appendix C).*
[2]*prior to January 19, 2018*
[3]*December19, 2017 to January 19, 2018*

The precipitation data indicates that there was heavier than normal precipitation in the month preceding the January 19th site visit when water was observed within the shallow, depressional wetlands as well as in upland areas immediately around the wetlands (Photoplates 8 through 12). In addition, the highest daily totals for January occurred 8 days prior to the January 19 site visit. Despite the level of precipitation, the areas that were identified as upland during the June 2016 and 2017 site visits did not contain the depths of surface water observed within the delineated wetland areas, however, the surface soil layers were saturated. The upland soil profiles were dry when the holes were dug but water filled in from the surface, which resulted in a higher than normal water level within the soil holes. Despite the high amounts of precipitation in this area, the ditch along the south property line does not appear to have flooded onto the property at all nor has it created a high water table that was realized within the wetlands.

Water Table Monitoring

The onsite wetlands do not appear to be influenced by shallow water table because of the dense clay and silt loam soils and the height of the property above Wetland I and the agricultural ditch. Water table holes were dug in three locations from east to west across the property with the intention of conducting a short study of the water depth within each hole. The holes were dug on January 19, 2018 to a depth of 24 to 28 inches following a period of heavy precipitation in this area. Initially the holes were dry when dug and water filled in from the surface and shallow puddles that had formed in the upland areas. Measurements were taken about 2 hours after they were first dug. The holes were left open and covered with plywood to ensure that nothing fell into or was trapped in the holes. The plywood was also placed to reduce the amount of water entering the holes from direct precipitation during the monitoring period. The water table measuring locations are shown on the site map in Figure 2. Additional data will be collected from these holes over the next two months to track water levels within the early growing season.

Table 3: Water Level Monitoring Results

Date	Water Table Hole 1	Water Table Hole 2	Water Table Hole 3
		Depth to water in hole	
1-19-18	-14.0"	-5.0"	-4.5"
2-12-18	-19.0"	-12.0"	-8.0"

NATIONAL WETLANDS INVENTORY

The National Wetlands Inventory (NWI) map indicates wetland to the southwest of the property (Figure 4). The wetland is mapped as palustrine emergent temporarily flooded (PEMA) and palustrine scrub/shrub seasonally flooded (PSSC) and is the approximate location of the offsite portion of Wetland I. ELS observations were consistent with the NWI mapping with regard to the offsite wetland. The ELS delineation revealed the small depressions on the west half of the property, which do not appear on the NWI map. NWI maps are typically used to gather wetland information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

CRITICAL AREAS SUMMARY

Wetland Determination Overview

The delineation conducted in June 2017 revealed 15 small depressional, emergent wetlands across the west half of this property. The wetlands are confined to shallow depressions that exhibit positive indicators for wetland hydrology (sparsely vegetated concave surfaces) and hydrophytic vegetation. Upon investigation of the soil profiles, it appears that these areas also exhibit positive indicators for hydric soil. Therefore, they exhibit positive indicators for each of the three wetland parameters. The upland areas identified around the wetlands are slightly higher in elevation and with the elevation rise, the presence of water and evidence of wetland hydrology was less and there were non-wetland plant species present (FACU indicator status). The soil test holes in these areas revealed a few profiles that meet one of the hydric soil indicators but because they lack positive indicators for both wetland hydrology and hydrophytic vegetation, these areas do not meet the wetland criteria. The east half of the property is determined to also be upland because the test plots generally revealed the absence of positive indicators for one or more of the three wetland parameters.

Wetland Category

Wetlands A through H and J through O were identified and delineated on the west half of the property. They are each composed of shallow depressions that are regularly mowed so do not have any persistent ungrazed vegetation coverage. They are confined to this property and have no surface water outlets, which indicate that they are not hydrologically connected to one another. They are also not connected to the offsite wetland or the agricultural ditch. The main source of hydrology is precipitation with some surface water runoff from both onsite and offsite sources. According to the *Washington State Rating System for Western Washington: 2014 Update*; Wetlands A through H and J through O meet the criteria for Depressional, Category IV wetlands that score 5 points for water quality functions, 6 points for hydrologic functions, and 3 points for habitat functions.

The northern boundary of the Wetland I, which is largely offsite and composed of emergent, scrub-shrub, depressional wetland, is represented by the agricultural ditch so was not officially delineated. During final delineation of wetlands on this property, a small portion of Wetland I was identified across the southwest corner of this property. Wetland I is approximately 2.3-acres in size, the majority of which lies south and west of the property. The wetland is bordered to the north by its outlet, an agricultural ditch running along the south property boundary. It is

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dominated by red-osier dogwood, spiraea, Sitka willow, and reed canarygrass. Hydrology sources include a shallow water table, runoff, and precipitation. Hydroperiods of the wetland include seasonally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. The wetland provides flood storage and delay and groundwater recharge functions. According to the *Washington State Rating System for Western Washington: 2014 Update*, Wetland I is a Depressional, Category II wetland that scores 8 points each for water quality and hydrologic functions, and 5 points for habitat functions.

Streams

The agricultural ditch is mapped as a Type Np (non-fish bearing, perennial) stream and flows from Jackson Highway, south along the property line and then west toward the Newaukum Golf Course. The agricultural ditch receives runoff from the offsite wetland, roads, and single family residences. It is approximately 2 feet wide and contained approximately 6 inches of water during the original site visit conducted in October 2015. The conditions described for the ditch during the October 2015 field visit remained the same during the June 2016 field visit. The water level within the ditch was generally 2 to 2.5 feet below the elevation the property as determined through ground level photos taken during the January 2018 site visit (Photoplate 14). Because this property is about 2 feet higher in elevation and the substrate is composed of dense clay and silt loam soils, the ditch has no hydrologic influence on the property or the identified wetlands. In addition, the wetlands are along the north half of the property so are at least 50 feet from the ditch, which further reduces the influence of the ditch on the wetland hydrology. This ditch does not appear to meet the criteria to be considered a stream so ELS biologists have determined that the agricultural ditch constructed to provide drainage for road runoff.

Critical Area Buffers

Designated wetland buffer widths are determined according to wetland category and the habitat score from the wetland rating form (*LCC 17.35A.580).* Wetlands A through H and J through O identified in the western portion of the property also require buffers of 50 feet because they are Category IV wetlands. Wetland I is a Category II system that scored 5 points for habitat function, which is considered moderate rating for this function per *LCC 17.35A.610(2).* The designated buffer width for Category II wetlands with moderate habitat function is 100 feet for high intensity land use and 50 feet for moderate intensity land uses.

Table 4. Summary of Wetlands and Buffer Requirements

Critical Area	Category/Water Type	HGM and Cowardin Class	Size	Buffer Width[1]
Wetlands A-H and J-O	Category IV	Depressional Emergent	30 square feet to 988 square feet (2,471 square feet total)	50-feet
Wetland I	Category II	Depressional Emergent, Scrub/Shrub	2.3-acres	100-feet (high intensity land uses[2]) 50 feet (moderate intensity land use)

[1] *LCC 17.35A.610(2)Buffer Standards for Moderate and High Wildlife Function for Category II and III Wetlands*
[2] *LLC 17.35A.605 Use intensity.*

The Type Np stream is mapped as a "Water of the State" which is regulated under *LCC 17.35A.660.* The stream buffer is determined based on the water type. Buffers for Type Np waters are 75-feet *(LCC17.35A.680).* ELS biologists have determined that the agricultural ditch is not a regulated stream and therefore has no buffer requirement. However, it will be buffered by the required buffer from Wetland I.

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. There are no other warranties, express or implied. The services preformed were consistent with our agreement with our client. This report is prepared solely for the use of our client and may not be used or relied upon by a third party for any purpose. Any such use or reliance will be at such party's risk.

The opinions and recommendations contained in this report apply to conditions existing when services were performed. Ecological Land Services, Inc. is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report. Ecological Land Services, Inc. does not warrant the accuracy of supplemental information incorporated in this report that was supplied by others.

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