

## **APPENDIX F**

### **WETLANDS AND OTHER SURFACE WATERS REPORT**

***PRELIMINARY***

**WETLANDS AND OTHER SURFACE WATERS REPORT**

**Project Number 328-02-14  
Big Horn County and Washakie County, Wyoming**

*Prepared for:*

Westside Irrigation District  
Worland, WY

*Prepared by:*

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## I. INTRODUCTION

The proposed project involves the conveyance of a parcel of land, comprising approximately 16,500 acres, from the Bureau of Land Management (BLM) to the Westside Irrigation District (WID). The parcel is located in southern Big Horn County and northern Washakie County, immediately west of Worland, Wyoming. The site is bound to the east by the Bighorn Canal, of which some sections occur within the project boundary (Figure 1). WID proposes to use those portions of the parcel that are irrigable and that avoid impacts to wildlife, recreation, sensitive environmental areas, and other land uses. The majority of the project area is potentially suitable for irrigation by center pivot sprinkler systems. Irrigation water would be obtained by pumping water from the Bighorn River at three locations. Each site would contain two pumps together capable of pumping 80 cfs, a pump station and fore bay.

The majority of the 16,500-acre parcel is dominated by sagebrush steppe. Although extensive tracts of salt desert shrub occur immediately adjacent the site to the west, only small, scattered inclusions of this habitat were observed within the parcel. Four intermittent drainages convey water across the site in an easterly direction into the Bighorn River. The four tributaries, listed from north to south, include Alamo, Fivemile, Sixmile, and Tenmile Creeks. All of these drainages are culverted beneath the Bighorn Canal and presumably receive additional water inputs from the canal via seepage or diversions. Three impoundments (stockponds) were observed on site, one of which was inundated and supported hydrophytic vegetation (Figure 1).

This report has been prepared to document a survey that was conducted for waters of the United States within the 16,500-acre project area. The term "waters of the United States" has been defined to include essentially all surface waters, including both those connected to a surface tributary system and isolated waters that are not part of a tributary system. The term also includes wetlands. A summary of the wetland delineation methodology and results is provided below.

## II. METHODS

WEST biologists surveyed all portions of the project site for waters of the U.S. Development in such areas is subject to the permit requirements of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (1972). Field surveys were conducted from September 12 through September 16, 2005.

Prior to conducting the survey, WEST biologists reviewed U.S. Geological Survey (USGS) topographic maps, soil survey information from the Natural Resource Conservation Service (NRCS), and U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps for the survey area. Preparation of this report complies with guidelines issued by the Regulatory Branch of the Sacramento District, USACE, titled *Minimum Standards for Acceptance of Preliminary Wetland Delineations* and a guidance letter issued by the Wyoming Regulatory Office, USACE, dated 1996.

Wetlands were delineated in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). This manual emphasizes a three-parameter approach to identify wetlands that may be federally regulated, including the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. These criteria were applied to establish the

presence and extent of wetlands. The delineated wetlands were classified according to methodologies set forth in *Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.*, 1979).

**Vegetation.** Plants observed at a given survey location were identified to species using a standard flora appropriate for Wyoming, *Vascular Plants of Wyoming* (Dorn 2001). Plant species nomenclature and indicator status were assigned according to the *National List of Plant Species that Occur in Wetlands: National Summary* (Reed 1988) and the *National List of Plant Species that Occur in Wetlands: Northwest Supplement (Region 9)* (Reed 1993). A list of species was then compiled for the survey area and an assessment of the dominant species was made. It was then determined if the survey area supported wetland vegetation. The 1987 manual frequently uses the term "dominant vegetation" but provides no definition. The term is defined by the 1989 Federal Manual for Identifying and Delineating Wetlands, which is no longer in use, as those species the dominance measures of which, when added together, immediately exceed 50% of the total dominance measure, plus those individual species which contribute 20% or more of the total dominance measure. This definition was used for this project.

Wetland indicator species are so designated according to their frequency of occurrence in wetlands. For instance, a species with a presumed frequency of occurrence of 67 percent to 99 percent in wetlands is designated a facultative wetland indicator species. The wetland indicator groups, indicator symbol, and the frequency of occurrence of species within wetlands are found in Table 1.

**Table 1. Plant Wetland Indicator Status Categories\***

| Indicator Category  | Symbol | Frequency of Occurrence |
|---------------------|--------|-------------------------|
| OBLIGATE            | OBL    | Greater than 99%        |
| FACULTATIVE WETLAND | FACW   | 67-99%                  |
| FACULTATIVE         | FAC    | 34-66%                  |
| FACULTATIVE UPLAND  | FACU   | 1-33%                   |
| UPLAND              | UPL    | Less than 1%            |

\* Based upon information contained in the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987).

Obligate and facultative wetland indicator species are hydrophytes that occur “in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present” (Environmental Laboratory 1987). Facultative indicator species may be considered wetland indicator species when found growing in hydric soils that experience periodic saturation.

**Soils.** Where possible, the top 22 inches of the soil profile was examined for hydric characteristics. Such characteristics include the presence of organic soils (Histosols), histic epipedons, aquic or peraquic moisture regime, presence of soil on hydric soil list, mottling indicated by the presence of gleyed or bright spots of colors (in the former case, blue grays; in the latter case, orange red, or red brown) within the soil horizons observed. Mottling of soils usually indicates poor aeration and lack of good drainage. Munsell Soil Notations (Kollmorgen Instr. Corp. 1990) were recorded for the soil matrix for each soil sample. The last digit of the

Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with 0 for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix which are one (1) or less, or two (2) or less when mottling is present, are typical of soils which have developed under anaerobic conditions.

In sandy soils, such as alluvial deposits in the bottom of drainage channels, hydric soil indicators include high organic matter content in the surface horizon and streaking of subsurface horizons by organic matter.

**Hydrology.** Each of the survey areas was examined for positive field indicators of wetland hydrology. Such indicators include visual observation of inundation and/or soil saturation, watermarks, drift lines, water-borne sediment deposits, water-stained leaves, and drainage patterns in wetlands. In the COE Omaha District, in which the project area is included, evidence must be sufficient to indicate continuous saturation for at least 5% of the growing season. For the project area, this means that soil saturation for 6 to 7 consecutive days is required.

Wetland boundaries were recorded with a Global Positioning System (GPS) unit with sub-meter accuracy. The location of each wetland sample point was also recorded with the GPS unit.

### III. RESULTS

Wetland habitat types identified on the project site include wet meadow, marsh, fringe wetland, scrub shrub wetland, and riparian woodland. With the exception of one wetland on site (WL-2), the hydrology for all other wetlands was associated with the proximity of the Bighorn Canal (*i.e.*, seepage, diversions, and/or high water table). Figure 1 shows an aerial photograph of the site with the locations of all the wetlands. Figures depicting each individual wetland and associated sample point(s) are provided in Appendix A. Wetland data forms are provided in Appendix B. Photos of wetlands and sample points are provided in Appendix C. The following section describes representative wetlands surveyed within the project area, including dominant plant species and their indicator status, hydrology, and hydric soil characteristics. Information regarding each of the wetlands, including type, acreage, and a brief description, are provided in Table 2. A list of all plant species encountered during the wetland survey is provided in Appendix D.

Wet meadow wetlands were observed in several locations along the perimeter of the Bighorn Canal (WL-4a, WL-6; Figure 1). Plant species commonly identified in these wetlands includes slender wheatgrass (*Agropyron trachycaulum*; FAC), creeping bentgrass (*Agrostis stolonifera*; FAC+), meadow foxtail (*Alopecurus pratensis*; FACW), beaked sedge (*Carex rostrata*; OBL), foxtail barley (*Hordeum jubatum*; FAC), Baltic rush (*Juncus balticus*; FACW+), and reed canarygrass (*Phalaris arundinacea*; FACW). Wetland hydrology in wet meadows was mostly associated with seepage and a high water table resulting from their close proximity to the Bighorn Canal. Additionally, they typically occurred in topographically lower positions on the landscape where surface water may collect. Soils in wet meadows were variable in both texture and color. They ranged from silty clays with low chroma values and distinct mottling to sandy loams with considerable organic streaking.

**Table 2. Wetlands delineated at the Westside Irrigation District project.**

| Wetland ID   | Wetland Type      | Size (acres) |
|--------------|-------------------|--------------|
| WL-1         | Marsh             | 1.94         |
| WL-2         | Scrub shrub       | 0.52         |
| WL-3a,b      | Scrub shrub       | 0.12         |
| WL-3c        | Scrub shrub       | 0.82         |
| WL-3d        | Fringe wetland    | 0.02         |
| WL-3e        | Scrub shrub       | 0.1          |
| WL-3f        | Marsh             | 0.35         |
| WL-4a        | Wet meadow        | 0.01         |
| WL-4b        | Riparian woodland | 0.85         |
| WL-5a        | Scrub shrub       | 0.81         |
| WL-5b        | Scrub shrub       | 1.36         |
| WL-6         | Wet meadow        | 0.67         |
| <b>Total</b> |                   | <b>7.57</b>  |

Marsh wetland was mapped in two locations within the project area (WL-1, -3f; Figure 1). These wetlands were typically dominated by tall graminoid species including reed canarygrass (FACW), common threesquare (*Scirpus pungens*; OBL), softstem bulrush (*Scirpus validus*; OBL), and broadleaf cattail (*Typha latifolia*; OBL). Hydrology of the marsh wetlands was associated with a high water table, presumably created from the presence of the Bighorn Canal. Soils were typically saturated to the soil surface and portions of these wetlands were inundated (up to 8 inches). Soil texture and color varied, but abundant gley mottling was typically observed.

Fringe wetland was delineated along the portion of Fivemile Creek adjacent the Bighorn Canal (WL-3d; Figure 1). Dominant plant species, hydrology, and soil characteristics were similar to those observed in wet meadow habitat.

Scrub shrub and riparian woodland occurred along Alamo Creek, Fivemile Creek, and Tenmile Creek, in the vicinity of the Bighorn Canal (WL-2, 3ab, 3c, 3e, 4b, 5ab; Figure 1). Dominant tree and shrub species observed include plains cottonwood (*Populus deltoides*; FAC), Russian olive (*Elaeagnus angustifolia*; FAC), whiplash willow (*Salix lasiandra*; FACW+), sandbar willow (*Salix exigua*; OBL), tamarisk (*Tamarix chinensis*; FACW), and prickly rose (*Rosa acicularis*; FACU). Dominant herbaceous species included cattail, reed canarygrass, and beaked sedge. Hydrology was associated with drainage channel depressions and proximity to the Bighorn Canal. Soils typically had low chroma values and some mottling. One scrub shrub wetland was observed at an impoundment along an unnamed, intermittent tributary to Tenmile Creek, along the southern boundary of the site (WL-2; Figure 1). Dominant species included plains cottonwood and whiplash willow around the perimeter of the shallow pond, with sparse broadleaf cattail within the pond. This wetland occurred far from the Bighorn Canal. Its hydrology was associated with its location in a large depression within an impounded, intermittent drainage. Clay soils with gleys and/or low chroma values were observed at this wetland.

#### IV. LITERATURE CITED

- Cowardin, L. M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79-31, U.S. Department of the Interior, Fish and Wildlife Service.
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- Kollmorgen, Instruments Corp. 1990. Munsell Soil Color Charts. New York.
- Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: national summary. U.S. Fish and Wildlife Service.
- Reed, P.B., Jr. 1993. National list of plant species that occur in wetlands: northwest supplement (Region 9). U.S. Fish and Wildlife Service.
- Weber, William A. 1976. Rocky Mountain Flora. University Press of Colorado.

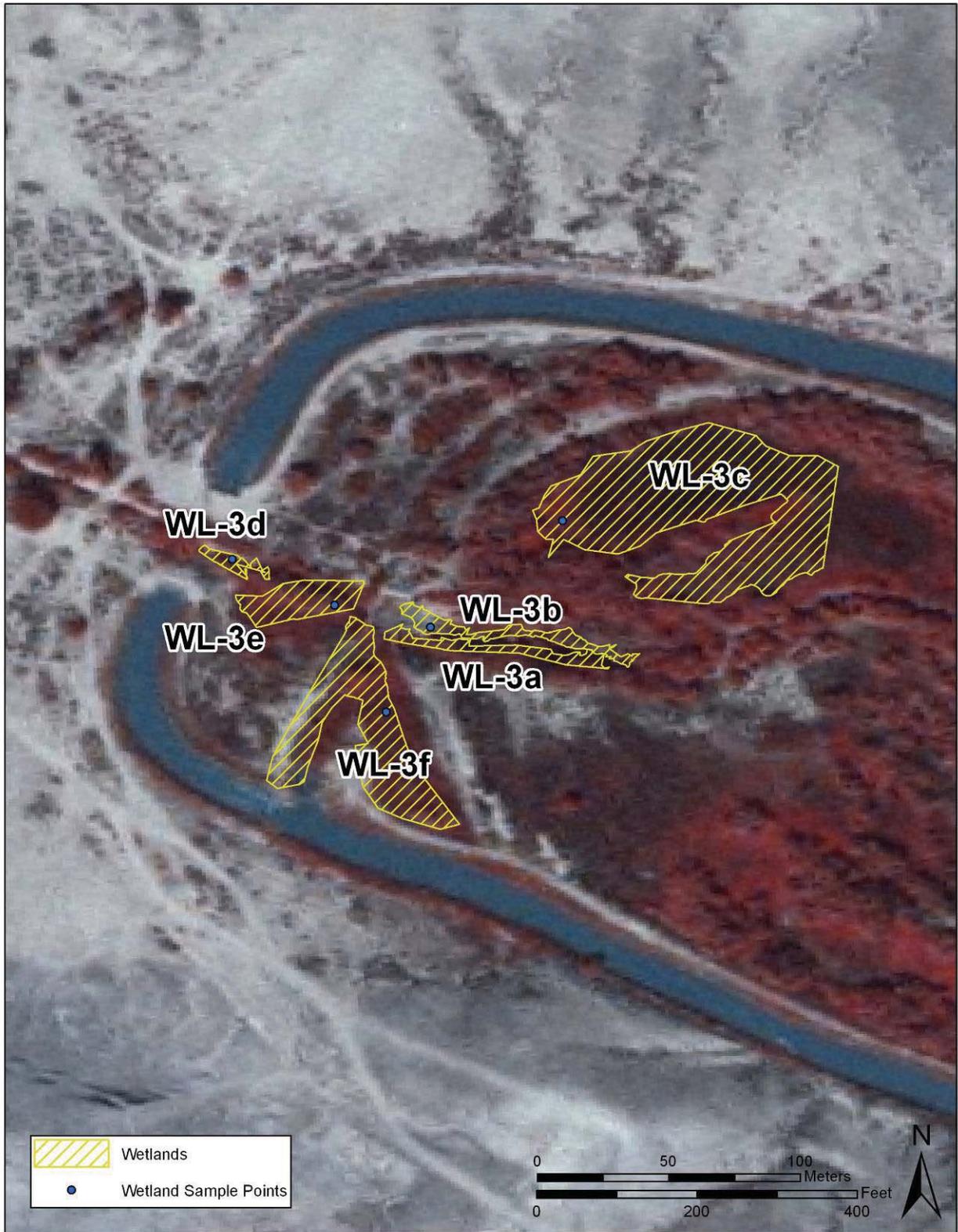
**Appendix A. Images for wetlands delineated for the Westside Irrigation District project.**



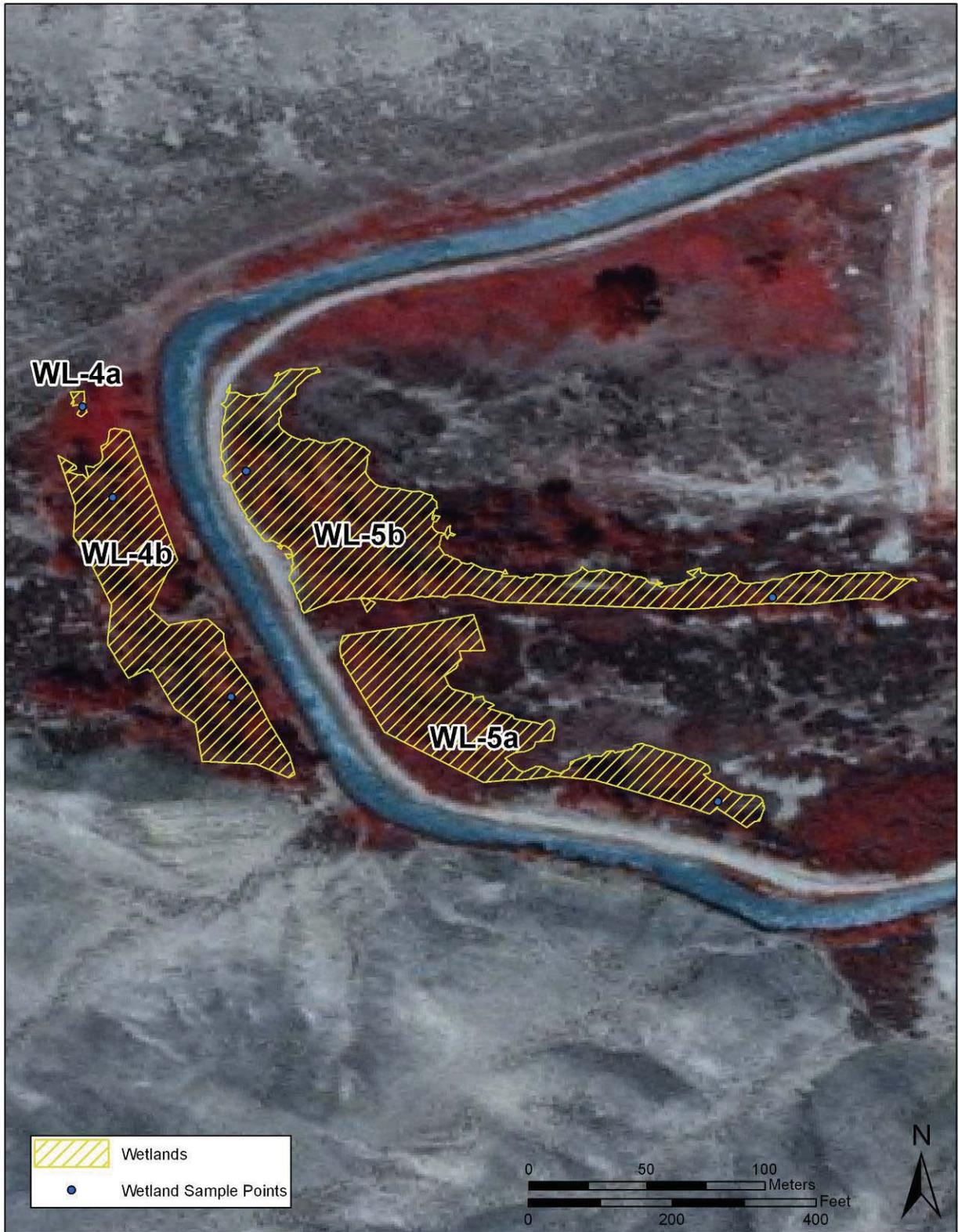
Map 1. Location of wetland 1 and associated sample point.



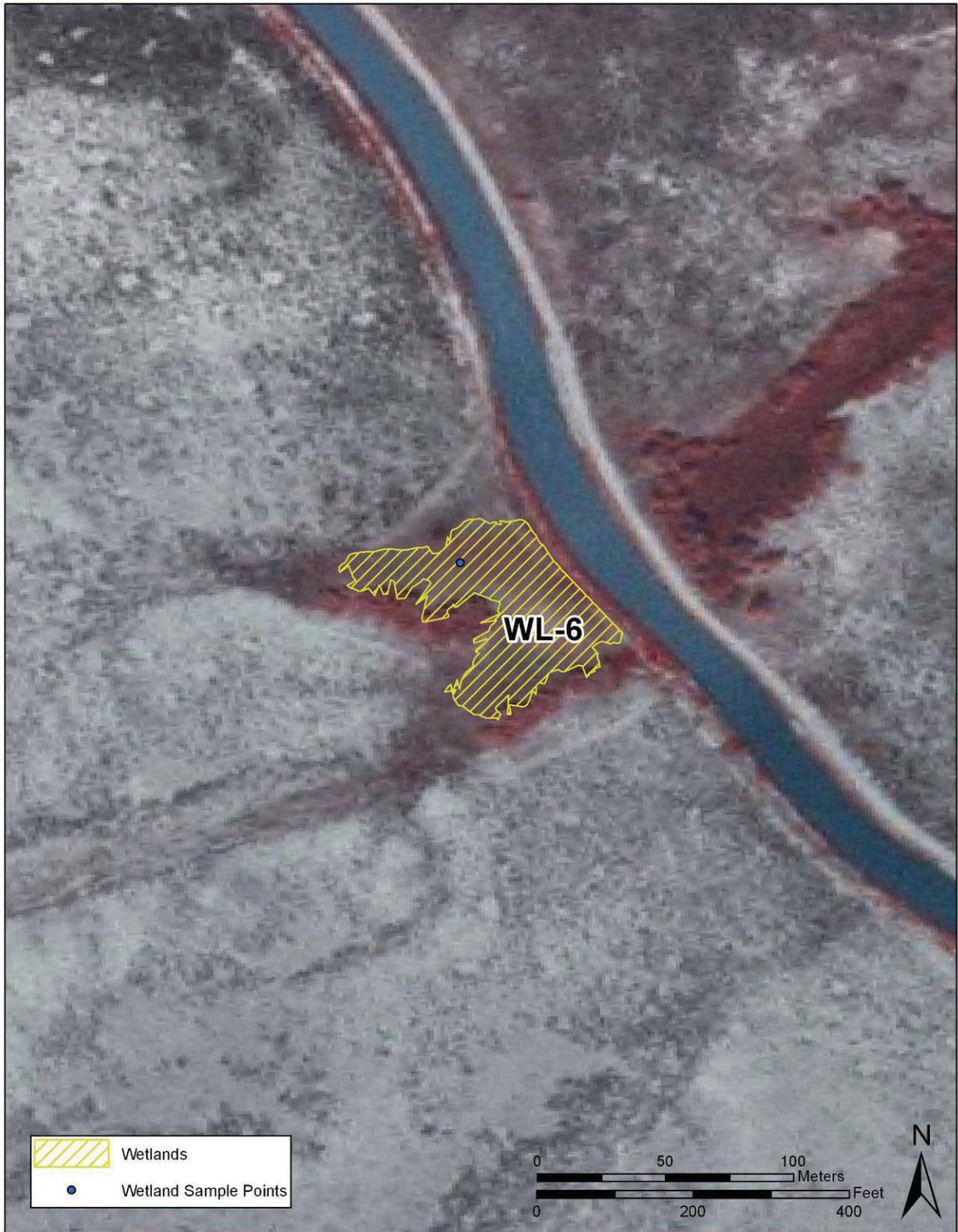
Map 2. Location of wetland 2 and associated sample point.



Map 3. Location of wetland 3 and associated sample points.



Map 4. Location of wetland 4 and 5 with associated sample points.



**Appendix B. Data forms for wetlands delineated at the Westside Irrigation District project.**

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

|   |  |                     |
|---|--|---------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 9/12/05       |
| Applicant/Owner:  |  | County: Big Horn    |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming      |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: marsh |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:        |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-1       |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Scirpus microcarpus   | 40      | Herb    | OBL       |
| 2. Typha latifolia   | 15      | Herb    | OBL       |
| 3. Eleocharis palustris  | 10      | Herb    | OBL       |
| 4. Scirpus pungens   | 10      | Herb    | OBL       |
| 5. Hordeum jubatum   | 10      | Herb    | FAC       |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). |         | 100%    |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available       | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br>___ Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water     ___ None ___ (in.)<br><br>Depth to Free Water in Pit     ___ None ___ (in.)<br><br>Depth to Saturated Soil     ___ None ___ (in.)          |  |
| Remarks: Wetland located at mouth of intermittent drainage, adjacent Bighorn Canal; wl is connected to canal through narrow channel (breach) in levee; portions of wl inundated up to 10 inches |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____ |         | Drainage Class: _____                                    |                                  |                              |  |
|--|---------|--|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                 |         | Field Observations<br>Confirm Mapped Type? Yes___ No___  |                                  |                              |  |
| Profile Description                        |         |  |                                  |                              |  |
| Depth<br>(inches)                          | Horizon | Matrix Color<br>(Munsell Moist)                          | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-6  |         | 10YR 5/2   | 7.5YR 3/4                        | Common/distinct              | Silty clay                               |
|  |         |  |                                  |                              |  |
|  |         |  |                                  |                              |  |
|  |         |  |                                  |                              |  |
|  |         |  |                                  |                              |  |
|  |         |  |                                  |                              |  |
| Hydric Soil Indicators:                    |         |  |                                  |                              |  |
| ___ Histosol                               |         | ___ Concretions (iron)                                   |                                  |                              |  |
| ___ 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                    |                                  |                              |  |
| <u>X</u> Reducing Conditions               |         | ___ Listed on National Hydric Soils List                 |                                  |                              |  |
| ___ Gleyed or Low-Chroma Colors            |         | ___ Other (Explain in Remarks)                           |                                  |                              |  |
| Remarks:                                   |         |  |                                  |                              |  |

**WETLAND DETERMINATION**

|                                 |                     |   |
|---------------------------------|---------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No ___ | Is this Sampling Point Within a Wetland?<br>Yes <u>X</u> No ___ |
| Wetland Hydrology Present?      | Yes <u>X</u> No ___ |   |
| Hydric Soils Present?           | Yes <u>X</u> No ___ |   |
| Remarks:                        |                     |   |

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

|   |  |                           |
|---|--|---------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 9/13/05             |
| Applicant/Owner:  |  | County: Washakie          |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming            |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: scrub shrub |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:              |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-2             |

**VEGETATION**

| Dominant Plant Species  | % Cover | Stratum | Indicator |
|---|---------|---------|-----------|
| 1. Salix lasiandra  | 45      | Shrub   | FACW+     |
| 2. Populus deltoides  | 35      | Tree    | FAC       |
| 3. Typha latifolia  | 10      | Herb    | OBL       |
| 4. Xanthium strumarium  | 5       | Herb    | FAC       |
| 5. Iva axillaris  | 5       | Herb    | FAC       |
| 6.  |         |         |           |
| 7.  |         |         |           |
| 8.  |         |         |           |
| 9.  |         |         |           |
| 10.   |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u>  |         |         |           |
| Remarks: Majority of vegetation around perimeter/shoreline of small impoundment; impoundment appears to be slowly filling in with Typha |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br>___ Saturated in Upper 12 Inches<br><input checked="" type="checkbox"/> Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>None</u> (in.)<br><br>Depth to Saturated Soil <u>None</u> (in.)                   |  |
| Remarks: Sample point along vegetated bank of shallow (up to 2' deep) impoundment   |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-6   |         | 10YR 3/2  | 4/10GY                           | Common/prominent             | Clay                                     |
| 6-16  |         | 5/10G   | 7.5YR 4/4                        | Many/prominent               | Clay                                     |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <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 checked="" type="checkbox"/> Reducing Conditions         |         | <input type="checkbox"/> Listed on National Hydric Soils List                 |                                  |                              |  |
| <input checked="" 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 ___ | Is this Sampling Point Within a Wetland?<br>Yes <input checked="" type="checkbox"/> No ___ |
| Wetland Hydrology Present?      | Yes <input checked="" type="checkbox"/> No ___ |  |
| Hydric Soils Present?           | Yes <input checked="" type="checkbox"/> No ___ |  |
| Remarks:                        |  |  |

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

|   |  |                           |
|---|--|---------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 9/13/05             |
| Applicant/Owner:  |  | County: Washakie          |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming            |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: scrub shrub |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:              |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-3a,b          |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Elaeagnus angustifolia  | 60      | Tree    | FAC       |
| 2. Salix exigua  | 15      | Shrub   | OBL       |
| 3. Xanthium strumarium   | 30      | Herb    | FAC       |
| 4. Agropyron trachycaulum  | 30      | Herb    | FAC       |
| 5. Typha latifolia   | 10      | Herb    | OBL       |
| 6. Scirpus pungens   | 10      | Herb    | OBL       |
| 7. Phalaris arundinacea  | 10      | Herb    | FACW      |
| 8. Tamarix chinensis   | 10      | Shrub   | FACW      |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>None</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)                      |  |
| Remarks: Fringe wetlands along both banks of Tenmile Creek  |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                                       |         | Drainage Class: _____   |                                  |                              |  |
|--|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____   |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description  |         |   |                                  |                              |  |
| Depth<br>(inches)  | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-3  |         | -----   |                                  |                              | Sand                                     |
| 3-14   |         | 2.5YR 4/2   | 4/5GY                            | Many/prominent               | Sandy loam                               |
| 14+  |         | -----   |                                  |                              | Gravelly sand                            |
|  |         |   |                                  |                              |  |
|  |         |   |                                  |                              |  |
|  |         |   |                                  |                              |  |
| Hydric Soil Indicators:  |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol  |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <input type="checkbox"/> Histic Epipedon   |         | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |                                  |                              |  |
| <input type="checkbox"/> Sulfidic Odor   |         | <input checked="" 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 checked="" type="checkbox"/> Gleyed or Low-Chroma Colors                  |         | <input type="checkbox"/> Other (Explain in Remarks)                           |                                  |                              |  |
| Remarks: Soils in area are highly variable due to evident deposition and erosion |         |   |                                  |                              |  |

**WETLAND DETERMINATION**

|                                 |   |                             |  |
|---------------------------------|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is this Sampling Point Within a Wetland?<br>Yes <input checked="" type="checkbox"/> No |
| 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:                        |   |                             |  |

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

|   |  |                     |
|---|--|---------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 9/13/05       |
| Applicant/Owner:  |  | County: Washakie    |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming      |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: marsh |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:        |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-3c      |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Typha latifolia   | 80      | Herb    | OBL       |
| 2. Phalaris arundinacea  | 10      | Herb    | FACW      |
| 3. Scirpus validus   | 10      | Herb    | OBL       |
| 4.   |         |         |           |
| 5.   |         |         |           |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <span style="float:right">_____ 100%</span> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|  |  |
|--|--|
| Recorded Data (Describe in Remarks)<br>_____ Stream, Lake or Tide Gauge<br>_____ Aerial Photographs (infrared)<br>_____ Other<br><input checked="" type="checkbox"/> No Recorded Data Available  | Wetland Hydrology Indicators:<br>Primary Indicators:<br>_____ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>_____ Water Marks<br>_____ Drift Lines<br>_____ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>_____ Oxidized Root Channels in upper 12 in.<br>_____ Water-Stained Leaves<br>_____ Local Soil Survey Data<br>_____ FAC-Neutral Test<br>_____ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <span style="float:right">_____ (in.)</span><br>Depth to Free Water in Pit <span style="float:right">_____ (in.)</span><br>Depth to Saturated Soil <span style="float:right">_____ (in.)</span> |  |
| Remarks: Wetland within large depression adjacent Bighorn Canal and Tenmile Creek  |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-16  |         | 10YR 4/2  | 2.5Y/N                           | Many/prominent               | Silty clay                               |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <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 checked="" type="checkbox"/> Reducing Conditions         |         | <input type="checkbox"/> Listed on National Hydric Soils List                 |                                  |                              |  |
| <input checked="" 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?<br>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: Eastern boundary of wetland was cut off because of project boundary, but wetland extends further east (outside project boundary) |   |                             |   |

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

|   |  |                              |
|---|--|------------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 9/13/05                |
| Applicant/Owner:  |  | County: Washakie             |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming               |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: fringe wetland |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:                 |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-3d               |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Phragmites australis  | 60      | Herb    | FACW+     |
| 2. Scirpus pungens   | 20      | Herb    | OBL       |
| 3. Xanthium strumarium   | 10      | Herb    | FAC       |
| 4. Agropyron trachycaulum  | 10      | Herb    | FAC       |
| 5.   |         |         |           |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br><input checked="" type="checkbox"/> Drift Lines<br><input checked="" type="checkbox"/> Sediment Deposits<br>___ Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>None</u> (in.)<br><br>Depth to Saturated Soil <u>None</u> (in.)                   |  |
| Remarks: Wetland spans channel of Tenmile Creek   |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____  |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____  |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-16  |         | -----   | 3/10Y                            | Many/prominent               | Loamy sand                               |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol   |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <input type="checkbox"/> Histic Epipedon  |         | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |                                  |                              |  |
| <input type="checkbox"/> Sulfidic Odor  |         | <input checked="" 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: Difficult to determine matrix color because of high sand content; organic streaking throughout profile |         |   |                                  |                              |  |

**WETLAND DETERMINATION**

|                                 |   |                             |   |
|---------------------------------|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is this Sampling Point Within a Wetland?<br>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:                        |   |                             |   |

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

|   |  |                           |
|---|--|---------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 09/13/05            |
| Applicant/Owner:  |  | County: Washakie          |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming            |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: scrub shrub |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:              |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-3e            |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Salix exigua  | 60      | Shrub   | OBL       |
| 2. Phragmites australis  | 20      | Herb    | FACW+     |
| 3. Elaeagnus anugustifoliua  | 10      | Tree    | FAC       |
| 4. Xanthium strumarium   | 5       | Herb    | FAC       |
| 5. Agropyron trachycaulum  | 5       | Herb    | FAC       |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br><input checked="" type="checkbox"/> Drift Lines<br>___ Sediment Deposits<br>___ Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>None</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)                      |  |
| Remarks: Fringe wetland along Tenmile Creek; includes portions of secondary stream terrace. Soil pit saturated to soil surface.   |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-16  |         | 10YR 4/2  | 2.5Y/5G                          | Many/prominent               | Sandy loam                               |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <input type="checkbox"/> Histic Epipedon                        |         | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |                                  |                              |  |
| <input type="checkbox"/> Sulfidic Odor                          |         | <input checked="" 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 checked="" 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?<br>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:                        |   |                             |   |

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

|   |  |                     |
|---|--|---------------------|
| Project/Site: Westside irrigation District                                |  | Date: 09/13/05      |
| Applicant/Owner:  |  | County: Washakie    |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming      |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: marsh |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:        |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-3f      |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Phragmites australis  | 50      | Herb    | FACW+     |
| 2. Typha latifolia   | 20      | Herb    | OBL       |
| 3. Carex rostrata  | 15      | Herb    | OBL       |
| 4. Scirpus validus   | 10      | Herb    | OBL       |
| 5. Cirsium arvense   | 5       | Herb    | FACU      |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br>___ Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>10</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)                        |  |
| Remarks: Wetland spans two, connected slough-like channels. Channels presumably function as diversion of overflow channels from Bighorn Canal.  |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-4   |         | 10YR 4/1  | 2.5N                             | Common/prominent             | Sandy clay                               |
| 4-16  |         | 10YR 4/1  | 2.5N                             | Many/prominent               | Sandy loam                               |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <input type="checkbox"/> Histic Epipedon                        |         | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |                                  |                              |  |
| <input type="checkbox"/> Sulfidic Odor                          |         | <input checked="" 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 checked="" 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?<br>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:                        |   |                             |   |

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

|   |  |                          |
|---|--|--------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 09/14/05           |
| Applicant/Owner:  |  | County: Big Horn         |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming           |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: wet meadow |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:             |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-4a           |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Carex rostrata  | 70      | Herb    | OBL       |
| 2. Scirpus pungens   | 20      | Herb    | OBL       |
| 3. Xanthium strumarium   | 5       | Herb    | FAC       |
| 4.   |         |         |           |
| 5.   |         |         |           |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br>___ Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>None</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)                      |  |
| Remarks: Wetland located within small depression near Bighorn Canal; portions of wetland inundated up to 3 inches.  |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____ |         | Drainage Class: _____   |                                  |                              |  |
|--|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                 |         | Field Observations<br>Confirm Mapped Type? Yes___ No___       |                                  |                              |  |
| Profile Description                        |         |   |                                  |                              |  |
| Depth<br>(inches)                          | Horizon | Matrix Color<br>(Munsell Moist)                               | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-4  |         | 10YR 4/1  | 2.5/N                            | Common/prominent             | Sandy clay loam                          |
| 4-16                                       |         | 10YR 4/1  | 2.5/N                            | Many/prominent               | Clay loam                                |
|  |         |   |                                  |                              |  |
|  |         |   |                                  |                              |  |
|  |         |   |                                  |                              |  |
|  |         |   |                                  |                              |  |
| Hydric Soil Indicators:                    |         |   |                                  |                              |  |
| ___ Histosol                               |         | ___ Concretions (iron)  |                                  |                              |  |
| ___ Histic Epipedon                        |         | <u>X</u> High Organic Content in Surface Layer in Sandy Soils |                                  |                              |  |
| ___ Sulfidic Odor                          |         | <u>X</u> Organic Streaking in Sandy Soils                     |                                  |                              |  |
| ___ Aquic Moisture Regime                  |         | ___ Listed on Local Hydric Soils List                         |                                  |                              |  |
| ___ Reducing Conditions                    |         | ___ Listed on National Hydric Soils List                      |                                  |                              |  |
| <u>X</u> Gleyed or Low-Chroma Colors       |         | ___ Other (Explain in Remarks)                                |                                  |                              |  |
| Remarks:                                   |         |   |                                  |                              |  |

**WETLAND DETERMINATION**

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No ___ | Is this Sampling Point Within a Wetland?<br>Yes <u>X</u> No ___ |
| Wetland Hydrology Present? Yes <u>X</u> No ___      |   |
| Hydric Soils Present? Yes <u>X</u> No ___           |   |
| Remarks:  |   |

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

|   |  |                                 |  |
|---|--|---------------------------------|--|
| Project/Site: Westside Irrigation District                                |  | Date: 09/14/05                  |  |
| Applicant/Owner:  |  | County: Big Horn                |  |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming                  |  |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: riparian woodland |  |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID: Sample point 1     |  |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-4b                  |  |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Elaeagnus angustifolia  | 25      | Tree    | FAC       |
| 2. Salix lasiandra   | 15      | Shrub   | FACW+     |
| 3. Typha latifolia   | 35      | Herb    | OBL       |
| 4. Carex rostrata  | 35      | Herb    | OBL       |
| 5. Alopecurus pratensis  | 15      | Herb    | FACW      |
| 6. Agrostis stolonifera  | 15      | Herb    | FAC+      |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>8</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)                         |  |
| Remarks: Wetland located adjacent Bighorn Canal and is bisected by intermittent drainage.   |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____ |         | Drainage Class: _____                                    |                                  |                              |  |
|--|---------|--|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                 |         | Field Observations<br>Confirm Mapped Type? Yes___ No___  |                                  |                              |  |
| Profile Description                        |         |  |                                  |                              |  |
| Depth<br>(inches)                          | Horizon | Matrix Color<br>(Munsell Moist)                          | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-5  |         | 10YR 2/1   | 2.5/N                            | Few/distinct                 | Silt loam                                |
| 5-16                                       |         | 10YR 4/1   | 2.5/N                            | Many/prominent               | Silty clay                               |
|  |         |  |                                  |                              |  |
|  |         |  |                                  |                              |  |
|  |         |  |                                  |                              |  |
|  |         |  |                                  |                              |  |
| Hydric Soil Indicators:                    |         |  |                                  |                              |  |
| ___ Histosol                               |         | ___ Concretions (iron)                                   |                                  |                              |  |
| ___ 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                    |                                  |                              |  |
| <u>X</u> Reducing Conditions               |         | ___ Listed on National Hydric Soils List                 |                                  |                              |  |
| <u>X</u> Gleyed or Low-Chroma Colors       |         | ___ Other (Explain in Remarks)                           |                                  |                              |  |
| Remarks:                                   |         |  |                                  |                              |  |

**WETLAND DETERMINATION**

|  |   |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No ___  | Is this Sampling Point Within a Wetland?<br>Yes <u>X</u> No ___ |
| Wetland Hydrology Present? Yes <u>X</u> No ___   |   |
| Hydric Soils Present? Yes <u>X</u> No ___  |   |
| Remarks: Although the wetland was identified as riparian woodland, it includes small, open areas dominated by emergent vegetation (see dominant plant species list). |   |

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

|   |   |  |                                 |
|---|---|--|---------------------------------|
| Project/Site: Westside Irrigation District                                |   |  | Date: 09/14/05                  |
| Applicant/Owner:  |   |  | County: Big Horn                |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |   |  | State: Wyoming                  |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> | No                                     | Community ID: riparian woodland |
| Is the site significantly disturbed (Atypical situation?)                 | Yes                                     | No <input checked="" type="checkbox"/> | Transect ID: Sample point 2     |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes                                     | No <input checked="" type="checkbox"/> | Plot ID: WL-4b                  |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Elaeagnus angustifolia  | 5       | Tree    | FAC       |
| 2. Salix amygdaloides  | 10      | Tree    | FACW+     |
| 3. Salix lasiandra   | 15      | Shrub   | FACW+     |
| 4. Carex rostrata  | 30      | Herb    | OBL       |
| 5. Typha latifolia   | 25      | Herb    | OBL       |
| 6. Glycyrrhiza lepidota  | 20      | Herb    | FAC+      |
| 7. Agrostis stolonifera  | 10      | Herb    | FAC+      |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|  |  |
|--|--|
| Recorded Data (Describe in Remarks)<br><input type="checkbox"/> Stream, Lake or Tide Gauge<br><input type="checkbox"/> Aerial Photographs (infrared)<br><input type="checkbox"/> Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br><input type="checkbox"/> Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br><input type="checkbox"/> Oxidized Root Channels in upper 12 in.<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>10</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)   |  |
| Remarks: Sample point located adjacent Big Horn Canal levee; hydrology presumably associated with canal seepage.   |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-3   |         | 10YR 4/1  |                                  |                              | Silt loam                                |
| 3-16  |         | 2.5Y 4/2  | 7.5YR 4/4                        | Common/distinct              | Clay                                     |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <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 checked="" type="checkbox"/> Reducing Conditions         |         | <input type="checkbox"/> Listed on National Hydric Soils List                 |                                  |                              |  |
| <input checked="" 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 ___ | Is this Sampling Point Within a Wetland?<br>Yes <input checked="" type="checkbox"/> No ___ |
| Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No ___      |  |
| Hydric Soils Present? Yes <input checked="" type="checkbox"/> No ___           |  |
| Remarks:   |  |

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

|   |  |                           |
|---|--|---------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 09/14/05            |
| Applicant/Owner:  |  | County: Big Horn          |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming            |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: scrub shrub |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:              |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-5a            |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Salix exigua  | 60      | Shrub   | OBL       |
| 2. Typha latifolia   | 20      | Herb    | OBL       |
| 3. Rosa acicularis   | 5       | Shrub   | FACU      |
| 4. Rhus trilobata  | 5       | Shrub   | NI        |
| 5. Atriplex micrantha  | 5       | Herb    | NOL       |
| 6. Hordeum jubatum   | 5       | Herb    | FAC       |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>75-100%</u>  |         |         |           |
| Remarks: Using 50/20 rule, salix, typha, atriplex (NOL), and hordeum were counted as dominants, so either 75% or 100% of dominants are FAC or greater. |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>0</u> (in.)<br><br>Depth to Free Water in Pit <u>8</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)                            |  |
| Remarks: Wetland within channel-like depression along base of Bighorn Canal levee; receives water from small diversion in creek channel and presumably seepage from canal.                |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-3   |         | 10YR 3/1  |                                  |                              | Silty clay loam                          |
| 3+  |         | 10YR 4/2  | 2.5/N                            | Few/prominent                | Clay                                     |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <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 checked="" type="checkbox"/> Reducing Conditions         |         | <input type="checkbox"/> Listed on National Hydric Soils List                 |                                  |                              |  |
| <input checked="" 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 ___ | Is this Sampling Point Within a Wetland? | Yes <input checked="" type="checkbox"/> No ___ |
| Wetland Hydrology Present?      | Yes <input checked="" type="checkbox"/> No ___ |  |  |
| Hydric Soils Present?           | Yes <input checked="" type="checkbox"/> No ___ |  |  |
| Remarks:                        |  |  |  |

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

|   |  |                             |
|---|--|-----------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 09/15/05              |
| Applicant/Owner:  |  | County: Big Horn            |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming              |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: scrub shrub   |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID: Sample point 1 |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-5b              |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Elaeagnus angustifolia  | 50      | Tree    | FAC       |
| 2. Salix lasiandra   | 30      | Shrub   | FACW+     |
| 3. Typha latifolia   | 45      | Herb    | OBL       |
| 4. Carex rostrata  | 40      | Herb    | OBL       |
| 5. Sonchus oleraceus   | 10      | Herb    | NOL       |
| 6. Mentha arvensis   | 5       | Herb    | FAC       |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>6</u> (in.)<br><br>Depth to Saturated Soil <u>0</u> (in.)                         |  |
| Remarks: Large wetland complex with inclusions of small emergent wetlands; wetland spans creek channel and is situated adjacent the Big Horn Canal.                                       |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                               |                           |                                       |
|---|---------|---|-------------------------------|---------------------------|---------------------------------------|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                               |                           |                                       |
| Profile Description   |         |   |                               |                           |                                       |
| Depth (inches)  | Horizon | Matrix Color (Munsell Moist)  | Mottle Colors (Munsell Moist) | Mottle Abundance/Contrast | Texture, Concretions, Structure, etc. |
| 0-4   |         | 2.5Y 4/2  |                               |                           | Clay loam                             |
| 4-16  |         | 3/10Y   |                               |                           | Clay loam                             |
|   |         |   |                               |                           |                                       |
|   |         |   |                               |                           |                                       |
|   |         |   |                               |                           |                                       |
|   |         |   |                               |                           |                                       |
|   |         |   |                               |                           |                                       |
| Hydric Soil Indicators:   |         |   |                               |                           |                                       |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                               |                           |                                       |
| <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 checked="" type="checkbox"/> Reducing Conditions         |         | <input type="checkbox"/> Listed on National Hydric Soils List                 |                               |                           |                                       |
| <input checked="" 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 ___ | Is this Sampling Point Within a Wetland?       |
| Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No ___      | Yes <input checked="" type="checkbox"/> No ___ |
| Hydric Soils Present? Yes <input checked="" type="checkbox"/> No ___           | Yes <input checked="" type="checkbox"/> No ___ |
| Remarks:   |  |

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

|   |  |                             |
|---|--|-----------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 09/15/05              |
| Applicant/Owner:  |  | County: Big Horn            |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming              |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: scrub shrub   |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID: Sample point 2 |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-5b              |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Salix lasiandra   | 10      | Shrub   | FACW+     |
| 2. Salix exigua  | 10      | Shrub   | OBL       |
| 3. Typha latifolia   | 70      | Herb    | OBL       |
| 4.   |         |         |           |
| 5.   |         |         |           |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

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

**SOILS**

| Map Unit Name<br>(Series and Phase): _____                      |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                                      |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description   |         |   |                                  |                              |  |
| Depth<br>(inches)   | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-16  |         | 10YR 4/1  |                                  |                              | Silt loam                                |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:   |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                               |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <input type="checkbox"/> Histic Epipedon                        |         | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |                                  |                              |  |
| <input checked="" 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 checked="" 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 ___ | Is this Sampling Point Within a Wetland?<br>Yes <input checked="" type="checkbox"/> No ___ |
| Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No ___      |  |
| Hydric Soils Present? Yes <input checked="" type="checkbox"/> No ___           |  |
| Remarks:   |  |

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

|   |  |                          |
|---|--|--------------------------|
| Project/Site: Westside Irrigation District                                |  | Date: 09/15/05           |
| Applicant/Owner:  |  | County: Big Horn         |
| Investigator: Kurt Flaig/Jeanette Flaig                                   |  | State: Wyoming           |
| Do Normal Circumstances exist on the site?                                | Yes <input checked="" type="checkbox"/> No | Community ID: wet meadow |
| Is the site significantly disturbed (Atypical situation?)                 | Yes No <input checked="" type="checkbox"/> | Transect ID:             |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse.) | Yes No <input checked="" type="checkbox"/> | Plot ID: WL-6            |

**VEGETATION**

| Dominant Plant Species   | % Cover | Stratum | Indicator |
|--|---------|---------|-----------|
| 1. Phalaris arundinacea  | 75      | Herb    | FACW      |
| 2. Rumex crispus   | 5       | Herb    | FAC+      |
| 3. Hordeum jubatum   | 5       | Herb    | FAC       |
| 4. Cirsium arvense   | 5       | Herb    | FACU+     |
| 5. Alopecurus pratensis  | 5       | Herb    | FACW      |
| 6.   |         |         |           |
| 7.   |         |         |           |
| 8.   |         |         |           |
| 9.   |         |         |           |
| 10.  |         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC<br>(excluding FAC-). <u>100%</u> |         |         |           |
| Remarks:   |         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| Recorded Data (Describe in Remarks)<br>___ Stream, Lake or Tide Gauge<br>___ Aerial Photographs (infrared)<br>___ Other<br><input checked="" type="checkbox"/> No Recorded Data Available | Wetland Hydrology Indicators:<br>Primary Indicators:<br>___ Inundated<br>___ Saturated in Upper 12 Inches<br>___ Water Marks<br>___ Drift Lines<br>___ Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br>Secondary Indicators (2 or more required)<br>___ Oxidized Root Channels in upper 12 in.<br>___ Water-Stained Leaves<br>___ Local Soil Survey Data<br>___ FAC-Neutral Test<br>___ Other (Explain in Remarks) |
| Field Observations<br><br>Depth of Surface Water <u>None</u> (in.)<br><br>Depth to Free Water in Pit <u>None</u> (in.)<br><br>Depth to Saturated Soil <u>None</u> (in.)                   |  |
| Remarks: Wetland located adjacent Bighorn Canal, hydrology presumably associated with canal seepage/high water table.   |  |

**SOILS**

| Map Unit Name<br>(Series and Phase): _____              |         | Drainage Class: _____   |                                  |                              |  |
|---|---------|---|----------------------------------|------------------------------|--|
| Taxonomy (Subgroup): _____                              |         | Field Observations<br>Confirm Mapped Type? Yes___ No___                       |                                  |                              |  |
| Profile Description                                     |         |   |                                  |                              |  |
| Depth<br>(inches)                                       | Horizon | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture, Concretions,<br>Structure, etc. |
| 0-3   |         | 10YR 3/2  | 7.5YR 3/4                        | Common/distinct              | Silt loam                                |
| 3-16  |         | 10YR 4/2  | 7.5YR 3/4                        | Many/distinct                | Silt clay loam                           |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
|   |         |   |                                  |                              |  |
| Hydric Soil Indicators:                                 |         |   |                                  |                              |  |
| <input type="checkbox"/> Histosol                       |         | <input type="checkbox"/> Concretions (iron)                                   |                                  |                              |  |
| <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 checked="" 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 <u>X</u> No ___ | Is this Sampling Point Within a Wetland?<br>Yes <u>X</u> No ___ |
| Wetland Hydrology Present? Yes <u>X</u> No ___      |   |
| Hydric Soils Present? Yes <u>X</u> No ___           |   |
| Remarks:  |   |

**Appendix C. Photos of wetlands delineated at the Westside Irrigation District project.**



Wetland 1.



Wetland 2.



Wetland 3a and b.



Wetland 3c.



Wetland 3d.



Wetland 3e.



Wetland 3f.



Wetland 4a.



Wetland 4b.



Wetland 5a.



Wetland 5b.



Wetland 6.

**Appendix D. Plants encountered during wetland surveys at the Westside Irrigation District project.**

**Appendix D. Plants encountered during wetland surveys at the Westside Irrigation District project.**

| <b>Family</b>          | <b>Common Name</b>      | <b>Scientific Name</b>         | <b>Wetland Indicator Status (Reg 9)</b> |
|------------------------|-------------------------|--------------------------------|---|
| <b>Alismataceae</b>    | Northern water plantain | <i>Alisma triviale</i>         | NOL                                     |
|                        | Arumleaf arrowhead      | <i>Sagittaria cuneata</i>      | OBL                                     |
| <b>Anacardiaceae</b>   | Skunkbush sumac         | <i>Rhus trilobata</i>          | NI                                      |
| <b>Apiaceae</b>        | Water hemlock           | <i>Cicuta douglasii</i>        | OBL                                     |
| <b>Asclepidaceae</b>   | Showy milkweed          | <i>Asclepias speciosa</i>      | FAC+                                    |
| <b>Asteraceae</b>      | Big sagebrush           | <i>Artemisia tridentata</i>    | NOL                                     |
|                        | Gray rabbitbrush        | <i>Chrysothamnus nauseosus</i> | NOL                                     |
|                        | Canada thistle          | <i>Cirsium arvense</i>         | FACU+                                   |
|                        | Curly-cup gumweed       | <i>Grindelia squarrosa</i>     | FACU                                    |
|                        | Povertyweed             | <i>Iva axillaris</i>           | FAC                                     |
|                        | Sow thistle             | <i>Sonchus oleraceus</i>       | NOL                                     |
|                        | Common cocklebur        | <i>Xanthium strumarium</i>     | FAC                                     |
| <b>Brassicaceae</b>    | Whitetop                | <i>Cardaria draba</i>          | NOL                                     |
|                        | Tumble mustard          | <i>Sysimbrium</i> sp.          | ----                                    |
| <b>Chenopodiaceae</b>  | Amaranth                | <i>Amaranthus</i> sp.          | ----                                    |
|                        | Twoscale saltbush       | <i>Atriplex micrantha</i>      | NOL                                     |
|                        | Pitseed goosefoot       | <i>Chenopodium berlandieri</i> | NOL                                     |
|                        | Red goosefoot           | <i>Chenopodium rubrum</i>      | FACW+                                   |
|                        | Halogeton               | <i>Halogeton glomeratus</i>    | NOL                                     |
|                        | Russian thistle         | <i>Salsola tragus</i>          | UPL                                     |
| <b>Cyperaceae</b>      | Nebraska sedge          | <i>Carex nebrascensis</i>      | OBL                                     |
|                        | Beaked sedge            | <i>Carex rostrata</i>          | OBL                                     |
|                        | Creeping spikerush      | <i>Eleocharis palustris</i>    | OBL                                     |
|                        | Panicled bulrush        | <i>Scirpus microcarpus</i>     | OBL                                     |
|                        | Common threesquare      | <i>Scirpus pungens</i>         | OBL                                     |
|                        | Softstem bulrush        | <i>Scirpus validus</i>         | OBL                                     |
| <b>Elaeagnaceae</b>    | Russian olive           | <i>Elaeagnus angustifolia</i>  | FAC                                     |
| <b>Equisetaceae</b>    | Horsetail               | <i>Equisetum</i> sp.           | ----                                    |
| <b>Fabaceae</b>        | Wild licorice           | <i>Glycyrrhiza lepidota</i>    | FAC+                                    |
|                        | White sweetclover       | <i>Melilotus alba</i>          | FACU                                    |
|                        | Yellow sweetclover      | <i>Melilotus officinalis</i>   | FACU                                    |
| <b>Grossulariaceae</b> | Gooseberry              | <i>Ribes</i> sp.               | ----                                    |
| <b>Juncaceae</b>       | Baltic rush             | <i>Juncus balticus</i>         | FACW+                                   |
| <b>Lamiaceae</b>       | Field mint              | <i>Mentha arvensis</i>         | FAC                                     |
| <b>Onagraceae</b>      | Fringed willowherb      | <i>Epilobium ciliatum</i>      | FACW-                                   |

**Appendix D. Plants encountered during wetland surveys at the Westside Irrigation District project.**

| <b>Family</b>        | <b>Common Name</b>   | <b>Scientific Name</b>         | <b>Wetland Indicator Status (Reg 9)</b> |
|----------------------|----------------------|--------------------------------|---|
| <b>Poaceae</b>       | Slender wheatgrass   | <i>Agropyron trachycaulum</i>  | FAC                                     |
|                      | Creeping bentgrass   | <i>Agrostis stolonifera</i>    | FAC+                                    |
|                      | Meadow foxtail       | <i>Alopecurus pratensis</i>    | FACW                                    |
|                      | American sloughgrass | <i>Beckmannia syzigachne</i>   | OBL                                     |
|                      | Smooth brome         | <i>Bromus inermis</i>          | NOL                                     |
|                      | Cheatgrass           | <i>Bromus tectorum</i>         | NOL                                     |
|                      | Barnyardgrass        | <i>Echinochloa crusgalli</i>   | FACW                                    |
|                      | Canada wildrye       | <i>Elymus canadensis</i>       | FAC                                     |
|                      | Foxtail barley       | <i>Hordeum jubatum</i>         | FAC                                     |
|                      | Reed canarygrass     | <i>Phalaris arundinacea</i>    | FACW                                    |
|                      | Common reed          | <i>Phragmites australis</i>    | FACW+                                   |
|                      | Bristlegrass         | <i>Setaria</i> sp.             | ----                                    |
|                      | Sand dropseed        | <i>Sporobolus cryptandrus</i>  | FACU-                                   |
| <b>Polygonaceae</b>  | Curly dock           | <i>Rumex crispus</i>           | FAC+                                    |
|                      | Golden dock          | <i>Rumex maritimus</i>         | FACW+                                   |
| <b>Rosaceae</b>      | Prickly rose         | <i>Rosa acicularis</i>         | FACU                                    |
| <b>Salicaceae</b>    | Plains cottonwood    | <i>Populus deltoides</i>       | FAC                                     |
|                      | Peachleaf willow     | <i>Salix amygdaloides</i>      | FACW                                    |
|                      | Sandbar willow       | <i>Salix exigua</i>            | OBL                                     |
|                      | Whiplash willow      | <i>Salix lasiandra</i>         | FACW+                                   |
| <b>Sarcobataceae</b> | Greasewood           | <i>Sarcobatus vermiculatus</i> | FACU+                                   |
| <b>Tamaricaceae</b>  | Tamarisk             | <i>Tamarix chinensis</i>       | FACW                                    |
| <b>Typhaceae</b>     | Broadleaf cattail    | <i>Typha latifolia</i>         | OBL                                     |