

TECHNICAL MEMORANDUM

September 14, 2018

To:	Mr. Aaron Hollingbery Toll Brothers, Inc.
From:	Kolten T. Kusters, M.S., PWS Wetland Scientist Raedeke Associates, Inc.
RE:	Croquet Club Redmond – Wetland Reconnaissance (RAI Project No. 2018-110-001)

Per your request, Raedeke Associates, Inc. staff conducted a site investigation of the Croquet Club Redmond project site on September 7, 2018. The purpose of our site visit was to identify and delineate any wetlands or streams on site, and to identify the approximate location of any off-site wetlands or streams whose buffers may impact development of the properties. In addition, during our site investigation we investigated for the presence of any regulated Fish and Wildlife Habitat Conservation Areas that may be present within vicinity of the project site.

We caution that the discussion of regulatory implications, which represent our best professional interpretation and analysis, should not be construed the final authority. Additional information may be obtained from agencies with jurisdictional responsibility for, or interest in, the site.

PROPERTY LOCATION

The Croquet Club Redmond project site consists of two parcels totaling approximately 4.22-acres located along NE 104th Street in the City of Redmond, Washington. The properties are identified as King County Tax Parcel Nos. 1246700280 and 1246700270. This places the project site in a portion of Section 34, Township 26 North, Range 5 East, W.M.

METHODOLOGY

We based our investigation upon the guidelines of the U. S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and

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subsequent amendments and clarifications provided by the USACE (1991a, 1991b, 1992, 1994), as updated for this area by the regional supplement to the USACE wetland delineation manual for the Western Mountains, Valleys, and Coast Region (USACE 2010). The USACE wetlands manual is required by state law (WAC 173-22-035, as revised) for all local jurisdictions, including the City of Redmond.

BACKGROUND RESEARCH

Prior to conducting our site visit, we reviewed existing background maps and information for the project site from the U.S.D.A. Natural Resource Conservation Service (NRCS 2018) Web Soil Survey, the U.S. Fish and Wildlife (USFWS 2018) National Wetland Inventory (NWI), and King County (2018) iMap in order to assist in our determination of whether wetlands were present within the property or its vicinity. We also reviewed the Washington Department of Fish and Wildlife (WDFW 2018b) Salmonscape database, and City of Redmond (2016) Stream Classification map and the WDFW (2018a) Priority Habitat and Species database in order to determine if any streams or fish and wildlife habitat were in vicinity of the project site. In addition, we also reviewed current and historical aerial photographs (Google Earth 2018) to assist in the definition of existing plant communities, drainage patterns, and land use.

None of the background inventories reviewed depicted any wetlands or streams on the project site. The NRCS (2018) Web Soil Survey shows the project site mapped as Alderwood gravelly sandy loam, a non-hydric soil. Alderwood series may include minor components that are hydric such as Mckenna, Shalcar, and Norma. The WDFW (2018a) Salmonscape and City of Redmond (2016) Stream Classification map depict several streams located approximately 450 feet north and east of the project site. Neither the King County (2018) iMap or USFWS (2018) NWI map depict any wetlands in vicinity of the project site. The WDFW (2018a) Priority Habitat and Species database does not show any mapped occurrence of endangered, threatened, or sensitive species or their habitat in the immediate vicinity of the project site.

RESULTS

During our September 7, 2018 site investigation, we did not identify any wetlands or streams on the project site. The site currently contains single-family residential homes with access driveways, paved parking areas, and regularly maintained yard/pasture areas. We noted a few scattered Douglas-fir (*Pseudotsuga menziesii*, FACU) trees located around each of the homes. The majority of the lawn area around the homes consisted of a mowed Kentucky bluegrass (*Poa pratensis*, FAC), orchard grass (*Dactylis glomerata*, FACU) and common dandelion (*Taraxacum officinale*, FACU). A portion of the southeast project site contains old livestock paddocks that are now dominated by Himalayan blackberry (*Rubus armeniacus*, FAC) (See Sample Plot 1).

The central portion of the project site contains a very flat and well-maintained croquet green as part of the existing Croquet Club infrastructure. The lawn within the croquet green is irrigated and regularly mowed.

Soils throughout the project site generally consist of up to 8 inches of dark brown (10YR 3/3) sandy loams over dark yellowish brown (10YR 4/3) sandy loams to a depth greater than 20 inches. During our site investigation, the soils did not exhibit any indicators of wetland hydrology (e.g. water table or soil saturation) within the upper 20 inches of soil profile. In addition, we did not observe any secondary indicators typically associated with wetlands such as drainage patterns, drift deposits, or water stained leaves (see Sample Plots 1).

136th Avenue NE Ditch

During our site visit, we investigated the ditch on the east frontage of the project site along 136nd Avenue NE. The ditch is approximately 2 feet in width and was dry at the time of our site investigation. We did not observe any off-site wetlands or streams in the vicinity of the project site that convey water to or from the ditch. The ditch appears to be entirely excavated from an and drains an area that is entirely upland in nature.

The City of Redmond (2018) Zoning Code Section 21.78 Definitions states that streams do not include artificially created irrigation ditches, canals, storm, or surface water runoff devices or other entirely artificial watercourses unless they are used by salmonid or created for the purpose of stream mitigation. Thus, it is unlikely that the City of Redmond would regulate the feature as a stream or wetland.

Wildlife

We did not observe any evidence of nesting within the site or vicinity by hawks, eagles, great blue herons, or other species of concern during our field investigation. Site conditions were generally not suitable for large raptor nesting, as very few trees were on site, none of which have branching patterns conducive to supporting large stick nests. In

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addition, the Washington Department of Fish and Wildlife (WDFW 2018a) Priority Habitats and Species (PHS) database shows no mapped occurrences of endangered, threatened, sensitive, or other priority species or habitats on the site or vicinity. We did not observe any woodpecker including forage habitat or nesting cavities on site.

LIMITATIONS

We have prepared this report for the exclusive use of the Toll Brothers, Inc. and their consultants. No other person or agency may rely upon the information, analysis, or conclusions contained herein without permission from Toll Brothers, Inc.

The determination of ecological system classifications, functions, values, and boundaries is an inexact science, and different individuals and agencies may reach different conclusions. With regard to wetlands, the final determination of their boundaries for regulatory purposes is the responsibility of the various agencies that regulate development activities in wetlands. We cannot guarantee the outcome of such agency determinations. Therefore, the conclusions of this report should be reviewed by the appropriate regulatory agencies prior to any detailed site planning or construction activities.

We warrant that the work performed conforms to standards generally accepted in our field, and has been prepared substantially in accordance with then-current technical guidelines and criteria. The conclusions of this report represent the results of our analysis of the information provided by the project proponent and their consultants, together with information gathered in the course of the study. No other warranty, expressed or implied, is made.

If you have any questions or comments, or wish to discuss this issue further, please contact me at (206) 525-8122 or at kkosters@raedeke.com.

LITERATURE CITED

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DATA FORM 1 (Revised)
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: Croquet Club Redmond	Date: 9/7/2018
Applicant/owner: Toll Brothers, Inc.	County: King
Investigator(s): Kolten T. Kusters	State: Washington
	S/T/R: S34, T26N, R5E, W.M.
Do Normal Circumstances exist on the site? yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	Community ID: Transect ID: Sample Plot 1 Plot ID:
Is the site significantly disturbed (atypical situation)? yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	
Is the area a potential Problem Area? yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	
Explanation of atypical or problem area:	

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Poa pratensis	H	60	FAC				
Dactylis glomerata	H	20	FAC				
Taraxacum officinale	H	10	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 66

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	_____	Physiological/reproductive adaptations	_____
Morphological adaptations	_____	Wetland plant database	_____
Technical Literature	_____	Personal knowledge of regional plant communities	_____
		Other (explain)	_____

Hydrophytic vegetation present? yes no

Rationale for decision/Remarks:

Greater than 50 percent hydrophytes present.

HYDROLOGY

Is it the growing season? yes no

Based on: _____ soil temp (record temp _____)
 _____ other (explain)

Water Marks: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	Sediment Deposits: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
Drift Lines: yes <input type="checkbox"/> no <input type="checkbox"/>	Drainage Patterns: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
Oxidized Root (live roots) Channels <12 in. yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	Local Soil Survey: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
FAC Neutral: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	Water-stained Leaves yes <input type="checkbox"/> no <input checked="" type="checkbox"/>

Dept. of inundation: NA inches

Depth to free water in pit: NA inches

Depth to saturated soil: NA inches

Check all that apply & explain below:

Stream, Lake or gage data: _____

Aerial photographs: _____ Other: _____

Other (explain):

Wetland hydrology present? yes no

Rationale for decision/Remarks:

Observed saturation and water table.

SOILS

Map Unit Name Alderwood Gravelly Sandy Loam

Drainage Class Moderately well-drained

(Series & Phase)

Field observations confirm Yes No
mapped type?

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A	10YR 3/3			Sandy Loam	
8-18+	B	10YR 4/3				

Hydric Soil Indicators: (check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Matrix chroma ≤ 2 with mottles |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Mg or Fe Concretions |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National/Local Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma (=1) matrix | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? Rationale yes no

for decision/Remarks:

Hydrogen sulfide odor at 6 inches depth and concentrations in soil.

Wetland Determination (circle)

- | | | |
|---------------------------------|---|---|
| Hydrophytic vegetation present? | yes <input type="checkbox"/> no <input checked="" type="checkbox"/> | |
| Hydric soils present? | yes <input type="checkbox"/> no <input checked="" type="checkbox"/> | Is the sampling point within a wetland? yes <input type="checkbox"/> no <input checked="" type="checkbox"/> |
| Wetland hydrology present? | yes <input type="checkbox"/> no <input checked="" type="checkbox"/> | |

Rationale/Remarks:

NOTES:

Data Form 2: Atypical Situations

Applicant Name: _____ Applicant Number: _____ Project Name: _____
Location: _____ Plot Number: _____ Date: _____

A. Vegetation:

1. Type of Alteration: _____

2. Effect on Vegetation: _____

3. Previous Vegetation: _____
(Attach documentation) _____
4. Hydrophytic Vegetation? Yes _____ No _____

B. Soils:

1. Type of Alteration: _____

2. Effect on Soils: _____

3. Previous Soils: _____
(Attach documentation) _____
4. Hydric Soils? Yes _____ No _____

C. Hydrology:

1. Type of Alteration: _____

2. Effect on Hydrology: _____

3. Previous Hydrology: _____
(Attach documentation) _____
4. Wetland Hydrology? Yes _____ No _____
Characterized By: _____