

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 2/22/17

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Portland District, Wyatt Node Development, NWP-2016-353

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Oregon County/parish/borough: Polk City: Dallas
 Center coordinates of site (lat/long in degree decimal format): Lat. 44.932782° **N**, Long. 123.337438° **W**.
 Universal Transverse Mercator:
 Name of nearest waterbody: Unnamed Tributary to Rickreall Creek
 Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Willamette River
 Name of watershed or Hydrologic Unit Code (HUC): Lower Rickreall Creek 170900070106
 Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
 Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 15 September 2016
 Field Determination. Date(s): 20 December 2016

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

- Waters subject to the ebb and flow of the tide.
- Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
 Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs **Tributary 1, Tributary 2, West Drainage**
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs **Wetland D, G, H, I and J**
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs **Wetlands A, B, C, E and F**
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters **Pond**
- Isolated (interstate or intrastate) waters, including isolated wetlands

| Resource | Size (Acres) | Water of the U.S. (Type) |
|---------------|--------------|--------------------------|
| Tributary 1 | 0.78 | RPW |
| Tributary 2 | 0.24 | RPW |
| West Drainage | .024 | RPW |
| Pond | 1.16 | Impoundment |
| Wetland A | 0.01 | wetland adjacent to RPW |
| Wetland B | 0.04 | wetland adjacent to RPW |

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tribute

| | | |
|-----------|------|-------------------------|
| Wetland C | 0.07 | wetland adjacent to RPW |
| Wetland D | 6.36 | wetland abutting RPW |
| Wetland E | 1.31 | wetland adjacent to RPW |
| Wetland F | 5.48 | wetland adjacent to RPW |
| Wetland G | 0.21 | wetland abutting RPW |
| Wetland H | 0.02 | wetland abutting RPW |
| Wetland I | 0.36 | wetland abutting RPW |
| Wetland J | 2.91 | wetland abutting RPW |

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: 6,024 and/or 2.2 acres.
Wetlands: 16.77 acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual

Elevation of established OHWM (if known): Unknown.

2. Non-regulated waters/wetlands (check if applicable):³

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain:

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: N/A.

Summarize rationale supporting determination: N/A.

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent": N/A.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is

³ Supporting documentation is presented in Section III.F.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: Lower Rickreall Creek 12,683 acres
 Drainage area: 1,238 acres
 Average annual rainfall: 52.72 inches
 Average annual snowfall: 1 inch

(ii) Physical Characteristics:

(a) Relationship with TNW:

- Tributary flows directly into TNW.
- Tributary flows through 1 tributaries before entering TNW.

Project waters are 15.5 river miles from TNW.
 Project waters are 0 river miles from RPW.
 Project waters are 11.25 aerial (straight) miles from TNW.
 Project waters are 0 aerial (straight) miles from RPW.
 Project waters cross or serve as state boundaries. Explain: No.

Identify flow route to TNW⁵: Tributary 2 (RPW) flows to Tributary 1 (RPW), which flows to Rickreall Creek (RPW), and into the Willamette River (TNW).

(b) General Tributary Characteristics (check all that apply):

Tributaries are:

- Natural. Explain: **Tributary 1** enters the site via a road culvert under James Howe Road and exits the project area via a road culvert under West Ellendale Avenue. Tributary 1 meanders across the southwest portion of the site with incised slopes and a small forested riparian buffer.
- Artificial (man-made).
- Manipulated (man-altered). Explain: The northern portion of **Tributary 2** was impounded in the 1970s to create a 1.16-acre Pond onsite. On the southwest end of Tributary 2, the resource becomes linear and channelized, making a near 90° angle before merging with Tributary 1. The **West Drainage** is a roadside ditch with fill material substrate and a distinct break in the vegetation.

Tributary properties with respect to top of bank (estimate):

Tributary 1

Average width: 10-15 feet
 Average depth: 2-4 feet
 Average side slopes: **Vertical (1:1 or less).**

Tributary 2

Average width: 2-3 feet
 Average depth: 12-18 inches
 Average side slopes: **Vertical (1:1 or less).**

West Drainage

Average width: 3-5 feet
 Average depth: < 2 inches
 Average side slopes: **Vertical (1:1 or less).**

Primary tributary substrate composition (check all that apply):

- | | | |
|--|--|-----------------------------------|
| <input checked="" type="checkbox"/> Silts | <input checked="" type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles | <input checked="" type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: | |
| <input type="checkbox"/> Other. Explain: . | | |

Tributary condition/stability:

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary 1: appears to be relatively stable with well vegetated banks. The tributary does show signs of incision and scouring along the reach. Leaning trees along the banks indicates potential instability.

Tributary 2: the northern reach of the tributary is forested and well vegetated. As the tributary continues south into a 9-acre cow pasture, the tributary pools into a man-made pond. The use of unrestricted cattle grazing has disturbed the bed and bank; dispersing the soil into an inconsistent muddy floodland void of vegetation. The southern reach is devoid of vegetation other than hay grasses.

Pond: has muddy banks devoid of vegetation with scattered cottonwood, oak trees, Himalayan blackberry, pasture grasses, and weedy forbs. Unrestricted cattle grazing continuously disturb the Pond banks.

West Drainage: is characteristic of a roadside ditch with fill material substrate and a clear break in vegetation.

Presence of run/riffle/pool complexes. Explain: N/A.

Tributary geometry:

Tributary 1: meanders, with vertical incised slopes and scour areas.

Tributary 2: meanders in the north reach, and transitions into an open water impounded feature in central reach, and becomes linear and channelized in the southern reach, before merging with Tributary 1.

West Drainage: **Relatively straight** roadside ditch

Tributary gradient (approximate average slope): **Tributary 1:** 1.26 %, **Tributary 2:** 3.5 %,s and **West Drainage:** 2.4%

(c) **Flow:**

Tributaries provides for: **Year-round flow (Tributary 1, 2, and); Intermittent flow (West Drainage)**

Estimate average number of flow events in review area/year: **20 (or greater)**

Describe flow regime: Flow is present year-round in Tributaries 1 and 2; with moderate to high flow pattern during rain events. Roadside culverts have channelized Tributary 1 flows entering and exiting the property. Tributary 2 is impounded in the central reach; impeding natural flow patterns. The impounded Pond in Tributary 2 is capable of storing water during flood events, however; the moderate slope of the property to the southwest in combination with cattle ground disturbance breaching the banks of the Pond, Tributary 1, Wetland D, G, H, and I; may account for unconfined sheet flows observed across the property. The West Drainage likely flows during moderate to high rain events with intermittent flows.

Surface flows: Onsite, Tributary 1 is **Discrete and confined** for approximately 385 feet before braiding into two **Discrete** and distinct channels before merging back into a single channel after 250 feet; where the resource abutts Wetland D. Tributary 2 is **Discrete and confined** up to the reaches above and below the Pond, where the channel becomes unconfined ponded surface flows. Once flows have passed through the impounded Pond, Tributary 2 becomes **Confined** again. During heavy rain or storm events, **Overland sheetflows** are observed between adjacent wetlands and tributaries. The West Drainage is a **Discrete and confined** channelized roadside ditch.

Subsurface flow: **Unknown**. Explain findings: The tributaries are perennial and likely have groundwater input year-round.

Tributary has (check all that apply):

Bed and banks

OHWM⁶ (check all indicators that apply):

clear, natural line impressed on the bank

changes in the character of soil

shelving

vegetation matted down, bent, or absent

leaf litter disturbed or washed away

sediment deposition

water staining

other (list):

the presence of litter and debris

destruction of terrestrial vegetation

the presence of wrack line

sediment sorting

scour

multiple observed or predicted flow events

abrupt change in plant community

Discontinuous OHWM.⁷ Explain: **Tributary 2** soils, bed, and bank have been disturbed upstream, downstream and within the impounded Pond, by cattle grazing with unrestricted access.

(iii) Chemical Characteristics:

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: The site is located on the edge of the Dallas, Oregon urban growth boundary. Moderate to high density residential communities have been encroaching from the south and east for the last 15 years. To the north and west the area is actively farmed with scattered small riparian and stream corridors.

Tributary 1: flows from the northwest to the southeast with a narrow riparian corridor, dense vegetation and forested banks. The stream discharges onsite with muddy murky water from a roadside culvert under James Howe Road and discharges offsite from a roadside culvert under West Ellendale Road. The tributary is mapped on McAlpin silty clay loam, which is a hydric soil with 0-3% slope. The substrate is not highly erodible with a moderately high runoff potential when thoroughly wet. The substrate can be moderately drained, with moderately slow permeability. In the northern portion of the site, the substrate is dominated by fine sediment with some gravels, and further south the substrate is dominated by gravels and small cobble.

Tributary 2: flows from the north to the south with the northern portion forested. As the tributary flows south into the center of the property, unrestricted cattle grazing occurs on approximately 9 acres. An ordinary high water mark (OHWM) cannot be observed within the grazed areas due to trampled soils dispersing the flows into an inconsistent muddy floodway. Tributary 2 substrate is dominated by fines. The tributary is mapped McAlpin silty clay loam (refer to Tributary 1 for soil description), Bellpine silty clay loam, Salkum silty clay loam, and Suver silty clay loam.

- Bellpine silty clay loam, which is not a hydric soil, with 12-20% slope. The substrate is highly erodible, with moderately high runoff potential when thoroughly wet. The substrate is well drained, with low permeability.
- Salkum silty clay loam, which is a hydric soil with 2-6% slope. The substrate is not highly erodible, with moderately high runoff potential when thoroughly wet. The substrate is well drained, with moderate permeability to moderately-low permeability in the C horizon.
- Suver silty clay loam with 3-12% slope is mapped in the upper reaches of the tributary and is not a hydric soil. This soil is not highly erodible, with high runoff potential when thoroughly wet. This is a poorly drained soil with potential for restricted or very slow permeability.

Pond: banks, riparian area, and OHWM are disturbed by unrestricted cattle grazing. The Pond is mapped McAlpin silty clay loam and Suver silty clay loam (refer to the soil descriptions above in Tributary 1 and 2). The water is muddy and murky in appearance with green algae film along the banks.

West Drainage: directs untreated stormwater runoff to Tributary 1.

Identify specific pollutants, if known: Unrestricted cattle grazing within Tributary 2, as well as Wetlands D, G, H, I, and J increasing phosphorus and nitrogen input into the tributary system.

(iv) Biological Characteristics. Channel supports (check all that apply):

Riparian corridor. Characteristics (type, average width):

Tributary 1: has a narrow forested riparian corridor spanning 20-120 feet across the channel and extends offsite upstream and downstream with road crossings fragmenting both the stream habitat and riparian corridor. The braided portion of the channel has approximately 110-foot riparian corridor, including channel widths. Riparian vegetation includes Oregon ash (*Fraxinus latifolia*, FACW), black cottonwood, Douglas hawthorn (*Crataegus douglasii*, FAC), Himalayan blackberry (*Rubus armeniacus*), snowberry (*Symphoricarpos*), poison oak (*Toxicodendron*), oso-berry (*Oemleria cerasiformis*, FACU), nine-bark (*Physocarpus capitatus*, FACW), rose, willow (*Salix* sp., generally FAC or wetter), Scotch broom (*Cytisus scoparius*), trailing blackberry (*Rubus ursinus*), meadow foxtail (*Alopecurus pratensis*), reed canarygrass (*Phalaris arundinacea*, FACW), Pacific blacksnakeroot (*Saniclea crassicaulis*, UPL), camas (*Camassia* sp., FACW), cow parsnip (*Heracleum maximum*, FAC), Pacific waterdropwort (*Oenanthe sarmentosa*, OBL), bedstraw, vetch (*Vicia* sp., generally FAC or drier), slough sedge (*Carex obnupta*, OBL), pioneer violet (*Viola glabella*, FACW), sword fern (*Polystichum munitum*, FACU), and rush (*Juncus* sp., generally FAC or wetter).

Tributary 2: north of the cow pasture, the riparian vegetation includes Douglas-fir (*Pseudotsuga menziesii*), Oregon white oak (*Quercus garryana*), Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus armeniacus*), velvetgrass (*Holcus lanatus*), bentgrass (*Agrostis*), vetch (*Vicia*), poverty rush (*Juncus tenuis*), shining geranium (*Geranium lucidum*), trailing blackberry (*Rubus ursinus*), selfheal (*Prunella*), bedstraw (*Galium aparine*), and meadow foxtail (*Alopecurus pratensis*). Within the cow pasture, vegetation has been heavily grazed and consists of pasture grasses and weedy forbs. South of the cow pasture, vegetation includes Himalayan blackberry, trailing blackberry, meadow foxtail, rush, orchardgrass, and tall fescue (*Festuca arundinacea*).

Pond: banks have scattered cottonwood and oak trees, along with Himalayan blackberry, pasture grasses and weedy forbs.

Wetland fringe. Characteristics:

Wetland D (6.36 acres) abuts Tributary 1 and 2 within the southern portion of the property. Tributary 2 flows south and west through Wetland D. Tributary 1 flows southwest and meets with Wetland D along the northern bank, approximately 400 linear

feet downstream of James Howe Road. The northern edge of Wetland D lies within the 9-acre cow pasture and the remaining portion of the wetland lies within managed hayfields.

Wetland G (0.21-acre) abuts Tributary 2 on both sides downstream of the Pond within the 9-acre cow pasture in the central portion of the property.

Wetland H (0.02-acre) abuts the Pond along the western edge within the 9-acre cow pasture in the central portion of the property.

Wetland I (0.36-acre) abuts Tributary 2 and the Pond upstream of the Pond within the 9-acre cow pasture in the central portion of the property.

Wetland J (2.91 acres) abuts Tributary 2 in the upper reaches of the property and continues north beyond the study area.

- Habitat for:
 - Federally Listed species.
 - Fish/spawn areas. Explain findings: Unknown, potentially in Rickreall Creek.
 - Other environmentally-sensitive species. Explain findings: .
 - Aquatic/wildlife diversity. Explain findings: Tributary 2 providing wildlife habitat and refuge for small animals, as observed by the presence of several beaver dams along the northern reach. The riparian corridor along Tributary 1, forested reach of Tributary 2, and the forested area to the northwest likely provides refuge and habitat for wildlife resident species and migratory species.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland type:

Wetlands A (0.01-acre), **B** (0.04-acre), **C** (0.07-acre), **D** (6.36 acres), **E** (1.31 acres), and **F** (5.48 acres) **G** (0.13-acre), **H** (0.02-acre), and **I** (0.36-acre) are Cowardin classified palustrine emergent seasonally flooded (PEMC) and HGM classified Slope/Flat/. **Wetland J** (2.91 acres) western edge is Cowardin classified as palustrine, forested, seasonally flooded (PFOC) and the eastern portion is Cowardin classified PEMC and HGM classified Slope/Flat.

Wetland quality:

The onsite streams, adjacent, and abutting wetlands form a hydrologic complex. The complex provides sediment retention, filtration, percolation, water quality treatment, removal of pollutants, macro-nutrient settlement (nitrogen (N), phosphorous (P), and potassium (K). Calcium (Ca), magnesium (Mg), and sulfur (S)) and temperature reduction before entering the onsite tributary system and Rickreall Creek directly downstream of the property.

Wetlands A, B, C, E, and, F boundaries lie within a hay production field dominated by orchard grass and timothy (*Phleum pretense*; FAC), along with meadow foxtail, bent grass, blue grass (*Poa sp.*, generally FAC), clover (*Trifolium sp.*, FAC or FACU), and geranium (*Geranium sp.*, generally FAC or drier). The wetlands soils show presence of oxidized rhizospheres, and meet the redox dark surface (F6) hydric soil field indicator. The wetland micro-topographic boundary is a flat concave shape with a rise in topography around the wetland boundary. Surface saturation associated with a high water table was observed at the time of the delineation (April 7th, 11th, and May 20th 2016).

Wetland A, B, C, E, and F provide moderate water storage and delay before overland sheetflow or shallow subsurface flow connect to Tributary 1, 2 or West Drainage. Grasses, foxtail, and clover dominate the wetlands primary productivity and food web contribution. The wetlands do not support fish species and minimal invertebrate and amphibian habitat. Species such as birds, deer, beavers, and small animals utilize these wetlands as undeveloped corridors for water, refuge, and migration.

Wetland D provides considerable water storage and delay, sediment stability, micro and macro-nutrients retention, and temperature reduction before connecting with Tributary 1 and 2. Grasses and rushes dominate the wetlands primary productivity and food web contribution. The wetland does not support fish species and minimal invertebrates. The wetland directly abuts Tributary 1 and 2 making it a suitable refuge or backwater habitat for amphibians, small animals, and birds.

Wetlands G (0.21-acre), **H** (0.02-acre), and **I** (0.36-acre) vegetation is dominated by marsh cudweed (*Gnaphalium palustre*, FACW), toad rush (*Juncus bufonius*, FACW), bentgrass, poverty rush (*Juncus tenuis*), slender-spike manna grass (*Glyceria leptostachya*, OBL), tall fescue (*Festuca arundinacea*), bluegrass (*Poa sp.*, generally FAC), and penny royal (*Mentha pulegium*, OBL). Soils within the wetlands meet the redox dark surface (F6) and/or depleted matrix (F3) hydric soil field indicators and contain oxidized rhizospheres and/or saturation associated with a high water table. Unrestricted cattle grazing continuously disturbs soils, vegetation, and bank stability of the Pond and abutting wetlands causing sediment and nutrients plums downstream.

Wetlands G, H, and I provide minimal to moderate sediment and nutrient retention surrounding the cattle influenced area. Grasses and rushes dominate the wetlands primary productivity and food web contribution. The wetland does not support fish species or invertebrates. The wetlands provide minimal habitat for small animal and migratory species; the impounded water and inundated wetlands are an attraction, while unrestricted cattle grazing is likely a deterrent.

Wetland J (2.91 acres) is located in the northeast corner of the property and abuts Tributary 2 at the farthest upstream reach. The wetland experiences periods of seasonal inundation and saturation before draining into the abutting Tributary 2 and Wetland I fringe. The wetland provides water storage and delay before becoming the headwaters of Tributary 2. The wetland provides suitable refuge habitat for amphibians, small animals like beavers, deer, and birds. The wetland in combination with the forested area to the west provide a wildlife corridor for species seeking refuge, shelter, water, or a migratory path between developed areas.

Project wetlands cross or serve as state boundaries. Explain: N/A.

(b) General Flow Relationship with Non-TNW:

Flow is: **Perennial flow** Explain: **Wetlands A-J** flow and soil saturation is observed year-round flowing into Non-TNWs (Tributary 1, 2, and the Pond).

Surface flow is: **Overland sheetflow**

Characteristics: **Wetland A-J** and the **West Drainage** have a surface connection with Tributary 1, 2, and the Pond.

Subsurface flow: **Yes**. Explain findings: Shallow subsurface flow is likely present year-round between all wetlands and tributaries onsite, except the West Drainage. Data collected during a normal rain period in the wetland delineation suggests soil saturation year-round and seasonal inundation of wetlands.

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting **Wetlands D, G, H, I, and J**

Not directly abutting Wetlands **A, B, C, E and F**

Discrete wetland hydrologic connection. Explain: The West Drainage has a discrete hydrologic connection with Tributary 1 during rain events.

Ecological connection. Explain: **Wetland A, B, C, E, and F** experience near surface soil saturation associated with a high water table and seasonal inundation. **Wetland A and B** exhibit a subsurface connect and seasonal sheet flow with the West Drainage that seasonally flows to Tributary 1 during rain events. **Wetlands C** exhibit a subsurface connect and seasonal sheet flow with Tributary 1. **Wetland E** exhibits subsurface connection and seasonal sheet flow with Tributary 1. **Wetland F** exhibits a surface connection and seasonal sheet flow with Wetland D and offsite with and potentially offsite with an adjacent tributary.

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **15.5** river miles from TNW.

Project waters are **11.25** aerial (straight) miles from TNW.

Flow is from: **Wetland to navigable waters**.

Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: All wetlands were inundated during the December 20, 2016 site visit and all standing water observed as murky and muddy in appearance.

Identify specific pollutants, if known: Unrestricted in-stream cow grazing likely contributes to increased nutrient loading (i.e., nitrogen (N), phosphorous (P), and potassium (K). Calcium (Ca), magnesium (Mg), and sulfur (S))

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

Riparian buffer. Characteristics (type, average width):

A portion of **Wetland D** abuts Tributary 1 riparian buffer that spans 20-120 feet across the channel and into Wetland D.

Wetland G shares a small riparian buffer with Tributary 2 that spans 30-50 feet across the channel just downstream of the Pond area.

Vegetation type/percent cover. Explain:

Wetland A is characterized by native and non-native grasses. Grasses cover 31% within the herb stratum with 69% bare ground.

Wetland B is characterized by native and non-native grasses. Grasses cover 100% within the herb stratum with 0% bare ground.

Wetland C is characterized by non-native grasses. Grasses cover 100% within the herb stratum with 0% bare ground.

Wetland D is characterized by native and non-native grasses. Grasses cover 70-100% within the herb stratum with 0-30% bare ground.

Wetland E is characterized by native and non-native grasses. Grasses cover 100% within the herb stratum with 0% bare ground.

Wetland F is characterized by native and non-native grasses. Grasses cover 100% within the herb stratum with 0% bare ground.

Wetland G is characterized by native and non-native grasses. Grasses cover 50% within the herb stratum with 50% bare ground.

Wetland H is characterized by native and non-native grasses. Grasses cover 50% within the herb stratum with 50% bare ground.

Wetland I is characterized by native and non-native grasses. Grasses cover 70-90% within the herb stratum with 10-30% bare ground.

Wetland J is characterized primarily by native and non-native grasses. Grasses cover 100% within the herb stratum, 10% cover by sapling/shrub stratum and portion of the wetland is classified as PFO with 5% cover within the tree stratum and is dominated by Oregon white oak.

Habitat for:

Federally Listed species. Explain findings:

Fish/spawn areas. Explain findings:

Other environmentally-sensitive species. Explain findings:

Aquatic/wildlife diversity. Explain findings: Beaver dams are present in the upper reaches of Tributary 2 and

Wetland J; to the west a forest hillside, that likely provides a wildlife corridor connection between adjacent undeveloped properties. Tributary 1 and Wetland D provide a riparian corridor habitat for small animals, amphibians, macro-invertebrates, and birds seeking refuge, food, water, or shelter.

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **10**

Approximately (16.77) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| <u>Directly abuts? (Y/N)</u> | <u>Size (in acres)</u> | <u>Directly abuts? (Y/N)</u> | <u>Size (in acres)</u> |
|------------------------------|------------------------|------------------------------|------------------------|
| Wetland A (N) | 0.01-acre | Wetland B (N) | 0.04-acre |
| Wetland C (N) | 0.07-acre | Wetland D (Y) | 6.36 acres |
| Wetland E (N) | 1.31 acres | Wetland F (N) | 5.48 acres |
| Wetland G (Y) | 0.21-acre | Wetland H (Y) | 0.02-acre |
| Wetland I (Y) | 0.36-acre | Wetland J (Y) | 2.91 acres |

Summarize overall biological, chemical and physical functions being performed: Tributary 1, 2 and the Pond are perennial stream that constantly move organic material downstream to Rickreall Creek and the Willamette River. The West Drainage, in combination with Wetlands A-J contributes organic material during rain events that create a connection to Rickreall Creek downstream. This organic material supports downstream foodwebs. Tributary 2, the Pond, and Wetlands D, G, H, and I lie within a 9-acre cow pasture that has unrestricted cattle grazing that may contribute to nutrient loading downstream and to the TNW. During the 20 December 2016 site visit standing water and a slow flow surface connection was observed between the West Drainage and Tributary 1, as well as from Wetland A and West Drainage, flowing in the southwest direction. The site visit was during an unusually wet condition, in Dallas Oregon, with 2.5 inches of snowfall recorded on 15 December 2016 and 1.15 inches of rainfall recorded the day of the site visit (DALLAS 1.0 WSW WETS station). Wetland A, B, and C provide season hydrologic connections to the West Drainage and Tributary 1.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent

wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW? NA
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW? NA
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: NA.
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**
 Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: **Tributary 1, 2, and the Pond** flow year-round with distinct bed and banks and flow connections observed during the wetland delineation and subsequent site visits. Refer to Section II (B).
 Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: The **West Drainage** has seasonal flows observed in the field during seasonal rain events that flow directly into an RPW and a TNW. Refer to Section III (B)

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters:

Tributary 1: 1,119 linear feet, 10-15width (ft)

Tributary 2: 2,643 linear feet, 2-3 width (ft)

Other non-wetland waters: **1.16** acres.

Identify type(s) of waters:

Pond: 150 linear feet, 260 width (ft)

3. **Non-RPWs⁸ that flow directly or indirectly into TNWs.**
 Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.
4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

⁸See Footnote # 3.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: Refer to Section.B.1(iv)

Wetland D (6.36 acres) abuts Tributary 1 and 2 within the southern portion of the property. Tributary 2 flows south and west through Wetland D. Tributary 1 flows southwest and meets with Wetland D along the northern bank, approximately 400 linear feet downstream of James Howe Road. The northern edge of Wetland D lies within the 9-acre cow pasture and the remaining portion of the wetland lies within managed hayfields.

Wetland G (0.21-acre) abuts Tributary 2 on both sides downstream of the Pond within the 9-acre cow pasture in the central portion of the property.

Wetland H (0.02-acre) abuts the Pond along the western edge within the 9-acre cow pasture in the central portion of the property.

Wetland I (0.36-acre) abuts Tributary 2 and the Pond upstream of the Pond within the 9-acre cow pasture in the central portion of the property.

Wetland J (2.91 acres) abuts Tributary 2 in the upper reaches of the property and continue north beyond the study area.

Provide acreage estimates for jurisdictional wetlands in the review area: **9.86** acres.

- Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: **0** acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Wetland A (0.01-acre) is approximately 30 feet from the intermittent West Drainage ditch that runs along James Howe Road and the property boundary (flowing north to south). During the 20 December 2016 site visit a slow flowing surface connection was observed between Wetland A and the West Drainage, flowing southwest. The site visit was during an unusually wet condition, in Dallas Oregon, with 2.5 inches of snowfall recorded on 15 December 2016 and 1.15 inches of rainfall recorded the day of the site visit (DALLAS 1.0 WSW WETS station). The wetland experiences periods of seasonal inundation and saturation before draining into the West Drainage.

Wetland B (0.04-acre) is located approximately 15 feet from James Howe Road and the property boundary (West Drainage). During the 20 December 2016 site visit standing water was observed. The wetland experiences periods of seasonal inundation and saturation before draining into the West Drainage.

Wetland C (0.07-acre) is located in the southwest quadrant of the property between Tributary 1 to the northeast and West Drainage to the west approximately 25 feet away. During the 20 December 2016 site visit standing water was observed. The wetland experiences periods of seasonal inundation and saturation before draining into the West Drainage.

Wetland E (1.31-acre) is located in the southern most portion of the property, adjacent to Tributary 1. The wetland experiences periods of seasonal inundation, year-round soil saturation with sheet flows entering Tributary 1 during seasonal rain events.

Wetland F (5.48 acres) is located along the southeast property boundary and extends offsite onto an undeveloped property with small houses, forested riparian areas and grassy farm fields. The wetland experiences periods of seasonal inundation and soil saturation before draining offsite.

Provide acreage estimates for jurisdictional wetlands in the review area: **6.91** acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional. **Pond**

- Demonstrate that impoundment was created from “waters of the U.S.,” or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in “SWANCC,” the review area would have been regulated based solely on the “Migratory Bird Rule” (MBR).
- Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report. **Concur with delineated boundaries**
 - Office does not concur with data sheets/delineation report. **Do not concur with isolated call of Wetlands A, B, and C**
- Data sheets prepared by the Corps: .

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: Dallas Oregon 7.5 Quad 1974, revised 1986.
- USDA Natural Resources Conservation Service Soil Survey. Citation:
- National wetlands inventory map(s). Cite name:
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
 - <http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cbe088e7c8704464aa0fc34eb99e7f30&extent=-123.1744472128904,44.87042790232514,-122.84211078710962,44.95066559100103>
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date):
or Other (Name & Date):
- Previous determination(s). File no. and date of response letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

Wetland A (0.01-acre) is approximately 30 feet from the intermittent West Drainage ditch that runs along James Howe Road and the property boundary (flowing north to south). During the 20 December 2016 site visit a slow surface connection was observed flowing from Wetland A, in the southwest direction to the West Drainage. The site visit was during an unusually wet condition, in Dallas Oregon, with 2.5 inches of snowfall recorded on 15 December 2016 and 1.15 inches of rainfall recorded the day of the site visit (DALLAS 1.0 WSW WETS station). Wetland A is mapped Bellpine silty clay loam, which is not a hydric soil and has a 12-20% slope. Bellpine silty clay loam can be highly erodible, with a moderately high runoff potential when thoroughly wet. This soil type is well drained, with low permeability. The wetland experiences periods of seasonal inundation and saturation before draining into the West Drainage.

Wetland B (0.04-acre) is located approximately 15 feet from James Howe Road and the property boundary (West Drainage). During the 20 December 2016 site visit, standing water was observed. Wetland B has the same soil type as Wetland A listed above. The wetland experiences periods of seasonal inundation and saturation before draining into the West Drainage.

Wetland C (0.07-acre) is located in the southwest quadrant of the property between Tributary 1 to the northeast and West Drainage to the west approximately 25 feet away. During the 20 December 2016 site visit, standing water was observed. Wetland C is mapped McAlpin silty clay loam, which is a hydric soil with 0-3% slope. McAlpin silty clay loam is not highly erodible, with a moderately high runoff potential when thoroughly wet. The soil type is moderately drained, with moderately slow permeability. The wetland experiences periods of seasonal inundation and saturation before draining into the West Drainage.

Wetland D (6.36 acres) is located in the southern portion of the site. Wetland hydrology indicators and hydric soil field indicators were observed within the cow pasture portion of the wetland, such as redox dark surface (F6) and/or depleted matrix (F3), oxidized rhizospheres and/or soil saturation associated with a high water table. The dominant wetland vegetation includes marsh cudweed (*Gnaphalium palustre*, FACW), toad rush (*Juncus bufonius*, FACW), bentgrass, poverty rush (*Juncus tenuis*), slender-spike manna grass (*Glyceria leptostachya*, OBL), tall fescue (*Festuca arundinacea*), bluegrass (*Poa sp.*, generally FAC), and penny royal (*Mentha pulegium*, OBL). Within the portion of Wetland D managed for hay production, the wetland shows presence of hydric soils, redox dark surface (F6), oxidized rhizospheres, and a subtle flat to concave relief. The dominant vegetation within the hayfield portion of Wetland D include meadow foxtail (*Alopecurus pratensis*), bentgrass (*Agrostis*), and tall fescue (*Festuca arundinacea*). Wetland D is mapped Bellpine silty clay loam, 12-20% slope (see Wetland A soil description), McAlpin silty clay loam, 0-3% slope (see Wetland C soil description), and Salkum silty clay loam, which is a hydric soil with 2-6% slope. The substrate is not highly erodible, with moderately high runoff potential when thoroughly wet. The substrate is well drained, with **moderate permeability to moderately-low permeability in the C horizon**. The wetland experiences periods of seasonal inundation and saturation before draining into the abutting Tributary 1 and 2.

Wetland E (1.31-acre) is located in the southern most portion of the property, directly abutting West Ellendale Road. During the 20 December 2016 site visit the entire wetland was inundated, with little to no soil or vegetation above the waterline. Wetland E is mapped Bellpine silty clay loam and McAlpin silty clay loam. Bellpine silty clay loam, 3-12% slope, is not a hydric soil, is highly erodible, with moderately high runoff potential when thoroughly wet, with low permeability. McAlpin silty clay loam, 0-3% slope (see Wetland C soil description). The wetland experiences periods of seasonal inundation and saturation before draining offsite.

Wetland F (5.48 acres) is located along the southeast property boundary and extends offsite onto an undeveloped property with a few small houses, forested riparian areas and grassy farm fields. Wetland F is mapped Bellpine silty clay loam, McAlpin silty clay loam, and Salkum silty clay loam. Bellpine silty clay loam, 3-12% slope (see Wetland E soil description), McAlpin silty clay loam, 0-3% slope (see Wetland C

soil description), and Salkum silty clay loam, 2-6% slope (see Wetland D soil description). The wetland experiences periods of seasonal inundation and saturation before draining offsite.

Wetland G (0.21-acre) is located directly downstream of the Pond and directly abuts Tributary 2 and the Pond. Wetland G is mapped McAlpin silty clay loam, 0-3% slope (see Wetland C soil description) and Salkum silty clay loam, 2-6% slope (see Wetland D soil description). The wetland experiences periods of seasonal inundation and saturation before draining into the abutting Tributary 2 and Wetland D fringe.

Wetland H (0.02-acre) abuts the Pond to the west and is mapped Suver silty clay loam with 3-12% slope, which is not a hydric soil. This soil is not highly erodible, with high runoff potential when thoroughly wet. This is a poorly drained soil with potential for restricted or very restricted water transmission through the soil. The wetland experiences periods of seasonal inundation and saturation before draining into the abutting Pond.

Wetland I (0.36-acre) abuts Tributary 2 and the Pond on the upstream side of the Pond. The wetland is mapped Suver silty clay loam with 3-12% slope (see Wetland H soil description). The wetland is impounded by a man-made berm and pipes, placed in the 1970s and used as a cattle pasture. The wetland experiences periods of seasonal inundation and saturation before draining into the abutting Tributary 2 and Pond.

Wetland J (2.91 acres) is located in the northeast corner of the property and abuts Tributary 2 at the farthest upstream reach. The wetland experiences periods of seasonal inundation and saturation before draining into the abutting Tributary 2 and Wetland I fringe. Soils within the western PFOC portion of the wetland meet the redox dark surface (F6) indicator, oxidized rhizospheres, drainage patterns, and/or relatively low geomorphic positions. The PFOC portion of the wetland is dominated by Oregon white oak (*Quercus garryana*), poison oak (*Toxicodendron*), Scotch broom (*Cytisus scoparius*), poverty rush (*Juncus tenuis*), velvetgrass (*Holcus lanatus*), bentgrass (*Agrostis*), green sheath sedge (*Carex feta*), and meadow deer vetch. Soils within the PEMC portions of the wetland, managed for hay production meet hydric soils, oxidized rhizospheres, and a subtle local relief flat and concave. The PEMC portion of the wetland is dominated by meadow foxtail (*Alopecurus pratensis*), tall fescue (*Festuca arundinacea*), velvetgrass (*Holcus lanatus*), and bentgrass (*Agrostis*). Wetland soils are saturated with a high water table and met the hydric indicators redox dark surface (F6) and/or depleted matrix (F3). The wetland is mapped Suver silty clay loam with 3-12% slope (see Wetland H soil description).