

APPENDIX D: Wetlands Delineation Report



Graham Environmental Services, Inc.

GES

Art School Site Wetland Delineation Report

Iowa City, Iowa



September 15, 2011

GES Project No. 2011.024



www.grahamenvironmental.com



Wetland Delineation Report

Art School
University of Iowa
Iowa City, Iowa

September 15, 2011

Background

Graham Environmental Services, Inc. (GES) was retained to complete a site evaluation for jurisdictional wetlands on a parcel of developed property located in the southwestern quadrant of the intersection of River Street and North Riverside Drive in Iowa City (**Figure 1**). The site is characterized as landscaped with turf grasses and a few trees on the eastern portion and wooded and steep with a ravine in the western portion.

On September 8, 2011, GES conducted an evaluation of the site and delineated one jurisdictional wetland at the site. A recent aerial photograph depicting the wetland and site boundaries is presented in **Figure 2**.

Methodologies

The site was assessed for wetlands using the on-site methods contained in the "Routine Determinations" section of the U.S. Army Corps of Engineers "*Wetlands Delineation Manual*" (Technical Report Y-87-1, 1987), as well as "*Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Midwest Region*" (U.S. Army Corps of Engineers, 2010). This is the methodology currently used to determine wetlands by the U.S. Army Corps of Engineers for implementation of Section 404 of the Clean Water Act.

GES classified the wetland under the U.S. Fish and Wildlife Service (FWS) Cowardin system and the Circular 39 methodology. Soil colors described herein follow Munsell Soil Color Charts. Hydric soil properties described follow *Field Indicators of Hydric Soils in the United States* (United States Department of Agriculture, Natural Resources Conservation Service, 2010. *Field Indicators of Hydric Soils in the United States*, Version 7.0. L.M. Vasilias, G.W. Hurt and C.V. Noble (eds.).



USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils).

Results

GES identified one wetland within the property boundaries as discussed below.

Wetland A

Wetland A is located in a narrow ravine near the southwestern boundary of the site. The wetland is bounded by steep slopes on either side and appears to receive storm water fairly regularly based on the lack of consistent herbaceous ground cover and some evidence of erosion. The upland/wetland boundary was investigated along a single transect on the eastern boundary.

Dominant vegetation in the wetland includes hackberry (*Celtis occidentalis*), yellow jewelweed (*Impatiens pallida*), wood nettle (*Laportea canadensis*), and day lily (*Hemerocallis fulva*). Upland vegetation includes hackberry and green ash (*Fraxinus pennsylvanica*).

Soils were evaluated by digging soil pits along a transect perpendicular to the wetland/upland boundary and examining the profile's texture, color, and redoximorphic characteristics. Soils in the wetland are described as 10 YR 3/2 silt loam over 10YR 4/2 silt loam with 10YR 4/4 mottles. Surface water was not present in the wetland nor was free water observed in the soil pit. Hydrology indicators include drift deposits, sparsely vegetated concave surface and FAC-neutral test. Upland soils are described as 10YR 4/2 silt loam over 10YR 4/3 silt loam over 10YR 5/4 silt. There were no hydrology indicators in the upland location.

The jurisdictional boundary was established where the soil profile in the upland soils demonstrates a lighter matrix tone, there is a change in plant communities, hydrology indicators are absent in the upland and a change in topography occurs.

We would classify the wetland as seasonally flooded palustrine deciduous forested, drained (PFO1Cd) under the Cowardin system which would equate to Type 1 lowland hardwoods under the Circular 39 system.

A ground photo of the wetland is included in **Figure 3**. Detailed information regarding the wetland's vegetation, soils and hydrology is included in the attached data form (**Appendix A**).

Regulatory Jurisdiction

Federal Regulatory Jurisdiction

The U.S. Army Corps of Engineers regulates the discharge of dredged or fill material into wetlands and waters that have a surficial hydrologic connection to federal navigable waters. The delineated wetland does not appear to have a connection to navigable waters. However, we would recommend obtaining a written confirmation that no jurisdictional wetlands are present from the Corps prior to commencement of any activities on the site.

Delineation Concurrence

Concurrence with our findings should be obtained from the U.S. Army Corps of Engineers (if they assert jurisdiction) before any earthwork is undertaken which could affect the delineated wetlands or other waters on the site.

The information contained herein represents our findings during wetland delineation activities conducted on September 8, 2011 at the referenced site.

Respectfully submitted,

Graham Environmental Services, Inc.

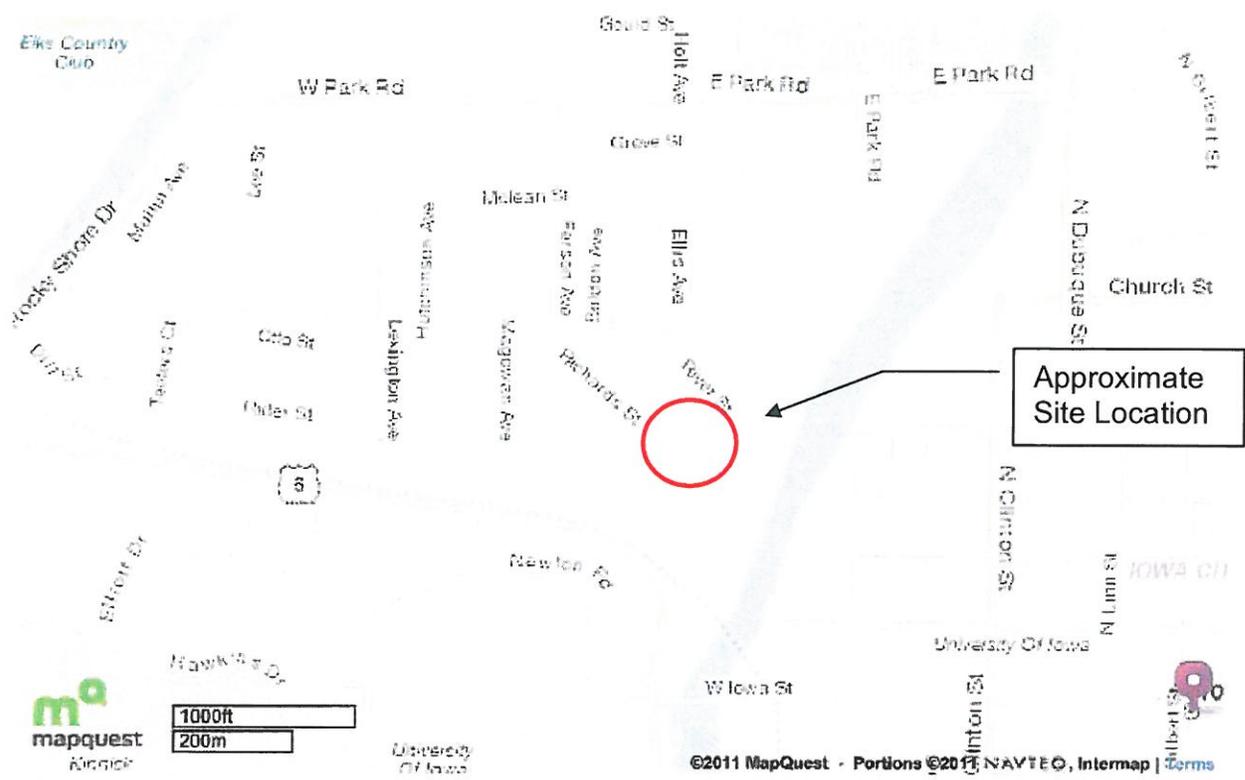
A handwritten signature in black ink, appearing to read "Mike Graham", is written over a horizontal line.

Mike Graham

Professional Wetland Scientist No. 365

Minnesota Wetland Delineator Certified No. 1179

Enclosures



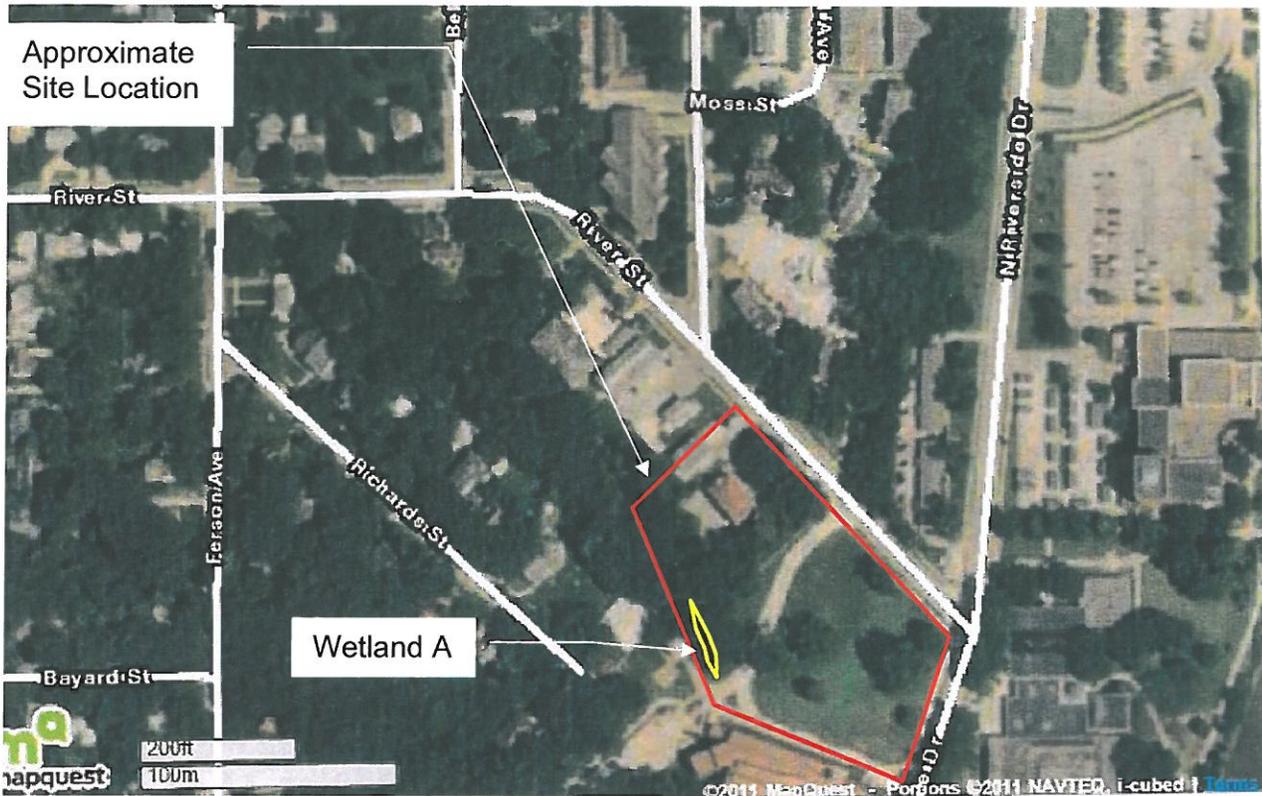
Not to Scale

Figure 1. Site Location Map
Art School Site
 University of Iowa
 Iowa City, Iowa



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Not to Scale

**Figure 2. Aerial Photograph
Art School Site
University of Iowa
Iowa City, Iowa**



GES

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Wetland A Looking Southeast

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Not to Scale



Graham Environmental Services, Inc.

Figure 3. Ground Photo-Wetland A
Art School Site
University of Iowa
Iowa City, Iowa

GES Project No. 2011.024

Appendix A

Wetland A - Wetland Data
WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site U of Iowa Art School City/County: Iowa City, Johnson Co. Sampling Date: 9/8/11
 Applicant/Owner: U of Iowa State: Iowa Sampling Point: Transect 1-Wetland
 Investigator(s): MJG Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): ravine Local relief (concave, convex, none): rolling
 Slope (%): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name _____ NWI Classification: _____

Are climatic/hydrologic conditions of the site typical for this time of the year? _____ (If no, explain in remarks)
 Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
 Are vegetation _____, soil _____, or hydrology _____ naturally problematic? present? Yes
SUMMARY OF FINDINGS (If needed, explain any answers in remarks.)

Hydrophytic vegetation present? <u>Y</u> Hydric soil present? <u>Y</u> Wetland hydrology present? <u>Y</u>	Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID: _____
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Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet
1 <u>Celtis occidentalis</u>	25	Y	FAC	Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
25 = Total Cover				Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>80</u> x 2 = <u>160</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>110</u> (A) <u>250</u> (B) Prevalence Index = B/A = <u>2.27</u>
Sapling/Shrub stratum (Plot size: _____)				
1 _____	_____	_____	_____	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	0 = Total Cover
Herb stratum (Plot size: <u>5-ft. radius</u>)				Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation <input checked="" type="checkbox"/> Dominance test is >50% <input checked="" type="checkbox"/> Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation* (explain) _____ *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
1 <u>Impatiens pallida</u>	50	Y	FACW	
2 <u>Laportea canadensis</u>	30	Y	FACW	
3 <u>Hemerocallis fulva</u>	20	N	NI	
4 <u>Polygonum sachalinense</u>	10	N	NI	
5 <u>Alliaria petiolata</u>	5	N	FAC	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
8 _____	_____	_____	_____	
9 _____	_____	_____	_____	
10 _____	_____	_____	_____	
115 = Total Cover				Hydrophytic vegetation present? <u>Y</u>
Woody vine stratum (Plot size: _____)				
1 _____	_____	_____	_____	Hydrophytic vegetation present? <u>Y</u>
2 _____	_____	_____	_____	
0 = Total Cover				

Remarks: (Include photo numbers here or on a separate sheet)

Wetland A - Wetland Data

SOIL

Sampling Point: transect 1-Wetlan

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-8	10YR 3/2						silt loam	
8-20	10YR 4/2		10YR 4/4	5	C	M	silt loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators: <input type="checkbox"/> Histisol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils: <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (explain in remarks)
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*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u>Y</u>
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface water present? Yes _____ No <u>X</u> Depth (inches): _____ Water table present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland hydrology present? <u>Y</u>
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Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: _____

Wetland A - Upland Data
WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site U of Iowa Art School City/County: Iowa City, Johnson Co. Sampling Date: 9/8/11
 Applicant/Owner: U of Iowa State: Iowa Sampling Point: Transect 1-Upland
 Investigator(s): MJG Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): ravine Local relief (concave, convex, none): rolling
 Slope (%): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name _____ VWI Classification: _____

Are climatic/hydrologic conditions of the site typical for this time of the year? _____ (If no, explain in remarks)
 Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
 Are vegetation _____, soil _____, or hydrology _____ naturally problematic? present? Yes
SUMMARY OF FINDINGS (If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	<u>Y</u>	Is the sampled area within a wetland? <u>N</u> If yes, optional wetland site ID: _____
Hydric soil present?	<u>N</u>	
Wetland hydrology present?	<u>N</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet
1 <u>Celtis occidentalis</u>	50	Y	FAC	Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)
2 _____				
3 _____				
4 _____				
5 _____				
50 = Total Cover				Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>15</u> x 2 = <u>30</u> FAC species <u>70</u> x 3 = <u>210</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>85</u> (A) <u>240</u> (B) Prevalence Index = B/A = <u>2.82</u>
Sapling/Shrub stratum (Plot size: <u>15-ft. radius</u>)				
1 <u>Acer negundo</u>	10	Y	FACW	
2 _____				
3 _____				
4 _____				
5 _____				
10 = Total Cover				
Herb stratum (Plot size: <u>5-ft. radius</u>)				
1 <u>Parthenocissus quinquefolia</u>	10	Y	FAC	
2 <u>Alliaria petiolata</u>	10	Y	FAC	
3 <u>Hemerocallis fulva</u>	5	N	NI	
4 <u>Polemonium occidentale subsp. lacustre</u>	5	N	NI	
5 <u>Laportea canadensis</u>	5	N	FACW	
6 _____				
7 _____				
8 _____				
9 _____				
10 _____				
35 = Total Cover				
Woody vine stratum (Plot size: _____)				
1 _____				
2 _____				
0 = Total Cover				
Hydrophytic Vegetation Indicators: _____ Rapid test for hydrophytic vegetation <input checked="" type="checkbox"/> Dominance test is >50% <input checked="" type="checkbox"/> Prevalence index is ≤3.0* _____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) _____ Problematic hydrophytic vegetation* (explain)				
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic				
Hydrophytic vegetation present? <u>Y</u>				

Remarks: (Include photo numbers here or on a separate sheet)

Wetland A - UplandData

SOIL

Sampling Point: Transect 1-Upland

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-12	10YR 4/2						silt loam	
12-18	10YR 4/3						silt loam	
18-20	10YR 5/4						silt	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)

- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- Coast Prairie Redox (A16) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)

- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes No Depth (inches): _____
 Water table present? Yes No Depth (inches): _____
 Saturation present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: