

APPENDIX D10
WETLANDS AND OTHER WATERS OF
THE U.S. INVENTORY

BLACK HILLS BENTONITE, L.L.C.
PERMIT NUMBER 339C
MAYOWORTH 2007 STUDY AREA

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Mayoworth Permit 339C 2007 Study Area

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D10.1 INTRODUCTION

The Black Hills Bentonite Mayoworth 2007 study area (Permit 339C) 2007 wetland delineation area is located in Johnson County, Wyoming approximately 12 miles northwest of the town of Kaycee. Access is via Highway 191. The study area encompasses approximately 520.0 acres. The delineation area lies within portions of Sections 15, 22, 23 and 26 of T45N, R83W. The study area boundary is shown on the attached Map D10-2. The study area for this delineation represents all lands within the permit amendment area as well as some additional lands. The wetlands delineations and the Cash Amendment area are illustrated on Map D10-1.

This report is a recommended determination of jurisdictional wetlands and other waters of the United States under authority of the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency under Section 404 of the Clean Water Act. The agencies retain the authority to amend or approve wetland delineations, and to make jurisdictional determinations on wetlands created by human activities.

D10.2 METHODS

Wetlands were delineated according to the 1987 Corps of Engineers wetlands delineation Manual. Other "Waters of the United States" were determined according to definitions in 33 CFR 328.3. Observations of potential wetland sites were made throughout the 2007 growing season. Field sampling was completed in September of 2007.

Potential wetlands initially were identified by examining topographic maps and National Wetlands Inventory (NWI) maps. All potential wetlands identified through those reviews were

surveyed in the field during September of 2007. Surveys were also conducted on the remainder of the lands in traverses across the study area. Vegetation, hydrology, and soil characteristics of wetlands and other sample sites were recorded on field data sheets and locations of observation sites were plotted on topographic maps. Photographs were taken of the wetland observation sites.

Recommendations for non-jurisdictional wetlands and other waters were made according to the following criteria:

- a. irrigation ditches constructed solely for the conveyance of water used in permitted agricultural practices for the growth of hay or other crops.
- b. isolated wetlands.
- c. ephemeral or intermittent drainages flowing water less than three months out of the year.

Information from an order 1-3 soil survey completed for the study area and the county soil survey were used in this survey where applicable. However, many of the soils encountered in wetlands were unmapped wet inclusions that would be too small to be separated out in a normal soil survey.

D10.3 RESULTS

This section will discuss the results of the surveys for jurisdictional wetlands and other waters of the United States completed during the 2007 wetland delineations. Discussions include vegetation, hydrology, and soils characteristics observed in the kinds of wetlands encountered within the study area.

The only wetlands observed on the Permit 339C Mayoworth 2007 study area wetlands

delineation were associated with three seeps, one spring and one stockpond. These wetlands were all classified as isolated and non-jurisdictional based on their locations on uplands or in non-jurisdictional ephemeral drainages. Individual site summaries and field data sheets representative of all areas surveyed are contained in Addendum D10A. Photographs of the areas identified are provided in Addendum D10B. Results of this survey are tabulated in Table D10-1.

D10.3.1 Seeps

Table D10-1 includes the seep wetlands identified on the study area. These seeps occupy about 0.7 acres within the site. Seep wetlands within this study area consist of continuous and discontinuous bands of distinctive wetlands on hill slopes and in isolated drainages. Wetlands on these sites are generally classified as palustrine systems with emergent vegetation. These seeps are usually saturated to the soil surface but generally do not flow continuously. Wetland vegetation along the seep wetlands often includes: *Juncus balticus*, *Hordeum jubatum*, *Scirpus* sp., *Triglochin maritima* and *Distichlis spicata* (Region 4 indicators). Upland vegetation typically includes: *Bromus tectorum*, *Agropyron smithii*, *Sporobolus airoides*, *Grindelia squarrosa*, and *Bromus japonicus*.

The water source (hydrology) in the seep wetlands consists primarily of very slow groundwater discharges. Some sites are augmented by surface flows in response to rain and snow melt.

Table D10-1. Wetlands Delineation Results for the Black Hills Bentonite Mayoworth Permit
 339C 2007 Study Area

Site	Wetland Acres	Open Water Other Waters of the U.S. Acres
<u>Non-jurisdictional</u>		
<u>Seeps</u>		
Seep 1	0.18	
Seep 2	0.02	-
Seep 4	<u>0.50</u>	<u>-</u>
Subtotal	0.70	-
<u>Spring</u>		
Spring 3	0.53	-
<u>Stockpond</u>		
SP 5	0.40	0.30
All Total	<u>1.63</u>	<u>0.30</u>

Wetland soils in seep wetlands typically range from dark grayish brown (10YR 4/2) to very dark gray (10YR 3/1). Mottles were typically strong brown (7.5YR 4/6). Upland soils do not have mottles in the upper part or low chroma.

D10.3.2 Spring

One spring was identified within the study area. This spring is perennial and has been excavated. Water flows a short distance down an ephemeral drainage. This wetland is classified as palustrine with emergent vegetation and occupies about 0.53 acres as shown in Table D10-1. The wetlands associated with this spring and drainage are isolated from the North Fork Powder River by the loss of defined channels and loss of continuous wetlands prior to entering hayland which also separates these wetlands from other wetlands.

Wetland vegetation is primarily *Carex nebraskensis*, *Agrostis stolonifera*, *Hordeum jubatum* and *Scirpus* sp. Adjacent upland vegetation is primarily *Artemisia tridentata*, *Chrysothamnus nauseosus*, *Agropyron smithii*, *Poa secunda* and *Stipa comata*.

The water source in this spring is directly from groundwater discharges. This spring has been excavated for livestock use.

Soils in this spring wetland are primarily very dark gray (10YR 3/1) throughout the upper horizons. Mottles are strong brown (7.5YR 4/6) and are common in the soils.

D10.3.2 Stockpond

One stockpond was identified within the study area. This stockpond is almost totally silted in so it infrequently contains open water but still has a fringe of wetland. The site is classified as palustrine with emergent vegetation. The acreage of this pond is about 0.4 acres of vegetated wetland and 0.3 acres of open water (barren) as shown in Table D10-1.

Wetland vegetation is primarily *Puccinellia airoides*, *Hordeum jubatum*, *Poa juncifolia* and *Distichlis spicata*. Adjacent upland vegetation is primarily *Artemisia tridentata*, *Chrysothamnus nauseosus*, *Agropyron smithii*, *Poa secunda* and *Stipa comata*.

The water source for this stockpond is surface runoff from rainfall or snow melt. This water is used for livestock.

Soils on this stockpond wetland are primarily dark gray (10YR 4/1) throughout the upper horizons. Mottles are strong brown (7.5YR 5/6) and are common in the soils.

D10.4 CONCLUSIONS

This report provides the wetlands and other waters of the United States delineation for the Permit 339C Mayoworth 2007 study area. Table D10-1 provides acreages for each wetland and Other Waters of the U.S. identified on the study area. The study area has a total of 1.63 acres of non-jurisdictional wetlands and 0.3 acres of non-jurisdictional pond other waters of the United States. These acreages are all associated with several isolated seeps, a spring and a stockpond.

D10.5 SOURCES

Department of the Army, Corps of Engineers. 1987. Corps of Engineers Wetland Delineations Manual. 100 pp.

Dorn, R.D. 1992. Vascular Plants of Wyoming, Second Edition. Mountain West Publishing. Cheyenne, Wyoming. 340 pp.

USDA-Soil Conservation Service. 1987 (Revised March 1990). Hydric Soils of the United States, In Cooperation with the National Technical Committee for Hydric Soils.

USDI-Fish and Wildlife Service. 1988. National List of Plant Species that Occur in Wetlands: North Plains (Region 4). 64 pp.

USDI-Fish and Wildlife Service. 1991. National Wetlands Inventory Maps.

ADDENDUM D10A
COMPUTERIZED FIELD DATA SHEETS

ADDENDUM D10B
REPRESENTATIVE PHOTOGRAPHS



Photo 1. Black Hills Bentonite Permit 339C Mayoworth 2007 Study Area Seep 1.



Photo 2. F



Photo 3. E



Photo 4.
339C

Permit

Mayoworth 2007 Study Area Seep 4.



Photo 5.
339C

Permit

Mayoworth 2007 Study Area Stockpond 5.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/site: <u>Mayoworth Mine Permit 339C Amendment #4</u>	Date: <u>9/28/2007</u>
Applicant/Owner <u>Black Hills Bentonite</u>	County: <u>Johnson</u>
Investigator: <u>Intermountain Resources - Jim Orpet</u>	State: <u>Wyoming</u>
Do Normal Circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Community ID: <u>Seep</u>
Is the site significantly disturbed (Atypical Situation)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Transect ID. <u>Seep 1</u>
Is the area a potential Problem Area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Plot ID: <u>Seep 1</u>
(If needed explain on reverse.)	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Scirpus pungens</i>	h	15%	OBL	9.	
2. <i>Spartina gracilis</i>	h	5%	FACW	10.	
3. <i>Distichlis spicata</i>	h	15%	FACW	11.	
4. <i>Puccinellia airoides</i>	h	5%	FACW	12.	
5. <i>Triglochin maritima</i>	h	5%	OBL	13.	
6. <i>Eleocharis macrostachya</i>	h	20%	OBL	14.	
7.			15.		
8.			16.		
Percent of Dominant Species that are OBL, FACW or FAC (Excluding FAC) <u>100 %</u>					
Remarks:					

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated In upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain In Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (In.) Depth to Free Water in Pit: <u>>16</u> (In.) Depth to Saturated Soil: <u>2</u> (In.)	
Remarks:	

SOILS

Plot ID: Seep 1

Map Unit Name (Series and Phase): <u>NA</u>			Drainage Class: <u>Well</u>		
Taxonomy (Subgroup): <u>Aquent</u>			Field Observations Confirm Mapped Type? Yes <u> </u> No <u>X</u>		
<u>Profile Description:</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture Concentrations, Structure, etc.
<u>0-3</u>	<u>A</u>	<u>10 YR 3/2</u>	<u>7.5 YR 4/6</u>	<u>Few/Medium</u>	<u>Loamy Sand</u>
<u>3-16+</u>	<u>BC</u>	<u>10 YR 3/1</u>	<u>7.5 YR 4/6</u>	<u>Common Medium</u>	<u>Sandy Clay Loam</u>
Hydric Soil Indicators:					
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is This Sampling Point Within a Wetland? Yes <u>X</u> No <u> </u>
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>	
Hydric Soils Present?	Yes <u>X</u>	No <u> </u>	
Remarks:			
Isolated Seeps			
120' x 15' = 0.04 acres			
300' x 20' = 0.14 acres			

Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/site: <u>Mayoworth Mine Permit 339C Amendment #4</u>	Date: <u>9/28/2007</u>
Applicant/Owner <u>Black Hills Bentonite</u>	County: <u>Johnson</u>
Investigator: <u>Intermountain Resources - Jim Orpet</u>	State: <u>Wyoming</u>
Do Normal Circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Community ID: <u>Seep</u>
Is the site significantly disturbed (Atypical Situation)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Transect ID: <u>Seep 2</u>
Is the area a potential Problem Area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If needed explain on reverse.)	Plot ID: <u>Seep 2</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Juncus balticus</i>	h	25%	OBL	9.	
2. <i>Panicum</i>	h	5%	FAC	10.	
3. <i>Cirsium arvense</i>	h	5%	FACU	11.	
4. <i>Melilotus officinalis</i>	h	5%	FACU	12.	
5. <i>Xanthium strumarium</i>	h	3%	FAC	13.	
6. <i>Hordeum jubatum</i>	h	5%	FACW	14.	
7. <i>Poa pratensis</i>	h	5%	FACU	15.	
8. <i>Agropyron smithii</i>	h	10%	FACU	16.	
Percent of Dominant Species that are OBL, FACW or FAC (Excluding FAC) <u>60 %</u>					
Remarks:					

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated In upper 12 Inches (Seasonally) <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain In Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (In.) Depth to Free Water in Pit: <u>>16</u> (In.) Depth to Saturated Soil: <u>>16</u> (In.)	
Remarks:	

SOILS

Plot ID: Seep 2

Map Unit Name (Series and Phase): <u>NA</u>					Drainage Class: <u>Well</u>
Taxonomy (Subgroup): <u>Aquent</u>					Field Observations Confirm Mapped Type? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<u>Profile</u> <u>Description:</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture Concentrations, Structure, etc.
<u>0-3</u>	<u>A</u>	<u>10 YR 3/2</u>	<u>7.5 YR 5/6</u>	<u>Common/fine</u>	<u>Sandy Clay Loam</u>
<u>3-16+</u>	<u>B</u>	<u>10 YR 3/2</u>	<u>7.5 YR 5/6</u>	<u>Common/fine</u>	<u>Sandy Clay Loam</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concentrations
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer In Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain In Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is This Sampling Point Within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Hydric Soils Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks:			
Marginal, Dry Seep - Isolated			
15' x 60' = 0.02 acres			

Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/site: <u>Mayoworth Mine Permit 339C Amendment #4</u>	Date: <u>9/28/2007</u>
Applicant/Owner <u>Black Hills Bentonite</u>	County: <u>Johnson</u>
Investigator: <u>Intermountain Resources - Jim Orpet</u>	State: <u>Wyoming</u>
Do Normal Circumstances exist on the site? Yes <u>X</u> No <u> </u>	Community ID: <u>Spring</u>
Is the site significantly disturbed (Atypical Situation)? Yes <u> </u> No <u>X</u>	Transect ID: <u>Spring 3</u>
Is the area a potential Problem Area? Yes <u> </u> No <u>X</u> (If needed explain on reverse.)	Plot ID: <u>Spring 3</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Carex nebraskensis</i>	h	25%	OBL	9.	
2. <i>Agrostis stolonifera</i>	h	20%	FAC ⁺	10.	
3. <i>Scirpus acutus</i>	h	5%	OBL	11.	
4. <i>Scirpus pungens</i>	h	10%	OBL	12.	
5. <i>Panicum capillare</i>	h	5%	FAC	13.	
6. <i>Hordeum jubatum</i>	h	5%	FACW	14.	
7. <i>Polypogon monspeliensis</i>	h	5%	OBL	15.	
8.			16.		
Percent of Dominant Species that are OBL, FACW or FAC (Excluding FAC) <u>100 %</u>					
Remarks:					

HYDROLOGY

<p><u> </u> Recorded Data (Describe in Remarks):</p> <p><u> </u> Stream, Lake, or Tide Gauge</p> <p><u> </u> Aerial Photographs</p> <p><u> </u> Other</p> <p><u>X</u> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u>X</u> Inundated</p> <p><u>X</u> Saturated In upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain In Remarks)</p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>0 - 6</u> (In.)</p> <p>Depth to Free Water in Pit: <u>10</u> (In.)</p> <p>Depth to Saturated Soil: <u>6</u> (In.)</p>	
Remarks:	

SOILS

Plot ID: Spring 3

Map Unit Name (Series and Phase): <u>NA</u>			Drainage Class: <u>Well</u>		
Taxonomy (Subgroup): <u>Aquent</u>			Field Observations Confirm Mapped Type? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
<u>Profile Description:</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture Concentrations, Structure, etc.
<u>0-3</u>	<u>A</u>	<u>10 YR 3/1</u>	<u>7.5 YR 4/6</u>	<u>Few/fine</u>	<u>Sandy Clay Loam</u>
<u>3-16+</u>	<u>B</u>	<u>10 YR 3/2</u>	<u>7.5 YR 4/6</u>	<u>Common/medium</u>	<u>Sandy Clay Loam</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol			<input type="checkbox"/> Concentrations		
<input type="checkbox"/> Histic Epipedon			<input type="checkbox"/> High Organic Content in Surface Layer In Sandy Soils		
<input type="checkbox"/> Sulfidic Odor			<input type="checkbox"/> Organic Streaking in Sandy Soils		
<input type="checkbox"/> Aquic Moisture Regime			<input type="checkbox"/> Listed on Local Hydric Soils List		
<input type="checkbox"/> Reducing Conditions			<input type="checkbox"/> Listed on National Hydric Soils List		
<input type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Other (Explain In Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is This Sampling Point Within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Hydric Soils Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks:			
<u>ISOLATED</u>			
Spring Area - 75' x 165'	=	0.28 acres	
Wet Drainage below - 15' x 725'	=	0.25 acres	
		<u>0.53 acres</u>	

Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/site: <u>Mayoworth Mine Permit 339C Amendment #4</u>	Date: <u>9/28/2007</u>
Applicant/Owner <u>Black Hills Bentonite</u>	County: <u>Johnson</u>
Investigator: <u>Intermountain Resources - Jim Orpet</u>	State: <u>Wyoming</u>
Do Normal Circumstances exist on the site? Yes <u>X</u> No <u> </u>	Community ID: <u>Seep</u>
Is the site significantly disturbed (Atypical Situation)? Yes <u> </u> No <u>X</u>	Transect ID: <u>Seep 4</u>
Is the area a potential Problem Area? Yes <u> </u> No <u>X</u> (If needed explain on reverse.)	Plot ID: <u>Seep 4</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Scirpus pungens</i>	h	30%	OBL	9.	
2. <i>Triglochin maritima</i>	h	5%	OBL	10.	
3. <i>Distichlis spicata</i>	h	20%	FACW	11.	
4.				12.	
5.				13.	
6.				14.	
7.				15.	
8.				16.	
Percent of Dominant Species that are OBL, FACW or FAC (Excluding FAC) <u>100 %</u>					
Remarks:					

HYDROLOGY

<p><u> </u> Recorded Data (Describe in Remarks):</p> <p><u> </u> Stream, Lake, or Tide Gauge</p> <p><u> </u> Aerial Photographs</p> <p><u> </u> Other</p> <p><u>X</u> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u> </u> Inundated</p> <p><u>X</u> Saturated In upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain In Remarks)</p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>0 - 2</u> (In.)</p> <p>Depth to Free Water in Pit: <u>6</u> (In.)</p> <p>Depth to Saturated Soil: <u>10</u> (In.)</p>	
Remarks:	

SOILS

Plot ID: Seep 4

Map Unit Name (Series and Phase): <u>NA</u>				Drainage Class: <u>Well</u>	
Taxonomy (Subgroup): <u>Aquent</u>				Field Observations Confirm Mapped Type? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
<u>Profile</u>					
<u>Description:</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture Concentrations, Structure, etc.
<u>3-16+</u>	<u>AC</u>	<u>10 YR 4/2</u>	<u>7.5 YR 4/6</u>	<u>Common/medium</u>	<u>Sandy Clay Loam</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
_____ Histosol			_____ Concentrations		
_____ Histic Epipedon			_____ High Organic Content in Surface Layer In Sandy Soils		
_____ Sulfidic Odor			_____ Organic Streaking in Sandy Soils		
_____ Aquic Moisture Regime			_____ Listed on Local Hydric Soils List		
_____ Reducing Conditions			_____ Listed on National Hydric Soils List		
_____ Gleyed or Low-Chroma Colors			_____ Other (Explain In Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is This Sampling Point Within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Hydric Soils Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks:			
Several Isolated seep areas - 0.5 acres			

Approved by HQUSACE 3/92