2009 Annual Wetland Mitigation Monitoring Report

for the Rocky Flats Site

(Click on the links below to view the wetland report, wetland project photos and forms)

2009 Annual Wetland Mitigation Monitoring Report (PDF Version)

2009 Photopoint Monitoring Photos

2009 Water Level Forms

Rocky Flats Site Vascular Flora List

Example Wetland Delineation Forms/Qualitative Wetland Assessment Forms

Wetland Locations	Wetland Delineation Forms/ Qualitative Wetland Assessment Forms	Noxious Weed Forms
A-1 Pond Wetland	2009 forms	Noxious weed forms
A-2 Pond Wetland	2009 forms	Noxious weed forms
B116 Wetlands	2009 forms	Noxious weed forms
B131 Wetland	2009 forms	Noxious weed forms
B131 SAEX1 Area	2009 forms	Noxious weed forms
B371 Wetlands	2009 forms	Noxious weed forms
B771 North Wetland	2009 forms	Noxious weed forms

B771 NW Wetland	2009 forms	Noxious weed forms
B881 Wetland	2009 forms	Noxious weed forms
Bowman's Pond/B771 Wetland	2009 forms	Noxious weed forms
B-1 Pond Wetland	2009 forms	Noxious weed forms
B-2 Pond Wetland	2009 forms	Noxious weed forms
B-3 Pond Wetland	2009 forms	Noxious weed forms
B-4 Pond Wetland	2009 forms	Noxious weed forms
C-1 Pond Wetland	2009 forms	Noxious weed forms
C-2 Pond Wetland	2009 forms	Noxious weed forms
East Shooting Range Wetland	2009 forms	Noxious weed forms
East Trenches Wetland	2009 forms	Noxious weed forms
Functional Channel 1 Wetland	2009 forms	Noxious weed forms
Functional Channel 1 Road Crossing	2009 forms	Noxious weed forms
Functional Channel 2 Wetland	2009 forms	Noxious weed forms
Functional Channel 2 Hillside Wetland	2009 forms	Noxious weed forms
Functional Channel 2/3 Confluence	2009 forms	Noxious weed forms
Functional Channel 3 Upper Wetland	2009 forms	Noxious weed forms
Functional Channel 3 Lower Wetland	2009 forms	Noxious weed forms
Functional Channel 4 Wetland	2009 forms	Noxious weed forms
Functional Channel 4 Hillside Wetland	2009 forms	Noxious weed forms
Functional Channel 5 Wetlands	2009 forms	Noxious weed forms
Mound East Wetland	2009 forms	Noxious weed forms
Mound West Wetland	2009 forms	Noxious weed forms
Mound SW Wetland	2009 forms	Noxious weed forms
Mound West-West Wetland	2009 forms	Noxious weed forms
Mound Well Wetland	2009 forms	Noxious weed forms
Original Landfill Wetlands	2009 forms	Noxious weed forms
Present Landfill Wetlands	2009 forms	Noxious weed forms
Ridge Road Wetland	2009 forms	Noxious weed forms
SW093 West Wetland	2009 forms	Noxious weed forms
Solar Ponds Well Area	2009 forms	Noxious weed forms
Solar Pond Discharge Gallery Wetland	2009 forms	Noxious weed forms
SPPTS Sump Installation	2009 forms	Noxious weed forms

NOTE: Calculations normally done on the Wetland Delineation Forms were done in electronic files. The results are presented in the spreadsheets in the report.

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U.S. Department of Energy
Office of Legacy Management

Rocky Flats, Colorado, Site
2009 Annual Wetland Mitigation Monitoring Report

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Contents

1.0 Introduction 1
2.0 Background 1
2.1 A-Ponds and B-Ponds 1
2.2 C-1 Pond 2
2.3 East Shooting Range 2
2.4 Functional Channels 1, 2, 3, 2/3 Confluence, 4, and 5 3
2.5 Original Landfill 4
2.6 Present Landfill 5
2.7 Groundwater Treatment System Wetlands 5
2.7.1 Solar Pond Discharge Gallery 5
2.7.2 East Trenches 6
2.8 Final Land Configuration Wetlands 6
2.9 Miscellaneous Wetlands 6
3.0 Methodology 6
4.0 Results and Discussion 8
4.1 Wetland Management 9
4.2 Noxious Weed Species 10
5.0 Summary 10
6.0 References 11

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1.0 Introduction

This report summarizes the wetland mitigation monitoring conducted during 2009 at the Rocky Flats Site (Site), a U.S. Department of Energy (DOE) facility near Denver, Colorado.

Cleanup, closure, and post-closure activities have disturbed approximately 7.8 acres of jurisdictional wetlands at the Site. To offset these impacts, several wetlands were established or re-created as mitigation wetlands. Monitoring of the mitigation wetlands began as each project was completed. A wetland monitoring and management plan was implemented (DOE 2006) to evaluate the reestablishment of the mitigation wetlands. The final objective is to reestablish 7.8 acres of wetlands on the Site (no net loss) as mitigation for those wetlands disturbed during project activities at the Site. The DOE Standley Lake Wetland Mitigation Bank can also be used to offset these effects; however, establishing the mitigation wetlands on the Site, if possible, is preferable.

For the first several years after initial wetland establishment, interim monitoring—consisting of qualitative and semiquantitative assessments of each of the wetland mitigation sites (DOE 2006)—is to be conducted. In addition, the wetlands will be mapped annually, and noxious weeds will be monitored and managed if necessary. Wetland determination during this time will be based primarily on hydrophytic vegetation indicators and wetland hydrology. Because the monitoring locations are in new wetlands, hydric soils have not had time to develop. Therefore, the soils are considered to be hydric when both hydrophytic vegetation and wetland hydrology are present. About the fifth year after project completion, the mitigation wetlands will be mapped and delineated according to the currently accepted U.S. Army Corps of Engineers (USACOE) wetland-delineation procedure (USACOE 1987, USACOE 2008). The 2009 monitoring marked the fourth year of interim wetland monitoring for most of the wetland areas.

2.0 Background

A brief description of each mitigation wetland area that is being monitored at the Site is provided below. Figure 1 shows the locations of the mitigation areas that were monitored in 2009. Figures 2 through 11 show close-up views of the areas. Table 1 shows the seed mixes that were used at the various wetland areas.

2.1 A-Ponds and B-Ponds

In 2005, ponds B-1, B-2, and B-3 at the Site were disturbed by remediation activities. Pond sediments were dredged and removed, and approximately 2.235 acres of open water, palustrine emergent, and palustrine scrub-shrub wetlands were affected by the project activities. The preexisting wetland vegetation along the pond edges was typified by coyote willow (*Salix exigua*), cattails (*Typha* sp.), Canada thistle (*Cirsium arvense*), and smaller amounts of snowberry (*Symphoricarpos occidentalis*), arctic rush (*Juncus balticus*), and other herbaceous plants (USACOE 1994). After project completion, the ponds were backfilled, contoured, and seeded (Table 1); erosion controls were installed after seeding. Additionally, 487 plains cottonwood (*Populus deltoides*) poles and 273 coyote willow stakes were planted in May 2005 along the southern edges of ponds B-1, B-2, and B-3 as part of a phytoremediation project for the East Trenches Groundwater Treatment System Remedy and to provide a shrub component to the

wetlands. In 2006, ponds B-1, B-2, and B-3 had an additional 110, 128, and 118 coyote willow stakes installed, respectively, along their southern shorelines. In 2007, ponds B-2 and B-3 had 59 and 42 additional coyote willow stakes installed, respectively, on their northern shorelines. In 2008, pond B-1 had an additional 13 peach-leaf willow (*Salix amygdaloides*) bare-root plants installed. During fall 2008 and winter 2008/2009, the dams at ponds A-1, A-2, B-1, B-2, B-3, and B-4 were breached to create a more natural flow-through system through the wetlands. As a result, portions of the pond wetland areas at B-1, B-2, and B-3 were disturbed again. After project completion, each of the wetland areas was seeded and planted with woody plant material. The planting and associated activities were similar to those of the first planting that followed the initial remediation activities in the B-series ponds. A total of approximately 300 coyote willow, 50 peach-leaf willow, 35 chokecherry (*Prunus virginiana*), and 15 American plum (*Prunus americana*) bare-root plants were installed at ponds A-1, A-2, B-1, B-2, B-3, and B-4, combined, in 2009. The total wetland area disturbed by the combined projects was approximately 0.57 acre in the A-ponds and 2.46 acres in the B-ponds (Table 2). Figures 2 and 3 show the in situ mitigation locations where monitoring was conducted in 2009.

2.2 C-1 Pond

During 2005, DOE removed part of the dam and installed a stop-log structure to create a flow-through system at the C-1 pond along Woman Creek at the Site. Some of the wetlands on the northern edge of the pond and just downstream of the dam were affected by project activities. Approximately 0.25 acre of wetland was disturbed by project activities (Table 2). The wetland vegetation along the northern edge of the pond prior to the project contained cattails, a few coyote willow and lead plant (*Amorpha fruticosa*) shrubs, and a single peach-leaf willow tree. The disturbed area below the dam was dominated by a few plains cottonwood trees, some coyote willow, and an understory of mostly smooth brome (*Bromus inermis*). The mitigation at the C-1 pond is in situ and is shown in Figure 4. After project completion, 115 coyote willow stakes and 3 plains cottonwood poles were installed along the northern edge of the pond west of the stop-log structure. Below the dam, approximately 28 coyote willow stakes were installed along the edges of the stream. In 2007, an additional 23 coyote willow stakes were installed below the dam. In 2008, three bare-root peach-leaf willow plants were installed at the C-1 pond (two above the stop-log structure and one below the grouted riprap area).

2.3 East Shooting Range

In 2005, DOE disturbed a small wetland area along Woman Creek during remediation activities for the East Shooting Range Project. The wetland impacts were located where a culvert was placed in the stream to allow equipment access. Project activities affected approximately 0.017 acre of palustrine scrub-shrub, seasonally flooded wetland (Table 2). The wetland vegetation along Woman Creek in this area is typified by coyote willow, lead plant, Nebraska sedge (*Carex nebrascensis*), bulrushes (*Scirpus* sp.), and an occasional plains cottonwood tree or peach-leaf willow. After project completion, the culvert was removed, the disturbed areas along the stream edge were seeded with a riparian seed mix, and erosion controls were installed. In situ wetland reestablishment is expected at this location and is shown in Figure 4. Additionally, 3 plains cottonwood poles and 40 peach-leaf willow stakes were planted in March 2005 along the edges of the stream at the former location of the culvert crossing.

2.4 Functional Channels 1, 2, 3, 2/3 Confluence, 4, and 5

During 2005, several mitigation wetlands were constructed in the North and South Walnut Creek drainages at the Site. Figures 5 through 7 show the locations of Functional Channel (FC) 1, FC2, the FC2/FC3 confluence, FC3 (upper and lower), FC4, and FC5 mitigation wetlands. The large FC2 and FC4 wetlands were designed to provide suitable conditions for wetland establishment for mitigation purposes at the Site. At the other locations, wetlands were not planned, but post-construction hydrology has provided good conditions for wetlands establishment.

The FC1 area was a borrow area that, at several locations, was excavated to the groundwater table (Figure 5). The FC1 wetland area was the last mitigation area to be completed in early fall 2005, when it was seeded with wetland species (Table 1). In 2007, 185 coyote willow stakes and 7 plains cottonwood stakes were installed at various locations at the FC1 wetland. Additional borrow material was removed from the eastern part of the bottom of FC1 in fall 2007 and used for fill at another project. The area was recontoured and seeded with both the wetland seed mix and an upland mix in January 2008 (Table 1). In spring 2008, 56 American plum and 48 chokecherry bare-root plants were installed at various locations around the perimeter of the FC1 wetlands. An additional 36 bare-root coyote willow plants were also installed on the south end of the new wetland area and adjacent wet hillside. In spring 2009, 35 American plum and 15 chokecherry were planted along the western edge of the FC1 wetland area.

In 2005, a road northwest of the FC1 area that crossed North Walnut Creek to the Present Landfill (PLF) was removed, and the culvert crossing was taken out (Figure 5). This area is referred to as the FC1 Road Crossing. The area was initially seeded with wetland species in fall 2005 (Table 1), and in 2006, 36 coyote willow stakes were installed. In 2008, the culvert was reinstalled to reestablish the road to the PLF. Part of the area that was becoming wetland in the former location of the road was destroyed, so less credit than expected will be possible at that location.

The FC2 wetland is an engineered, shallow wetland (Figure 6). It was completed and seeded with wetland species in late spring 2005 (Table 1). Erosion controls, consisting of matting and wattles, were placed across the bottom of the wetland area after seeding. A row of coyote willow (63 stakes) was initially installed along the first berm to provide a wetland shrubland component in 2005. In 2006, 151 coyote willow stakes were installed along the western shoreline of the wetland area. The following year, 117 coyote willow stakes were installed along the eastern shoreline of the wetland area. In 2008, 100 bare-root coyote willow plants and 26 bare-root peach-leaf willow plants were installed on the north end of the wetland and along portions of the northeast perimeter.

The FC2 hillside wetland is an area where a natural seep occurs on a hillside to the south of the main FC2 wetland (Figure 6). Prior to closure, this area was dominated by cattails. Approximately 81 coyote willow stakes were installed throughout this wetland area in spring 2006. The upper area was seeded with wetland seed mix at that time, and the lower area was seeded with a wetland seed mix in 2007.

At the FC2/FC3 confluence (a settling pool where FC2 and FC3 meet in North Walnut Creek), the wetland margin was seeded with wetland species (Table 1), and 18 coyote willow stakes were installed in 2005 (Figure 6). Prior to this project, the area was dominated by cattails and a

few Russian olive trees (*Elaeagnus angustifolia*). In 2008, seven bare-root peach-leaf willow plants were installed around the perimeter of the wetland area.

The FC3 wetlands were created in the bottom of the channel where shallow streambed slopes allowed the placement of a soil cover over the riprap (Figure 6). The wetland bottom areas and hillsides were seeded with a mix of wetland and riparian species (Table 1). Erosion controls, consisting of erosion matting and wattles, were placed across the bottom of the wetland areas after seeding. In the upper (west) wetland, a total of 48 coyote willow stakes were planted along the channel in 2005. The same year, a total of 94 coyote willow stakes were installed along the bottom of the channel at the lower (east) wetland.

The FC4 wetland is a shallow engineered wetland in the South Walnut Creek drainage (Figure 7). The broad, flat bottom slopes gently eastward, and 13 berms (approximately 6 inches high) were installed across the wetland, running north–south, to create shallow pools throughout the wetland. A total of 862 coyote willow stakes were planted along the berms in 2005. Additionally, in the center of the wetland, several large clumps of willow, salvaged from areas of Woman Creek disturbed by the Original Landfill (OLF) Project, were transplanted by front-end loaders. The wetland was seeded with wetland species (Table 1). Unfortunately, when the area was seeded and erosion matting and wattles were installed, many of the willow stakes were pulled up and replanted after being in place for a month; many died as a result. In January 2006, the steep hillside on the south side of the wetland began to slump. By mid-2007, some uplift had occurred along the southern edge of the FC4 wetland. In 2007, approximately 100 additional coyote willow bare-root plants were installed along the northern edge of the wetland. In the late fall 2007, the hillside south of the wetland was repaired, and portions of the uplifted material along the southern edge of the wetland were removed to reestablish as much of the wetland mitigation area as possible. In 2008, 182 bare-root coyote willow plants were installed along the southern margin of the FC4 wetland. Also, 24 bare-root peach-leaf willows were installed near the west end on both the north and south sides of the wetland.

2.5 Original Landfill

During 2005, DOE disturbed several wetland areas during remediation activities at the OLF Project. Approximately 1.17 acres of jurisdictional wetlands were disturbed during construction of the landfill cover (Table 2). Within the OLF Project area, the South Interceptor Ditch (SID)—a narrow, linear ditch—was classified as a jurisdictional wetland, although it had a lower functional value than the natural wetlands associated with Woman Creek (USACOE 1994). The vegetation in the SID was typified by cattails and some coyote willow. Along Woman Creek, the wetlands were dominated by large plains cottonwood trees, coyote willow, lead plant, snowberry, arctic rush, and various other plants. After project completion, however, several wet seep areas began to form in certain areas on the cover, so it is possible that some in situ wetland restoration may occur in time. Also, the coyote willow along Woman Creek was reestablishing. A total of 56 and 91 coyote willow stakes were installed in the West Channel and at the bottom of the east side of the buttress wall, respectively, in 2007. In fall 2008, the West Channel was reconfigured to address stability issues on the OLF. As a result, some of the potential wetland area that was developing in the West Channel was lost. However, additional wetland area is expected to develop at the south end of the West Channel where seep drains now exit. The locations monitored in 2009 are shown in Figure 8.

2.6 Present Landfill

In 2005, remediation activities during Site cleanup and closure disturbed the East Landfill Pond (ELP) at the Site's PLF. The pond itself was a deep-water habitat surrounded by emergent wetlands composed largely of cattails, Torrey's rush (*Juncus torreyi*), and wintercress (*Barbarea vulgaris*). South of the ELP, some wet areas that contained arctic rush and Canada thistle were present. As a result of the project, portions of the wetlands along the western edge of the pond were permanently lost under the new landfill cover. In addition, the upper 1 to 2 feet of sediment on the pond bottom was removed and placed under the landfill cover. After project activities were completed, the pond bottom and surrounding upland edges were reseeded with an appropriate native seed mix (Table 1), and the pond was allowed to refill with water. Approximately 2.8 acres of wetland were disturbed by the project (Table 2).

The seeding of the wetland (pond edge) was done in the late spring of 2005. In addition to the seeding of the wetland, 75 willow stakes were planted between the west end of the pond and the passive treatment cell. A mixture of coyote willow and peach-leaf willow was planted in the wet areas at this location. In 2006, 182 coyote willow stakes were installed around the pond perimeter. In 2007, an additional 46, 125, and 80 coyote willow stakes were installed below the passive treatment cell (between the cell and pond), along the northern edge of the pond, and along the wet slump edges (of a newly formed slump north of the pond), respectively. Figure 9 shows the mitigation locations monitored at the PLF in 2009.

2.7 Groundwater Treatment System Wetlands

2.7.1 Solar Pond Discharge Gallery

The Solar Pond Discharge Gallery (SPDG) is an area east of the solar pond treatment cells where effluent from the Solar Pond Plume Treatment System (SPPTS) is discharged. The discharge gallery consists of a gravel bed with a buried discharge pipe. Prior to the installation of the treatment system and discharge gallery in 1999, there was no wetland at this location. After the discharge gallery was installed, water flowed eastward from the gravel bed in tire ruts of an old, two-track road and saturated the soil along the route. Cattails, coyote willow, and various other wetland species began to establish in the discharge gallery and surrounding area where the saturated conditions provided suitable habitat for hydrophytic vegetation. In 2005, 435 coyote willow stakes were planted along North Walnut Creek, with a few dozen in the general vicinity of the discharge gallery as part of a phytoremediation project for the SPPTS. Most of these died because their locations lacked moisture. In 2006, an additional 40 coyote willow stakes were installed near the tire-rut locations. In 2007, 100 more bare-root coyote willow plants were installed around and east of the discharge gallery. In fall 2008, installation of a new sump at the SPPTS disturbed a 40 square foot wetland area on the hillside south of the discharge gallery (Table 2). Monitoring of the area began in 2009. Figure 6 shows the SPDG locations that were monitored in 2009. Monitoring at the SPPTS in 2009 was conducted as directed by the U.S. Environmental Protection Agency. This involves annual monitoring to see how the area responds over time to changes made to the system.

The wetland that has formed at the discharge gallery is artificially created and maintained. In time, when the treatment system is no longer needed at the Site, the system may be decommissioned, and all or portions of the system may be removed. At that point, the artificially

maintained wetlands associated with the groundwater treatment system will be left in place, and natural succession will be allowed to proceed. The hydrophytic vegetation that is present may or may not be able to sustain itself, depending on the final environmental conditions. No mitigation for a potential loss of this wetland area will be made, as it is artificially created and maintained. Nature will be allowed to take its course, and plant species will adapt to the final conditions at the location. The same is true for the East Trenches wetland area (discussed below), which is also part of a groundwater treatment system.

2.7.2 East Trenches

The East Trenches Plume Treatment System (ETPTS) was installed in 1999. At the discharge gallery, a small underground pipe exits into riprap before flowing down a short hill into the B-4 pond. The predominant vegetation in the area is arctic rush and bulrushes. In spring 2006, the system's discharge pipe was extended several feet to improve effluent flow. The wetland area affected by this activity measured approximately 10 square feet (Table 2). The area monitored in 2009 is shown in Figure 3. Monitoring at the ETPTS in 2009 was conducted as directed by the U.S. Environmental Protection Agency and as described above for the SPPTS discharge gallery.

2.8 Final Land Configuration Wetlands

Table 2 lists several other small wetland impacts (bottom section of table) that occurred during the final land configuration project during site closure. Most of these were associated with taking out culverts or roads around the perimeter of the former Industrial Area. Where wetland conditions remained after project completion, these areas were seeded with native wetland species and, in some cases, planted with coyote willow. Figures 2 through 11 show the areas monitored at these locations in 2009.

2.9 Miscellaneous Wetlands

Several additional new wet areas exhibiting hydrophytic vegetation have been observed on hillsides and other locations since Site closure. Those that were monitored in 2009 are shown in Figures 2 through 11. Where appropriate, the additional seeding of wetland species and planting of woody wetland species may be conducted in the future to help develop these locations.

3.0 Methodology

Wetland monitoring in 2009 was conducted in late summer using both qualitative and semiquantitative monitoring methodologies. A Wetland Qualitative Revegetation Evaluation form and a Routine Wetland Determination form—Great Plains Region (USACOE 2008) were completed for each wetland (see the "Example Wetland Delineation Forms/Qualitative Wetland Assessment Forms" link on the DVD for sample forms). In 2009, a shift was made from the previous wetland delineation methodology found in the 1987 *Corps of Engineers Wetland Delineation Manual* (USACOE 1987) to the new wetland delineation methods found in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (USACOE 2008).

Based on the USACOE wetland definition, an area is considered to be a wetland when the three wetland indicators—hydrophytic vegetation, wetland hydrology, and hydric soils—are present. Wetland determinations in 2009 were based primarily on hydrophytic vegetation indicators and wetland hydrology. Because the monitoring locations are mitigation wetlands, hydric soils may not have had time to develop. Therefore, the soils are considered to be hydric when both hydrophytic vegetation and wetland hydrology are present. Vegetation was monitored by creating a species list and foliar cover summary for each wetland area as a whole. For each species across the wetland area, cover was estimated and recorded to the nearest percentage on the wetland determination data form. Foliar cover data are reported as the percent absolute cover for each species encountered. The percent absolute foliar cover was the estimated actual cover value for each species (percentage of ground surface covered by the leaves and stems) in a wetland area. For species that were estimated to have less than 1 percent cover, a value of 0.25 percent was recorded (refer to the "2009 forms" link on the DVD for the completed forms for each wetland). Wetland hydrology was evaluated based on ground surface observations at the time of monitoring in late summer and from biweekly observations at the various wetlands taken from May 5 through June 4, 2009. Biweekly water level observation data sheets may be found on the DVD under the "2009 Water Level Forms" link. No soils data were collected in 2009.

Because of the large number of forms, it was impractical to complete the analysis of species and foliar cover data on each form. Therefore, the data from the "Vegetation" section of the wetland determination data form were entered into an electronic database for analysis, and only the species codes and cover values are entered on the first page of each data form. Species codes and their associated names are in the Rocky Flats Site Vascular Flora List on the DVD. Hydrophytic wetland indicator classification, dominance, and the dominance test and prevalence tests were calculated in the database and on the spreadsheet tables where they are summarized. The 50/20 rule was used first to determine species dominance for hydrophytic vegetation following the method provided in the 2008 Interim Regional Supplement (USACOE 2008). If the plant community failed the dominance test using the 50/20 rule, and wetland hydrology and hydric soils (assumed) were present, then the prevalence index was calculated to determine if hydrophytic vegetation was present. A score of 3.0 or less indicates hydrophytic vegetation is present. The final determinations for hydrophytic vegetation, hydrophytic soils, and wetland hydrology are summarized by sample location in the foliar cover summary tables. Geographical Information System (GIS) numbers and their associated location names are listed in the tables and shown in the figures that present the locations monitored in 2009.

The areal extent of estimated wetlands in 2009 was mapped using a Trimble GPS unit and downloaded into ArcGIS (ESRI 2008). Acreages were calculated and summarized for each area surveyed. Maps were produced in ArcGIS.

Photo monitoring was conducted at each of the mitigation wetland sites. Photos were taken from established photopoints for each wetland. For new wetland areas monitored in 2009, new photopoints were established. These photo series will show the development of the wetlands over time (refer to the "2009 Photopoint Monitoring Photos" link for each wetland on the DVD).

Noxious weed surveys were conducted monthly for most wetland sites during the height of the growing season from June through August 2009 (refer to the "Noxious Weed Forms" link for each wetland on the DVD). Some of the smaller "new" wetlands were not discovered until late August and early September when monitoring was conducted; hence, they have no weed-survey

forms for 2009. State-listed noxious weeds (CNWA 2006) and other problematic species at the Site were listed on these forms, along with a percent cover estimate and a diagram of their location in the wetland, as appropriate.

4.0 Results and Discussion

Ninety-four sites totaling 8.48 acres of potential wetland were monitored and mapped in 2009 (Table 3). Figures 1 through 11 show the monitored wetland locations. Of these potential acres, 8.3 acres, or 98 percent, met the three wetland indicators in 2009. Excluding the SPPTS and ETPTS areas (artificially created and maintained wetlands), the total potential mitigation areas with a dominance of hydrophytic vegetation in 2009 was 8.29 acres. The average yearly precipitation received at the Site from 1992 to 2009 is 15.54 inches (National Renewable Energy Laboratory NWTC M2 Tower and former Rocky Flats Meteorological Tower data). Three of the past 4 years, when wetland monitoring has been conducted, the Site has received below-average precipitation. This has somewhat hindered the establishment of the wetland mitigation areas. Precipitation for 2008 was 12.26 inches, compared to 14.59 inches in 2007 and 12.62 inches in 2006. In 2009, above-average precipitation was received (19.83 inches). From April through September (one month prior to and going through the growing season) in 2009, a total of 14.08 inches of precipitation was received. This total exceeds the amounts received in 2008, 2007, and 2006 when only 9.02 inches, 7.97 inches and 4.86 inches were received, respectively, during the same time frame. The mean for this period from 1992 to 2009 is 10.66 inches. The increased precipitation in 2009 helped with establishment of wetland vegetation at many of the mitigation areas.

The smallest areas that met all three wetland indicators in 2009 was 0.0001 acre (3 square feet) located at the East Trenches and SPPTS Sump Installation wetlands (Table 3). The largest area that met the three wetland indicators was 1.00 acre at FC2, which is one of the engineered mitigation wetlands.

Tables 4 through 9 summarize the species richness and cover data for the potential wetlands monitored. The yellow highlighted cells in the tables represent the dominant species as determined by the 50/20 rule at each location. The orange shaded cells are locations where the total herbaceous, shrub, or tree cover, within each respective vegetation layer, was less than 5 percent. Therefore, it was below the threshold to be considered a vegetated area. Green shaded cells were those where the wetland indicator criteria were met, and pink shaded cells were those where wetland indicator criteria were not met. A total of 87 locations had all three hydrophytic wetland indicators present in 2009. Only six locations did not have all three indicators present. One location (GIS# 51 on Figure 6) was a deep-water habitat that had no vegetation; therefore, it is not presented in the table.

For areas that had all three wetland indicators in 2009, the most abundant herbaceous hydrophytic species (greater than 2 percent absolute cover averaged across all respective locations) were cattails, arctic rush, Torrey's rush, bulrushes, foxtail barley (*Hordeum jubatum*), switchgrass (*Panicum virgatum*), and prairie cordgrass (*Spartina pectinata*) (Table 10). The most abundant hydrophytic shrub and tree species at these locations included coyote willow and peach-leaf willow. The most abundant non-hydrophytic species at these locations was slender wheatgrass (*Agropyron caninum* [*A. trachycaulum*]).

At the locations that did not have all three wetland indicators present in 2009, the most abundant herbaceous non-hydrophytic species included Canada thistle, smooth brome, slender wheatgrass, Canada wildrye (*Elymus canadensis*), and western wheatgrass (*Agropyron smithii*) (Table 11). The most abundant herbaceous hydrophytic indicator species at these locations was arctic rush, switchgrass, and quackgrass (*Agropyron repens*). The most abundant hydrophytic shrub species at these locations were coyote willow and plains cottonwood.

Photo-monitoring results for 2009, as compared with earlier photos, are presented in the "2009 Photopoint Monitoring Photos" link for each wetland on the DVD.

Table 2 is the wetland debit sheet that shows the acreage of wetlands disturbed during and after closure. A total of approximately 7.8 acres has been disturbed during and since closure activities. Based on monitoring conducted in 2009, a total of approximately 8.29 acres of the mitigation areas currently have the three wetland indicators present (Table 3, excluding the SPPTS and ETPTS). Depending on future conditions, the Site should be able to meet the "no net loss" of wetlands using on-site wetland mitigation. Continued monitoring and management efforts will work to further develop the wetlands and enhance or create others where new seeps and wet areas become present in the revegetation areas at the Site.

4.1 Wetland Management

Most of the naturally occurring wetland habitat types at the Site are emergent herbaceous communities. However, wetland shrub and forest communities also occur along the streams and at a few other locations. While the establishment of the emergent herbaceous communities is typically accomplished by seeding wetland species, the establishment of the shrubland and forest communities is often also done by installing woody plant stakes or bare-root stock. The establishment of several shrub-dominated communities at the mitigation wetlands would further enhance the overall habitat at the Site by adding additional vegetation structure in the wetland communities.

As has been done in previous years, during spring 2009, additional woody vegetation was planted at several locations using bare-root stock. Wetland locations FC1 and ponds A-1, A-2, B-1, B-2, B-3, and B-4 received additional woody plant stock. Species planted included coyote willow (350 plants), peach-leaf willow (50 plants), American plum (50 plants), and chokecherry (50 plants). Future seeding and planting of woody species may be done at some of the wetland areas to further enhance the mitigation wetlands.

In the past, counts were made to assess the survival of species that had been planted. However, over time, accurate counts of the individuals surviving at the different locations has become impossible because the plants have all grown together. Thus, survival counts are no longer made. Instead, live woody plants growing at each wetland mitigation location are counted. Table 12 lists the number of woody plants of different species found at each location in 2009. These counts include both planted individuals and "volunteers" that have come in on their own. The individuals that are too numerous to count are indicated with a "TN" in the table. At most locations where the originally installed plants survived the first year, plants have begun to spread and fill in the surrounding areas. Where clumps of willow had intact root systems after project disturbance, these plants have come up and continued to spread. At many locations, volunteers of

lead plant, coyote willow, peach-leaf willow, plains cottonwood, narrow-leaved cottonwood (*Populus angustifolia*), Arkansas rose (*Rosa arkansana*), dewy stem willow (*Salix irrorata*), Russian olive, and salt cedar (tamarisk, *Tamarix ramosissima*) seedlings have come in on their own. The seed source most likely came from nearby established plants or from seed brought in by wildlife. Plains cottonwood and willow require an open, scoured area for seedlings to germinate and survive; areas of open, bare ground that were available after wetland projects were completed in 2005 created ideal germination conditions for these species. While most of the volunteers are desirable, two species, Russian olive and salt cedar, are noxious weeds in Colorado. Therefore, attempts are made to control them so they do not proliferate at the wetland locations.

4.2 Noxious Weed Species

Monthly noxious weed surveys were performed from June through August at each of the wetland areas. Weed species recorded in 2009 at the various mitigation wetlands included Canada thistle, cheatgrass (*Bromus tectorum*), chicory (*Cichorium intybus*), common mullein (*Verbascum thapsus*), Dalmatian toadflax (*Linaria dalmatica*), diffuse knapweed (*Centaurea diffusa*), field bindweed (*Convolvulus arvensis*), houndstongue (*Cynoglossum officinale*), moth mullein (*Verbascum blattaria*), musk thistle (*Carduus nutans*), quackgrass, Russian olive, salt cedar, sowthistle (*Sonchus arvensis*), and St. John's wort (*Hypericum perforatum*). These species are listed on the Colorado Noxious Weed Act list (CNWA 2006). Additional potentially problematic species noted at some locations included cocklebur (*Xanthium strumarium*) and birdfoot trefoil (*Lotus corniculatus*).

During 2009, weed-control activities were conducted at several of the wetland mitigation locations. Herbicide applications (using Milestone [aminopyrilid]) were made along the perimeter of a few wetland areas to control noxious species such as Canada thistle, diffuse knapweed, and musk thistle. At several locations in 2009, individual salt cedar plants and Russian olive trees were removed. In 2010, efforts will continue to eradicate any new salt cedar and Russian olive plants found growing at the Site. As necessary, weed control will be conducted in the future to eradicate, suppress, or contain various weed species based on the target species of concern. Weed control will be conducted as part of the normal natural resource-management operations at the Site.

5.0 Summary

Since the wetland mitigation efforts began in 2005, a variety of native wetland species have established in the mitigation areas. Hydrophytic vegetation has begun to fill in the previously open spaces in the mitigation wetlands. Wetlands hydrology continues to be present at most of the locations, and in time hydric soils will develop. Based on the monitoring conducted in 2009, approximately 98 percent of the total area of potential wetlands mapped had all three wetland indicators present. Management of these areas will continue, with a goal of transforming these areas into successful, sustainable mitigation wetlands. As needed, additional native wetland species will be reseeded, and native shrub and tree species will be planted to enhance these areas. The continued monitoring and control of invasive species will help detect weed problems, which will save time and reduce the costs to control them.

6.0 References

CNWA (Colorado Noxious Weed Act), 2006. *Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act*, 8 CCR 1206-2, Colorado Department of Agriculture, Conservation Services Division.

DOE (U.S. Department of Energy), 2006. *Rocky Flats, Colorado, Site Wetland Mitigation Monitoring and Management Plan*, Office of Legacy Management, Grand Junction, Colorado, June.

ESRI (Environmental Systems Research Institute), 2008. *ArcGIS version 9.3*, Environmental Systems Research Institute, Inc. Redlands, California.

USACOE (U.S. Army Corps of Engineers), 1987. *Corps of Engineers Wetlands Delineation Manual*, Wetlands Research Program Technical Report Y-87-1 (online edition), U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi.

USACOE (U.S. Army Corps of Engineers), 1994. *Rocky Flats Plant Wetlands Mapping and Resource Study*, prepared for the U.S. Department of Energy, Golden, Colorado, prepared by the U.S. Army Corps of Engineers, Omaha District, December.

USACOE (U.S. Army Corps of Engineers), 2008. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*, ERDC/EL TR-08-12, Engineer Research and Development Center, Vicksburg, Mississippi.

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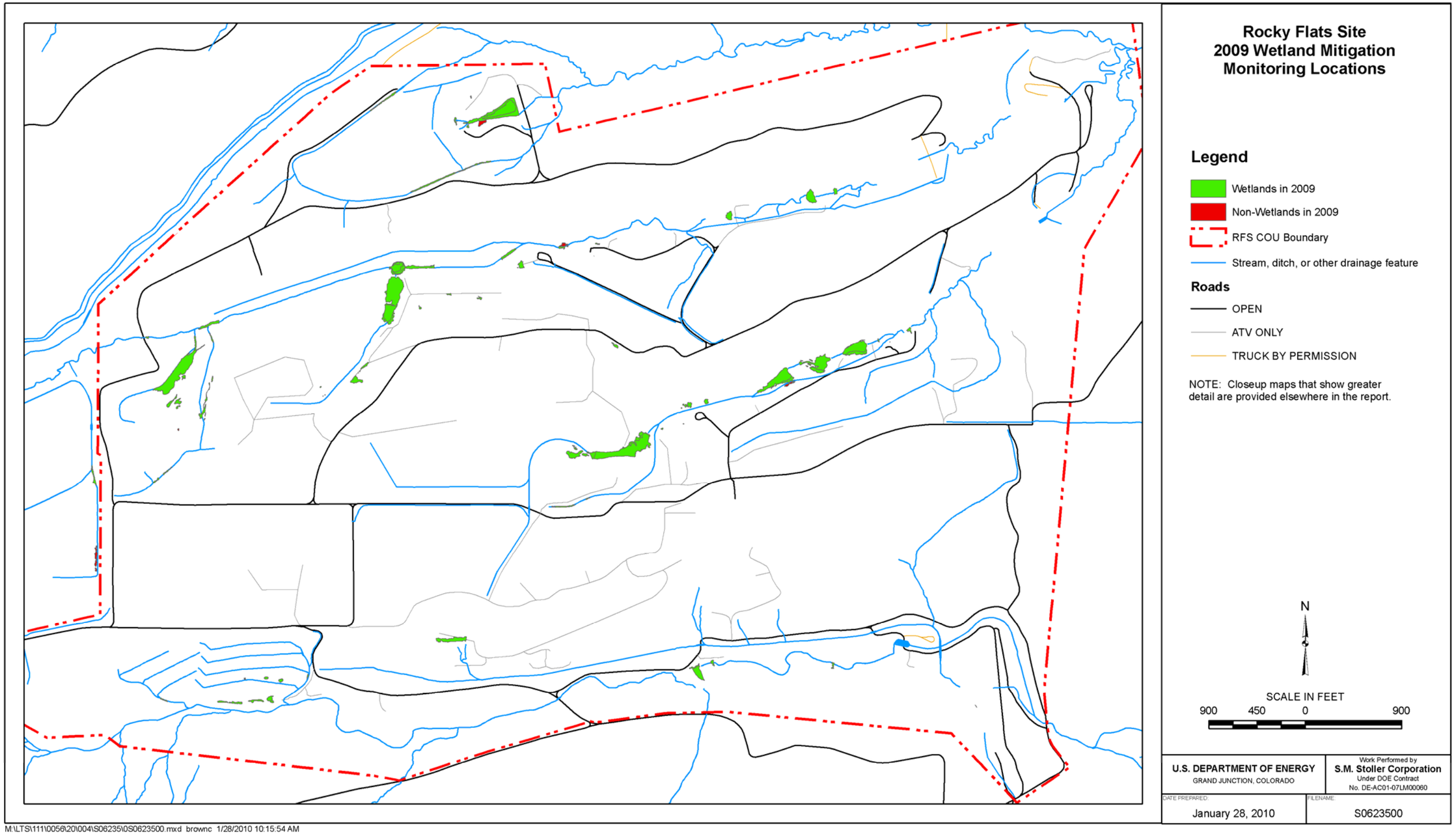
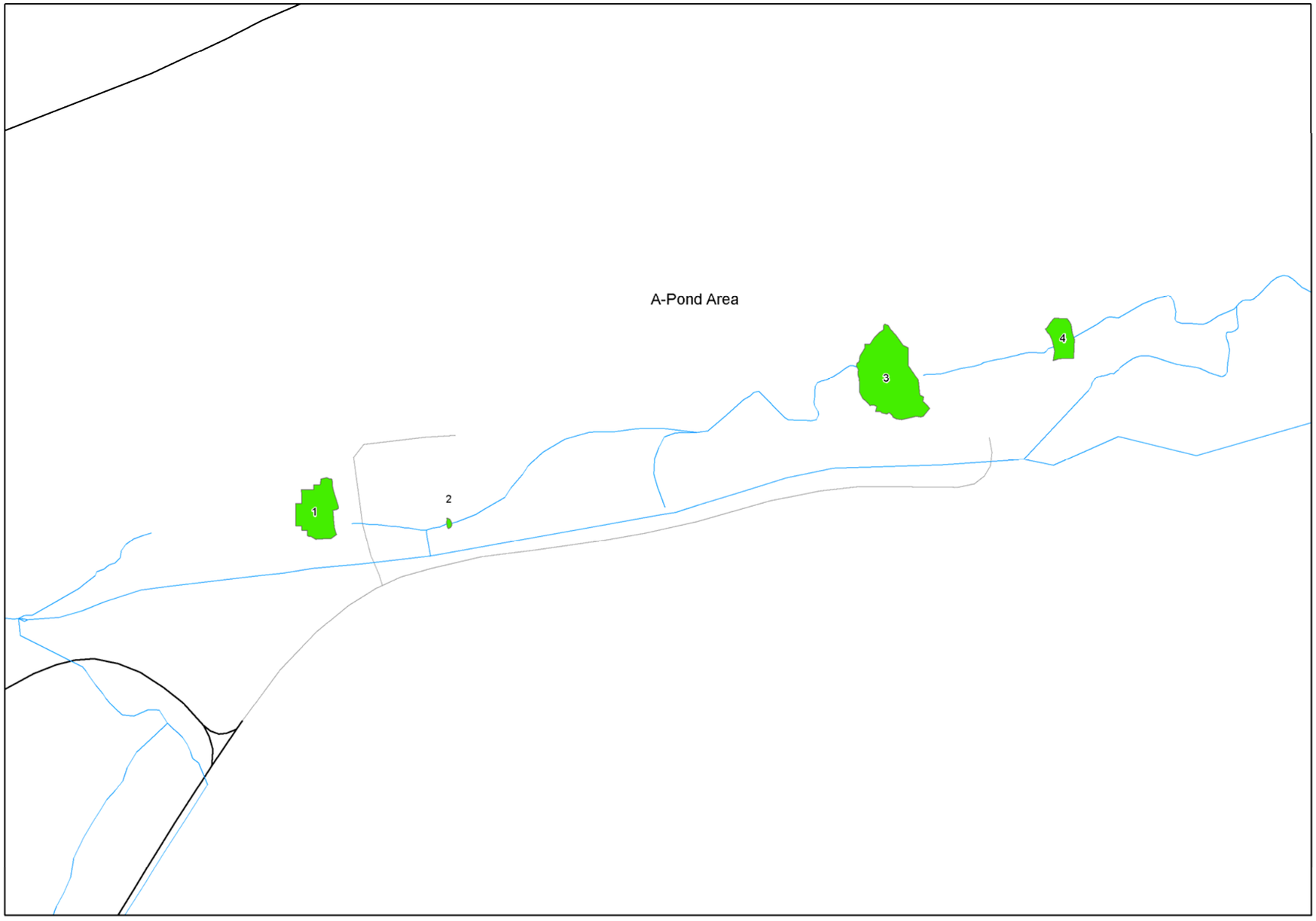


Figure 1. Rocky Flats Site 2009 Wetland Mitigation Monitoring Locations



Rocky Flats Site
2009 Wetland Monitoring
A-Pond Area

Legend

- Wetland in 2009
- Non-Wetland in 2009
- Stream, ditch, or other drainage feature

Roads

- OPEN
- ATV ONLY
- TRUCK BY PERMISSION

NOTES:
1. Numbers correspond to GIS#'s found in tables in report.
2. Wetland and non-wetland classifications are based on whether the location met the three wetland indicator criteria as defined in the U.S. Army Corps of Engineers wetland delineation manual. If all three indicators were present the area was considered a wetland. If one or more indicators were absent, the area was not considered a wetland.

N

SCALE IN FEET
150 75 0 150

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
DATE PREPARED: January 28, 2010	FILENAME: 0S0623600

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Figure 2. Rocky Flats Site 2009 Wetland Monitoring A-Pond Area

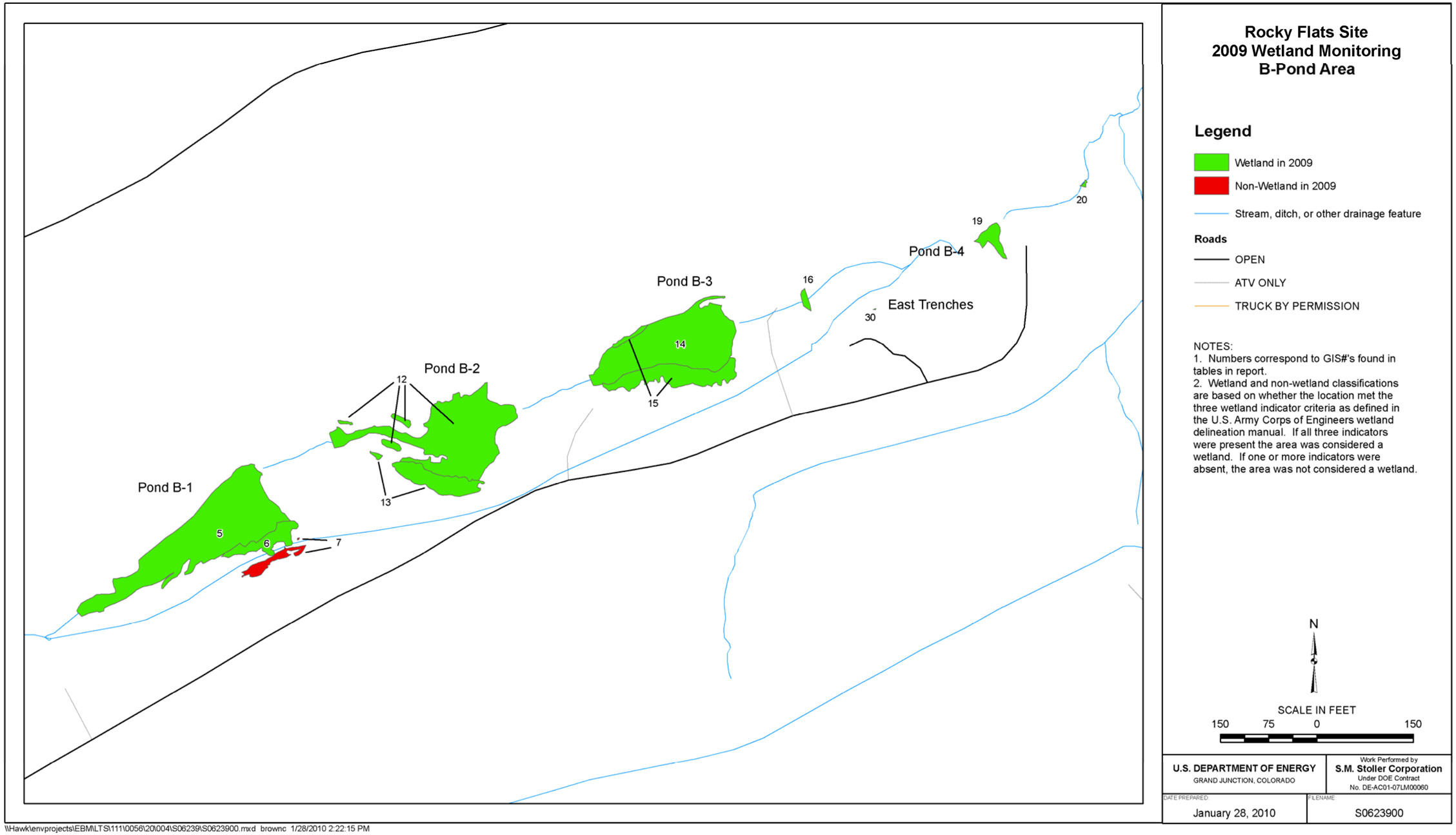

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Figure 3. Rocky Flats Site 2009 Wetland Monitoring B-Pond Area

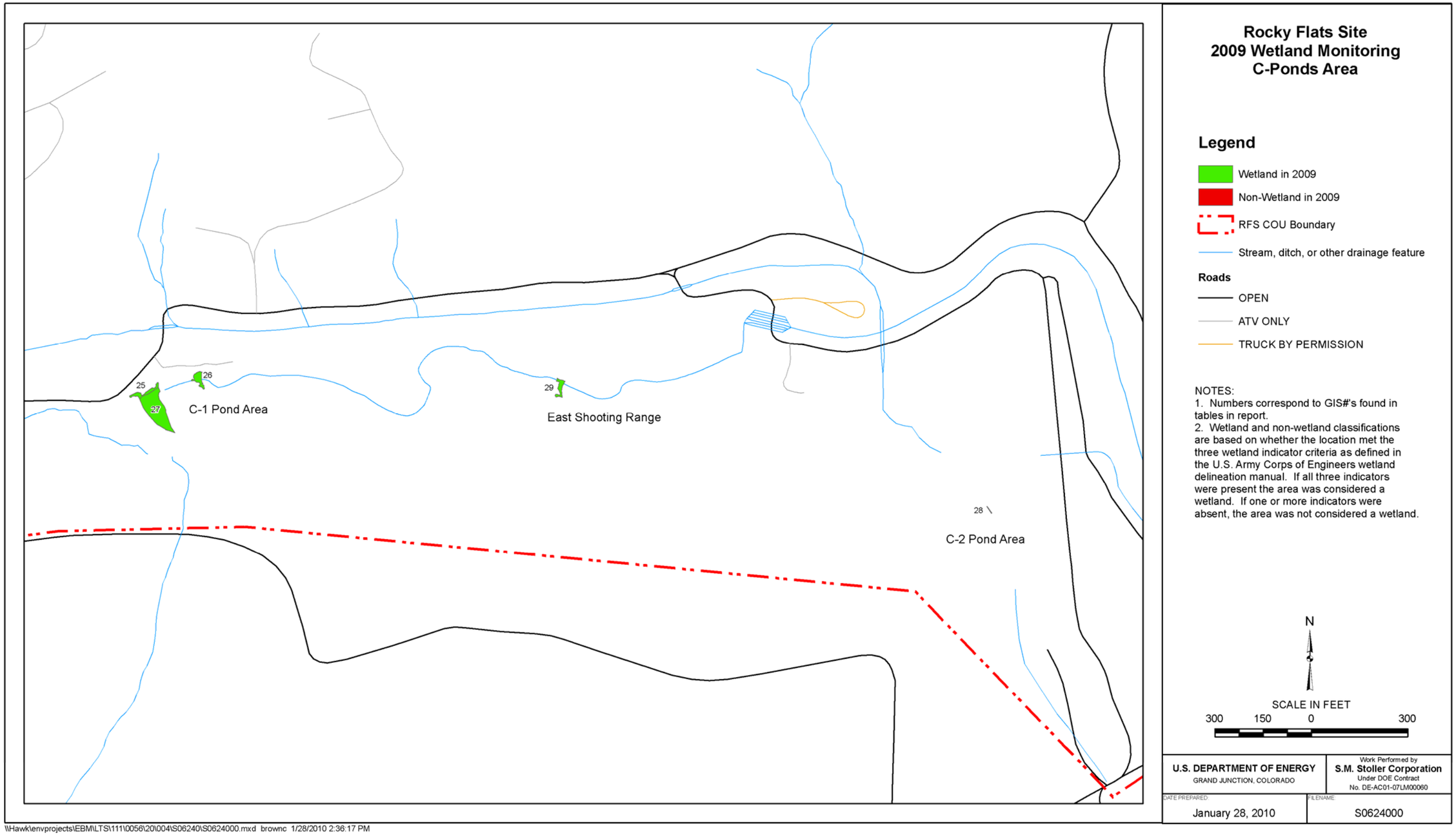

Figure 4. Rocky Flats Site 2009 Wetland Monitoring C-Ponds Area

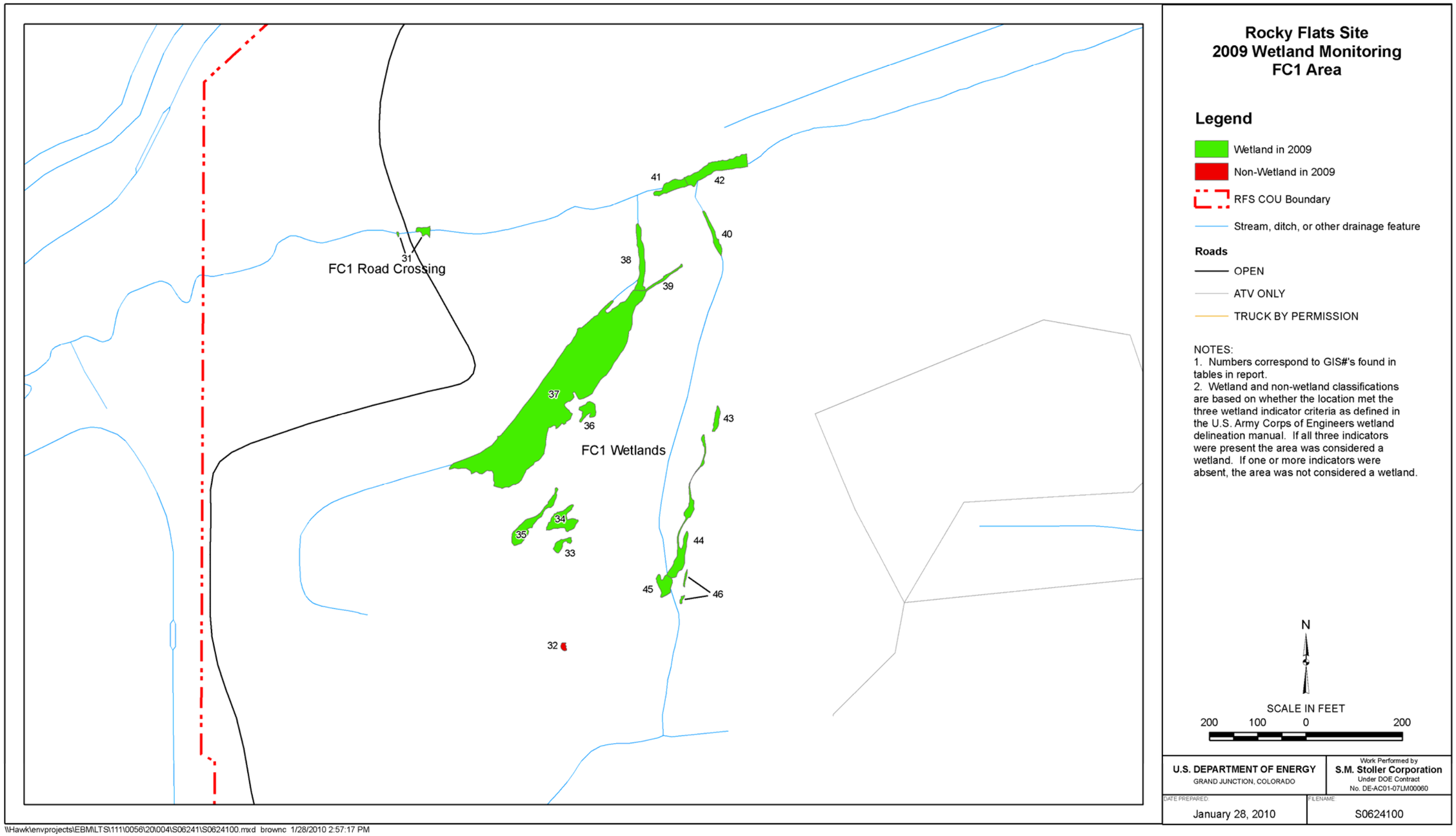

Figure 5. Rocky Flats Site 2009 Wetland Monitoring FC1 Area

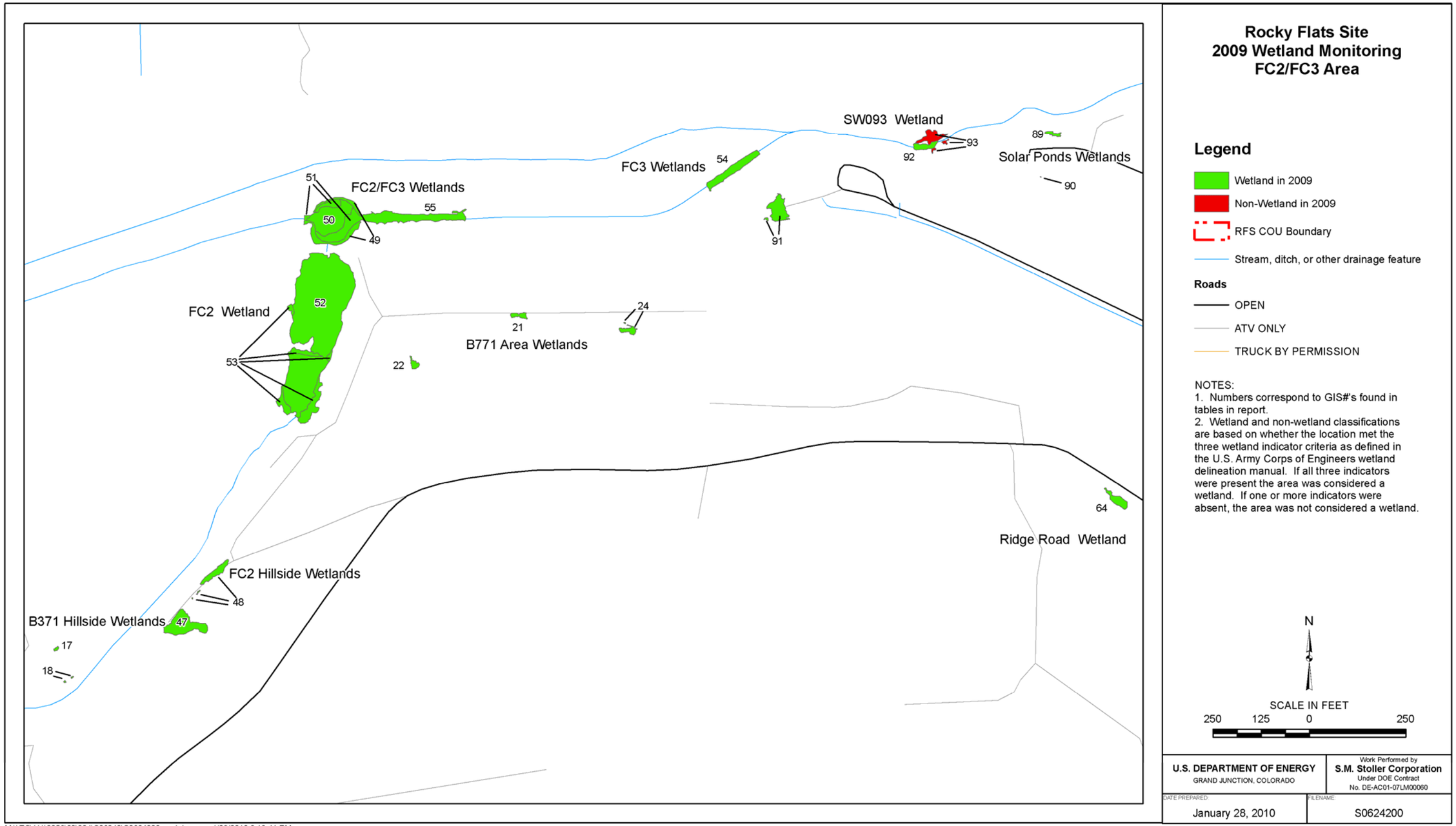

Figure 6. Rocky Flats Site 2009 Wetland Monitoring FC2/FC3 Area

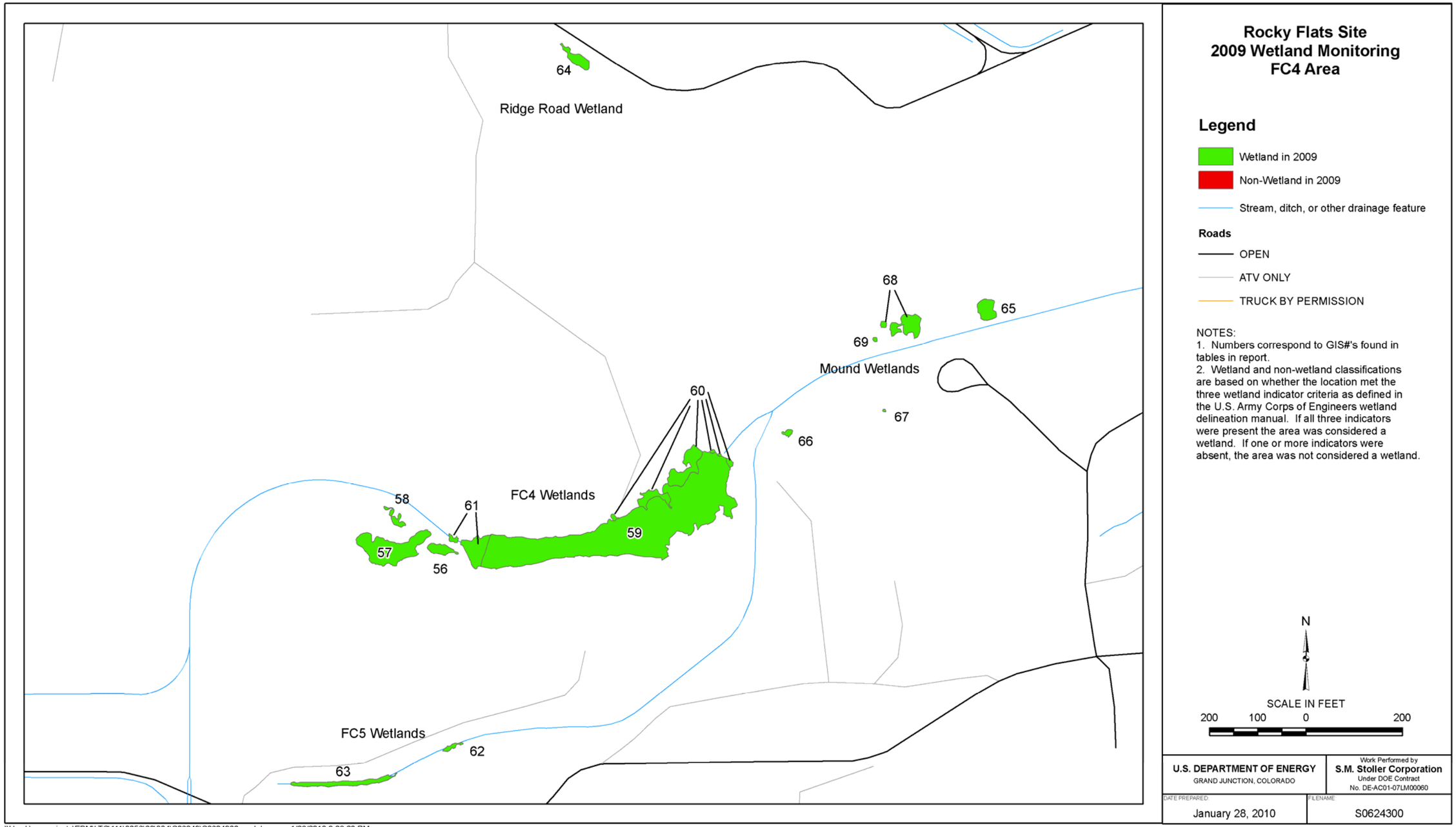

Figure 7. Rocky Flats Site 2009 Wetland Monitoring FC4 Area

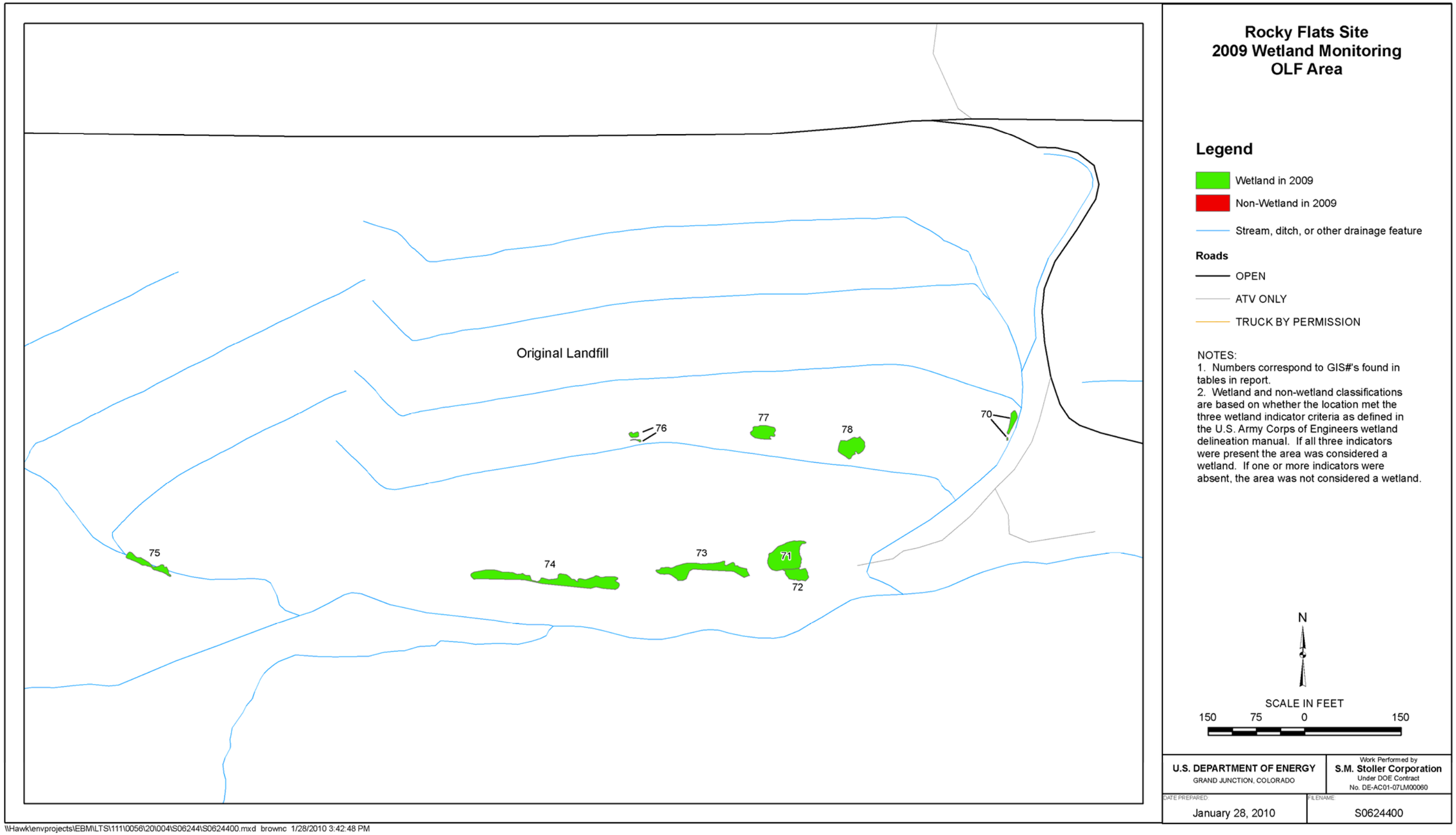

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Figure 8. Rocky Flats Site 2009 Wetland Monitoring OLF Area

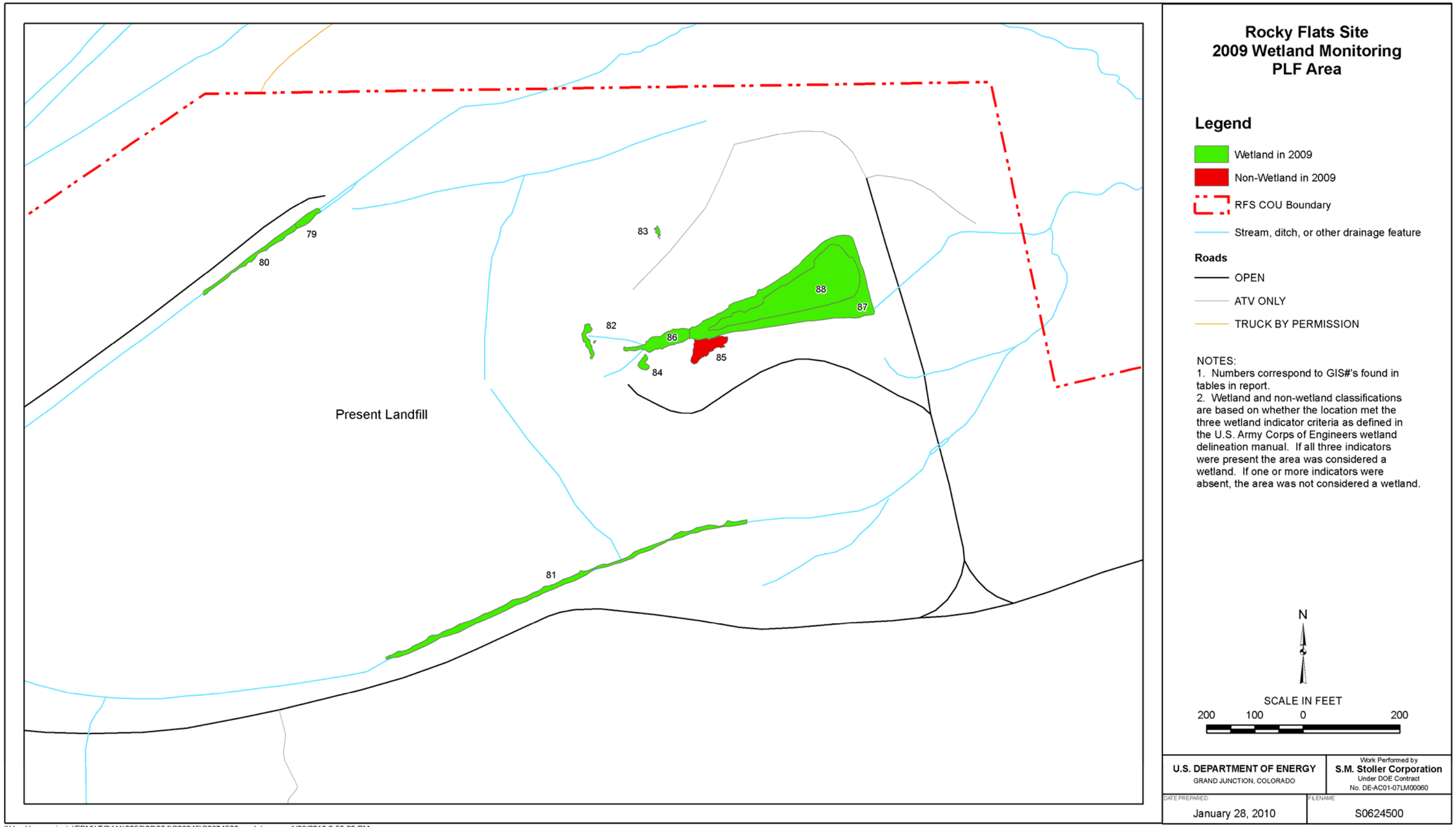

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Figure 9. Rocky Flats Site 2009 Wetland Monitoring PLF Area

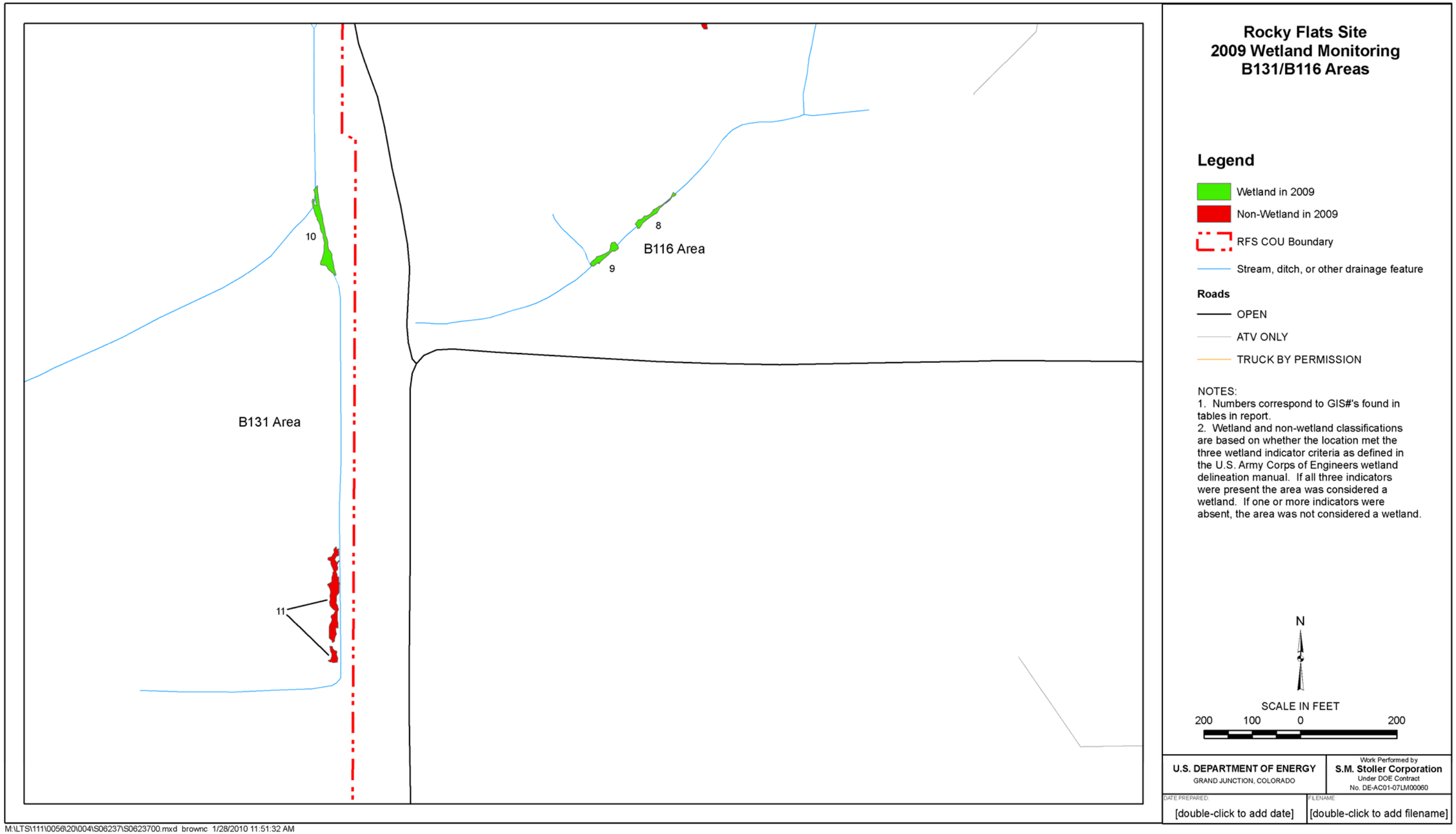

Figure 10. Rocky Flats Site 2009 Wetland Monitoring B131/B116 Areas

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Figure 11. Rocky Flats Site 2009 Wetland Monitoring B881 Area

Table 1. Seed Mixes Used At Various Wetland Mitigation Areas

2005 B-1 Pond Wetland Seed Mix

Zone	Scientific Name	Common Name	Wetland Designation	% of Mix
1	Carex lanuginosa	Wooly Sedge	OBL	10
	Carex nebrascensis	Nebraska Sedge	OBL	10
	Carex praegracilis	Clustered Beak Sedge	FACW	10
	Carex utriculata	Beaked Sedge	OBL	10
	Eleocharis palustris	Spikerush	OBL	10
	Juncus tenuis	Poverty Rush	FAC	10
	Junus torreyi	Torrey's Rush	FACW	10
	Panicum virgatum var. nebraska 28	Switchgrass	FAC	10
	Scirpus americanus	Three-Square Bulrush	OBL	10
	Spartina pectinata	Prairie Cordgrass	FACW	10
2	Agrostis scabra	Hair Grass	FAC	5
	Carex lanuginosa	Wooly Sedge	OBL	10
	Carex praegracilis	Clustered Beak Sedge	FACW	10
	Eleocharis palustris	Spikerush	OBL	10
	Elymus canadensis	Canada Wildrye	FACU	10
	Elymus trachycaulum var. San Luis	Slender Wheatgrass	FACU	10
	Juncus balticus	Arctic Rush	FACW	10
	Panicum virgatum var. nebraska 28	Switchgrass	FAC	10
	Pascopyrum smithii var. arriba	Western Wheatgrass	FACU	10
	Spartina pectinata	Prairie Cordgrass	FACW	10
	Amorpha fruiticosa	Lead Plant	OBL	5

2005 B-2 Pond Wetland Seed Mix

Zone	Scientific Name	Common Name	Wetland Designation	% of Mix
1	Andropogon gerardii	Big Bluestem	FAC-	15
	Bouteloua gracilis var. hachita	Blue Grama		10
	Elymus canadensis	Canada Wildrye	FACU	20
	Elymus trachycaulus var. san luis	Slender Wheatgrass	FACU	20
	Panicum virgatum var. nebraska 28	Switchgrass	FAC	20
	Pascopyrum smithii var. arriba	Western Wheatgrass	FACU	15
2	Agrostis scabra	Hair Grass	FAC	5
	Carex lanuginosa	Wooly Sedge	OBL	10
	Carex praegracilis	Clustered Beak Sedge	FACW	10
	Eleocharis palustris	Spikerush	OBL	10
	Elymus canadensis	Canada Wildrye	FACU	10
	Elymus trachycaulum var. San Luis	Slender Wheatgrass	FACU	10
	Juncus balticus	Arctic Rush	FACW	10
	Panicum virgatum var. nebraska 28	Switchgrass	FAC	10
	Pascopyrum smithii var. arriba	Western Wheatgrass	FACU	10
	Spartina pectinata	Prairie Cordgrass	FACW	10
	Amorpha fruiticosa	Lead Plant	OBL	5

Table 1. (cont.)

3	Carex lanuginosa	Wooly Sedge	OBL	5
	Carex nebrascensis	Nebraska Sedge	OBL	10
	Carex praegracilis	Clustered Beak Sedge	FACW	5
	Carex utriculata	Beaked Sedge	OBL	10
	Eleocharis palustris	Spikerush	OBL	10
	Juncus tenuis	Poverty Rush	FAC	10
	Junus torreyi	Torrey's Rush	FACW	10
	Panicum virgatum var. nebraska 28	Switchgrass	FAC	10
	Scirpus americanus	Three-Square Bulrush	OBL	20
	Spartina pectinata	Prairie Cordgrass	FACW	10

4	Scirpus americanus	Three-Square Bulrush	OBL	20
	Scirpus validus	Soft-Stem Bulrush	OBL	40
	Scirpus acutus	Hardstem Bulrush	OBL	40

2005 B-3 Pond Wetland Seed Mix

Zone	Scientific Name	Common Name	Wetland Designation	% of Mix
1	Andropogon gerardii	Big Bluestem	FAC-	15
	Bouteloua gracilis var. hachita	Blue Grama		10
	Elymus canadensis	Canada Wildrye	FACU	20
	Elymus trachycaulus var. san luis	Slender Wheatgrass	FACU	20
	Panicum virgatum var. nebraska 28	Switchgrass	FAC	20
	Pascopyrum smithii var. arriba	Western Wheatgrass	FACU	15

2	Not used for B-3 Pond

3	Carex lanuginosa	Wooly Sedge	OBL	5
	Carex nebrascensis	Nebraska Sedge	OBL	10
	Carex praegracilis	Clustered Beak Sedge	FACW	5
	Carex utriculata	Beaked Sedge	OBL	10
	Eleocharis palustris	Spikerush	OBL	10
	Juncus tenuis	Poverty Rush	FAC	10
	Junus torreyi	Torrey's Rush	FACW	10
	Panicum virgatum var. nebraska 28	Switchgrass	FAC	10
	Scirpus americanus	Three-Square Bulrush	OBL	20
	Spartina pectinata	Prairie Cordgrass	FACW	10

4	Scirpus americanus	Three-Square Bulrush	OBL	20
	Scirpus validus	Soft-Stem Bulrush	OBL	40
	Scirpus acutus	Hardstem Bulrush	OBL	40

Table 1. (cont.)

Functional Channel 1 Wetland Seed Mix

Scientific Name	Common Name	Wetland Designation	% of Mix
Graminoids			
Agrostis scabra	Hair Grass	FAC	10
Carex lanuginosa	Wooly Sedge	OBL	0
Carex nebrascensis	Nebraska Sedge	OBL	5
Carex utriculata	Beaked Sedge	OBL	0
Eleocharis palustris	Longstem Spike Rush	OBL	15
Juncus balticus	Arctic Rush	FACW	10
Juncus torreyi	Torrey's Rush	FACW	15
Scirpus acutus	Hard-stem Bulrush	OBL	7
Scirpus americana	Three-Square	OBL	5
Scirpus validus	Softstem Bulrush	OBL	13
Spartina pectinata	Prairie Cordgrass	FACW	20

Functional Channel 2 and 4 Wetland Seed Mix

Scientific Name	Common Name	Wetland Designation	% of Mix
Calamagrostis canadensis	Bluejoint Reedgrass	OBL	25
Carex nebrascensis	Nebraska Sedge	OBL	10
Eleocharis palustris	Creeping Spikerush	OBL	10
Juncus balticus	Arctic Rush	FACW	15
Poa palustris	Fowl Bluegrass	FACU	10
Schenoplectus pungens	Three Square Bulrush	OBL	20
Spartina pectinata	Prairie Cordgrass	FACW	10

Present Landfill Wetland Seed Mix

Scientific Name	Common Name	Wetland Designation	% of Mix
Graminoids			
Agropyron smithii	Western Wheatgrass	FACU	15
Agropyron trachycaulum	Slender Wheatgrass	FACU	15
Agrostis scabra	Hair Grass	FAC	6
Carex nebrascensis	Nebraska Sedge	OBL	5
Eleocharis palustris	Longstem Spike Rush	OBL	5
Elymus canadensis	Canada Wildrye	FACU	10
Juncus balticus	Baltic Rush	OBL	5
Panicum virgatum	Switchgrass	FAC	10
Scirpus acutus	Hard-Stem Bulrush	OBL	6
Scirpus pungens	Three-Square Bulrush	OBL	6
Scirpus validus	Great Bulrush	OBL	6
Spartina pectinata	Prairie Cordgrass	FACW	10
Shrubs			
Amorpha fruticosa	Lead Plant	OBL	1

Table 1. (cont.)

Wetland Seed Mix Used In 2006 and in 2009 Dam Breach Project			
Scientific Name	**Common Name**	**Wetland Designation**	**% of Mix**
Graminoids			
Agrostis scabra	Hair Grass	FAC	10
Carex nebrascensis	Nebraska Sedge	OBL	5
Eleocharis palustris	Longstem Spike Rush	OBL	15
Juncus balticus	Arctic Rush	FACW	10
Juncus torreyi	Torrey's Rush	FACW	15
Scirpus acutus	Hard-stem Bulrush	OBL	7
Scirpus americana	Three-Square	OBL	5
Scirpus validus	Softstem Bulrush	OBL	13
Spartina pectinata	Prairie Cordgrass	FACW	20

Riparian Seed Mix			
Scientific Name	**Common Name**	**Wetland Designation**	**% of Mix**
Graminoids			
Agropyron smithii	Western Wheatgrass	FACU	15
Agropyron trachycaulum	Slender Wheatgrass	FACU	20
Andropogon gerardii	Big Bluestem	FAC-	15
Bouteloua gracilis	Blue Grama		10
Elymus canadensis	Canada Wildrye	FACU	20
Panicum virgatum	Switchgrass	FAC	20

Table 2. USACOE and EPA Final Jurisdictional Wetland Impacts Acreage Summary for RFETS 1/18/2010

Project Description	Agency	Actual Wetland Acres Disturbed	Comments
East Shooting Range Project	EPA	0.0169	Wetlands issues submitted under modifications to IM/IRA.
Original Landfill Project	EPA	1.1721	Wetland plan submitted with IM/IRA document.
Present Landfill Project	EPA	2.8239	Wetland plan submitted with IM/IRA.
B-Pond Remediation and Dam Breach Projects	EPA	2.4556	Wetlands addressed in RSOP notification.
East Trenches Project	EPA	0.0002	Actual impacted area = 10 square feet. Project done in 2006. Extended discharge piping a few feet north. Area monitored per EPA direction.
Solar Ponds Discharge Gallery	EPA	NA	Area monitored per EPA direction.
Solar Pond Sump Installation	EPA	0.0009	Actual impacted area = ~40 square feet. Project done in fall 2008. Installed sump at SPPTS. Area monitored per EPA direction.
EPA Subtotal		**6.4696**	
A Ponds Dam Breach Project	USACOE	0.5741	
C-1 Pond	USACOE	0.2507	
C-2 Pond	USACOE	0.0011	All disturbance on pond bottom, so assumed will return. Only pond margin disturbance calculated.
Road North of B131	USACOE	0.0489	
Wetland West of Parking Area North of B771 (FC2/FC3 Confluence)	USACOE	0.1803	
Functional Channel 1 (includes North Access Road NW of B371)	USACOE	0.0307	
Functional Channel 3 (Area Near SW093)	USACOE	0.0089	
Functional Channel 4 (North Access Road Near WWTP (east and west of road), (B991 and Old Pidas Area)	USACOE	0.2357	
USACOE Subtotal		**1.3304**	
Grand Total		**7.8000**	

Does not include any impacts to wetlands associated with water depletion due to cessation of wastewater.

Off-Site Ratios will be 1:1 for the following reasons:
1. Off-site wetlands replace comparable wetlands impacted.
2. Off-site wetlands are close to impacted site (~1 1/2 miles).
3. Off-site wetlands are located in the same stream drainage.

Table 3. 2009 Estimated Wetland Acreage Summary

GIS Number	Location	Wetland (Y/N)	ACRES
1	A-1 Pond Wetland - A	Y	0.0765
2	A-1 Pond Wetland - B	Y	0.0016
3	A-2 Pond Wetland - A	Y	0.1709
4	A-2 Pond Wetland - B	Y	0.0352
5	B-1 Pond Wetland - A	Y	0.4824
6	B-1 Pond Wetland - B	Y	0.0534
7	B-1 Pond Wetland - C	N	0.0268
8	B116 Wetland - North	Y	0.0144
9	B116 Wetland - South	Y	0.0156
10	B131 Wetland	Y	0.0479
11	B131 SAEX1	N	0.0689
12	B-2 Pond Wetland - A	Y	0.3871
13	B-2 Pond Wetland - B	Y	0.0842
14	B-3 Pond Wetland - A	Y	0.3573
15	B-3 Pond Wetland - B	Y	0.1227
16	B-3 Pond Wetland - C	Y	0.0064
17	B371 Hillside Wetland - A	Y	0.0022
18	B371 Hillside Wetland - B	Y	0.0011
19	B-4 Pond Wetland - A	Y	0.0245
20	B-4 Pond Wetland - B	Y	0.0012
21	B771 North Wetland	Y	0.0106
22	B771 Northwest Wetland	Y	0.0091
23	B881	Y	0.2030
24	Bowman's Pond Wetland	Y	0.0135
25	C-1 Pond Wetland - A	Y	0.0199
26	C-1 Pond Wetland - B	Y	0.0222
27	C-1 Pond Wetland - C	Y	0.1481
28	C-2 Pond Wetland	Y	0.0011
29	East Shooting Range Wetland	Y	0.0174
30	East Trenches Wetland	Y	0.0001
31	FC1 Road Crossing	Y	0.0100
32	FC1 Wetland - A	N	0.0036
33	FC1 Wetland - B	Y	0.0117
34	FC1 Wetland - C	Y	0.0412
35	FC1 Wetland - D	Y	0.0464
36	FC1 Wetland - E	Y	0.0198
37	FC1 Wetland - F	Y	0.9507
38	FC1 Wetland - G	Y	0.0370
39	FC1 Wetland - H	Y	0.0096
40	FC1 Wetland - I	Y	0.0167
41	FC1 Wetland - J	Y	0.0256
42	FC1 Wetland - K	Y	0.0641
43	FC1 Wetland - L	Y	0.0101
44	FC1 Wetland - M	Y	0.0579
45	FC1 Wetland - N	Y	0.0231
46	FC1 Wetland - O	Y	0.0044
47	FC2 Hillside Wetland - A	Y	0.0897
48	FC2 Hillside Wetland - B	Y	0.0283
49	FC2/FC3 Confluence Wetland - A	Y	0.0676
50	FC2/FC3 Confluence Wetland - B	Y	0.1394
51	FC2/FC3 Confluence Wetland - C	Y	0.0981
52	FC2 Wetland - A	Y	1.0000
53	FC2 Wetland - B	Y	0.1072
54	FC3 Lower Wetland	Y	0.0656
55	FC3 Upper Wetland	Y	0.1249
56	FC4 Hillside Wetland - A	Y	0.0219
57	FC4 Hillside Wetland - B	Y	0.1364
58	FC4 Hillside Wetland - C	Y	0.0131
59	FC4 Wetland - A	Y	0.9618
60	FC4 Wetland - B	Y	0.0975
61	FC4 Wetland - C	Y	0.0588
62	FC5 East Wetland	Y	0.0061
63	FC5 West Wetland	Y	0.0418
64	Ridge Road Wetland	Y	0.0252
65	Mound East Wetland	Y	0.0308
66	Mound Southwest Wetland	Y	0.0048
67	Mound Well Wetland	Y	0.0007
68	Mound West Wetland	Y	0.0478
69	Mound West-West Wetland	Y	0.0016
70	OLF - A	Y	0.0061
71	OLF - B	Y	0.0441
72	OLF - C	Y	0.0131
73	OLF - D	Y	0.0420
74	OLF - E	Y	0.0645
75	OLF - F	Y	0.0129
76	OLF - G	Y	0.0029
77	OLF - H	Y	0.0149
78	OLF - I	Y	0.0219
79	PLF Wetland - A	Y	0.0186
80	PLF Wetland - B	Y	0.0419
81	PLF Wetland - C	Y	0.1661
82	PLF Wetland - D	Y	0.0179
83	PLF Wetland - E	Y	0.0032
84	PLF Wetland - F	Y	0.0098
85	PLF Wetland - G	N	0.0518
86	PLF Wetland - H	Y	0.0662
87	PLF Wetland - I	Y	0.4116
88	PLF Wetland - J	Y	0.4311
89	SPPTS Discharge Gallery Wetland	Y	0.0069
90	SPPTS Sump Installation Wetland	N	0.0001
91	SPPTS Well Wetland	Y	0.0555
92	SW093 Wetland - A	Y	0.0199
93	SW093 Wetland - B	N	0.0349

	Acres	Percent
Wetland in 2009 - Total Acreage	**8.2983**	**97.8**
Non-Wetland in 2009 - Total Acreage	**0.1861**	**2.2**
Total Acreage	**8.4843**	**100.0**

Wetland (Y/N) = Does wetland meet wetland indicator criteria in 2009?

Table 4. Wetland Vegetation Data Summary 2009

Herbaceous Cover

			GIS #	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**A1 Pond A**	**A1 Pond B**	**A2 Pond A**	**A2 Pond B**	**B1 Pond A**	**B1 Pond B**	**B1 Pond C**	**B116 North**	**B116 South**	**B131**	**B131 SAEX1**	**B2 Pond A**	**B2 Pond B**
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	Y	FACU	0.25		0.25	1.00	2.00		1.00	2.00		0.25	6.00	10.00	15.00
Agropyron cristatum (L.) Gaertn.	AGCR1	N							0.25							
Agropyron intermedium (Host) Beauv.	AGIN1	N														
Agropyron repens (L.) Beauv.	AGRE1	N	FAC							0.25						
Agrostis scabra Willd.	AGSC1	Y	FAC	7.00		3.00	5.00						0.25			
Agropyron smithii Rydb.	AGSM1	Y	FACU					2.00			0.25				3.00	10.00
Agrostis stolonifera L.	AGST1	N	FAC+					0.25	0.25		0.25	0.25	0.25		0.25	1.00
Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1	N							0.25					1.00		
Alisma triviale Pursh	ALTR1	Y	OBL													
Ambrosia artemisiifolia L.	AMAR1	Y					0.25	0.25		0.25	0.25		0.25	0.25		
Ambrosia psilostachya DC.	AMPS1	Y	FAC			0.25								3.00		
Andropogon gerardii Vitman	ANGE1	Y	FAC-													
Andropogon scoparius Michx.	ANSC1	Y	FACU													
Apocynum cannabinum L.	APCA1	Y	FAC													
Artemisia campestris L. ssp. caudata (Michx.) Hall & Clem.	ARCA1	Y														
Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1	Y	FACU-													
Aster falcatus Lindl.	ASFA1	Y	FAC					0.25	5.00	0.25						
Astragalus flexuosus (Hook.) G. Don	ASFL1	Y														
Aster hesperius A. Gray var. hesperius	ASHE1	Y	OBL						0.25	0.25					0.25	
Aster porteri Gray	ASPO1	Y													0.25	
Asclepias speciosa Torr.	ASSP1	Y	FAC					0.25	2.00	1.00	0.25			0.25		
Asclepias viridiflora Raf.	ASVI1	Y														
Barbarea vulgaris R. Br.	BAVU1	N	FAC	0.25	0.25					0.25						
Bouteloua curtipendula (Michx.) Torr.	BOCU1	Y												1.00		
Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1	Y												3.00		
Bromus inermis Leyss. ssp. inermis	BRIN1	N							30.00	10.00						
Bromus japonicus Thunb. ex Murr.	BRJA1	N	FACU	0.25					0.25					0.25		
Bromus tectorum L.	BRTE1	N														
Buchloe dactyloides (Nutt.) Engelm.	BUDA1	Y	FACU											0.25		
Calamagrostis canadensis (Michx.) Beauv.	CACA1	Y	OBL													
Carex lanuginosa Michx.	CALA1	Y	OBL				3.00		1.00							
Carex nebrascensis Dew.	CANE1	Y	OBL					0.25			0.25					
Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi	CANU1	N														
Carex praegracilis W. Boott.	CAPR1	Y	FACW													
Ceratophyllum demersum L.	CEDE1	Y	OBL												5.00	
Centaurea diffusa Lam.	CEDI1	N						0.25	0.25		0.25			2.00		0.25
Chenopodium glaucum L.	CHGL1	Y	FACW	0.25		10.00	1.00								1.00	
Chrysopsis villosa Pursh.	CHVI1	Y														
Cirsium arvense (L.) Scop.	CIAR1	N	FACU	0.25	0.25	0.25	0.25	1.00	1.00		0.25	0.25		0.25	2.00	10.00
Cichorium intybus L.	CIIN1	N												0.25		
Convolvulus arvensis L.	COAR1	N														
Conyza canadensis (L.) Cronq.	COCA1	Y	FACU-							0.25						0.25
Crepis occidentalis Nutt.	CROC1	Y														
Cynoglossum officinale L.	CYOF1	N								5.00						0.25
Dalea candida Michx. ex Willd. var. oligophylla (Torr.) Shinners.	DACA1	Y														
Dactylis glomerata L.	DAGL1	N	FACU													
Distichlis spicata (L.) Greene var. stricta (Torr.) Beetle	DISP1	Y	NI												0.25	
Echinochloa crus-galli (L.) Beauv.	ECCR1	N	FACW			0.25	0.25	0.25					0.25	0.25	1.00	
Elymus canadensis L.	ELCA1	Y	FACU					0.25			0.25		0.25		0.25	1.00
Eleocharis macrostachya Britt.	ELMA1	Y	OBL				7.00	2.00	0.25			0.25	15.00	0.25	0.25	0.25
Epilobium ciliatum Raf. ssp. glandulosum (Lehm.) Hock & Raven	EPCI1	Y	OBL													
Equisetum arvense L.	EQAR1	Y	FAC													
Erigeron strigosus Muhl. ex Willd.	ERST1	Y	FAC													
Euphorbia marginata Pursh.	EUMA1	Y	FACU													
Euphorbia serpyllifolia Pers.	EUSE1	Y														

Table 4. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

			GIS #	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**A1 Pond A**	**A1 Pond B**	**A2 Pond A**	**A2 Pond B**	**B1 Pond A**	**B1 Pond B**	**B1 Pond C**	**B116 North**	**B116 South**	**B131**	**B131 SAEX1**	**B2 Pond A**	**B2 Pond B**
Festuca ovina L. var. rydbergii St. Yves	FEOV1	Y														
Festuca pratensis Huds.	FEPR1	N	FAC								65.00	15.00			0.25	0.25
Gaura parviflora Dougl.	GAPA1	Y	NI						0.25							
Geum macrophyllum Willd.	GEMA1	Y	OBL							0.25						
Glycyrrhiza lepidota Pursh.	GLLE1	Y	FACU													
Grindelia squarrosa (Pursh.) Dun.	GRSQ1	Y	FACU-					0.25			0.25	0.25		0.25		
Helianthus annuus L.	HEAN1	Y	FACU				0.25	0.25	0.25	0.25			0.25			
Hordeum jubatum L.	HOJU1	Y	FACW			0.25		0.25	0.25			0.25	0.25	0.25	0.25	
Hypericum perforatum L.	HYPE1	N														
Juncus balticus Willd.	JUBA1	Y	OBL		0.25		2.00	0.25	1.00	70.00		0.25	1.00			
Juncus bufonius L.	JUBU1	Y	OBL													
Juncus dudleyi Wieg.	JUDU1	Y	FAC										0.25			
Juncus longistylis Torr.	JULO1	Y	FACW+													
Juncus nodosus L.	JUNO1	Y	OBL													
Juncus torreyi Cov.	JUTO1	Y	FACW+			0.25	1.00	0.25					15.00		1.00	0.25
Kochia scoparia (L.) Schrad.	KOSC1	N	FACU	0.25		0.25	3.00			0.25					0.25	
Lactuca serriola L.	LASE1	N	FAC				0.25	0.25	0.25	0.25				0.25	0.25	
Lepidium campestre (L.) R. Br.	LECA1	N														
Leptochloa fasicularis (Lam.) A. Gray	LEFA1	Y	OBL												0.25	
Lemna minor L.	LEMI1	Y	OBL													
Linaria dalmatica (L.) Mill.	LIDA1	N								0.25						0.25
Lotus corniculatus L.	LOCO1	N	FACU													
Lycopus americanus Muhl. ex Barton	LYAM1	Y	OBL													
Melilotus alba Medic.	MEAL1	N	FACU													
Mentha arvensis L.	MEAR1	Y	FACW		0.25		0.25		0.25							
Medicago lupulina L.	MELU1	N	FAC											0.25		
Melilotus officinalis (L.) Pall.	MEOF1	N	FACU	0.25			3.00	0.25		0.25	0.25			4.00	0.25	0.25
Medicago sativa L. ssp. sativa	MESA1	N														
Muhlenbergia asperifolia (Nees. & Mey.) Parodi	MUAS1	Y	FACW													
Muhlenbergia racemosa (Michx.) B. S. P.	MURA1	Y	FACW													
Nepeta cataria L.	NECA1	N	FACU				0.25			3.00						2.00
Oenothera villosa Thunb. ssp. strigosa (Rydb.) Dietrich & Raven	OEVI1	Y	FAC					0.25		0.25			0.25			0.25
Onosmodium molle Michx. var. occidentale (Mack.) Johnst.	ONMO1	Y														
Opuntia macrorhiza Engelm.	OPMA1	Y														
Panicum capillare L.	PACA1	Y	FAC												0.25	
Panicum virgatum L.	PAVI1	Y	FAC					1.00			20.00	10.00	0.25			15.00
Phleum pratense L.	PHPR1	N	FACU													
Plantago lanceolata L.	PLLA1	N	FAC									0.25		0.25		
Plantago major L.	PLMA1	N	FAC								0.25		0.25		0.25	0.25
Poa annua L.	POAN1	N	FACU													
Polygonum arenastrum Jord. ex Bor.	POAR1	N													0.25	
Poa compressa L.	POCO1	N	FACU										0.25	0.25		
Polygonum convolvulus L.	POCO2	N	FACU							0.25						
Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1	Y	FAC-						0.25							
Polygonum lapathifolium L.	POLA1	N	OBL													
Polypogon monspeliensis (L.) Desf.	POMO1	N	OBL					0.25					20.00		1.00	0.25
Potamogeton natans L.	PONA1	Y	OBL													
Polygonum persicaria L.	POPE2	N	OBL	0.25		1.00	1.00						0.25	0.25		
Poa pratensis L.	POPR1	N	FACU							0.25						
Polygonum ramosissimum Michx.	PORA1	Y	FAC													
Prunella vulgaris L.	PRVU1	Y	FAC													
Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1	Y														
Ranunculus trichophyllus Chaix	RATR1	Y	OBL													
Rumex crispus L.	RUCR1	N	FACW					0.25					0.25	0.25		
Rumex salicifolius Weinm. ssp. triangulivalvis Danser	RUME1	Y						0.25								

Table 4. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

			GIS #	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**A1 Pond A**	**A1 Pond B**	**A2 Pond A**	**A2 Pond B**	**B1 Pond A**	**B1 Pond B**	**B1 Pond C**	**B116 North**	**B116 South**	**B131**	**B131 SAEX1**	**B2 Pond A**	**B2 Pond B**
Salix sp.	SAL1															
Scirpus pallidus (Britt.) Fern	SCPA1	Y	OBL													
Scirpus pungens Vahl	SCPU1	Y	OBL									1.00	0.25			
Scirpus validus Vahl.	SCVA1	Y	OBL			1.00	0.25	1.00					15.00		25.00	0.25
Setaria viridis (L.) Beauv.	SEVI1	N														
Sisymbrium altissimum L.	SIAL1	N	FACU							0.25						
Sonchus arvensis L. ssp. arvensis L.	SOAR1	N	FAC										0.25	0.25	0.25	
Solidago canadensis L.	SOCA1	Y	FACU													
Solidago missouriensis Nutt.	SOMI1	Y														
Sorghastrum nutans (L.) Nash	SONU1	Y	FACU											0.25		
Solidago rigida L.	SORI1	Y	FACU													
Sporobolus cryptandrus (Torr.) A. Gray	SPCR1	Y	FACU-													
Spergularia media (L.) Presl.	SPME1	Y	NI										1.00			
Sporobolus neglectus Nash	SPNE1	Y	UPL													
Spartina pectinata Link	SPPE1	Y	FACW			0.25	0.25	1.00					0.25		1.00	0.25
Stipa viridula Trin.	STVI1	Y												0.25		
Taraxacum officinale Weber	TAOF1	N	FACU													
Tragopogon dubius Scop.	TRDU1	N												0.25		
Triglochin maritima L.	TRMA1	Y	OBL													
Typha angustifolia L.	TYAN1	N	OBL					30.00				1.00			10.00	
Typha latifolia L.	TYLA1	Y	OBL	0.25		8.00	0.25	35.00	1.00				25.00		20.00	5.00
Unknown Species	UNKN															
Veronica anagallis-aquatica L.	VEAN1	N	OBL	0.25												
Verbascum blattaria L.	VEBL1	N	UPL							0.25						0.25
Verbena bracteata Lag. & Rodr.	VEBR1	Y	FACU													
Verbascum thapsus L.	VETH1	N				0.25			2.00	0.25						
Xanthium strumarium L.	XAST1	Y	FAC										0.25			
Total Herbaceous Foliar Cover				9.50	1.00	25.25	29.50	79.75	46.25	94.50	89.75	28.75	96.75	25.00	84.00	62.50
50/20 Rule: 50% of Total Cover				4.75	0.50	12.63	14.75	39.88	23.13	47.25	44.88	14.38	48.38	12.50	42.00	31.25
50/20 Rule: 20% of Total Cover				1.90	0.20	5.05	5.90	15.95	9.25	18.90	17.95	5.75	19.35	5.00	16.80	12.50
Total Native Herbaceous Cover				7.75	0.50	23.25	21.50	47.00	11.75	73.75	23.50	12.00	75.00	15.00	68.00	47.50
Total Non-Native Herbaceous Cover				1.75	0.50	2.00	8.00	32.75	34.50	20.75	66.25	16.75	21.75	10.00	16.00	15.00

Shrub/Sapling Cover

			GIS #	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**A1 Pond A**	**A1 Pond B**	**A2 Pond A**	**A2 Pond B**	**B1 Pond A**	**B1 Pond B**	**B1 Pond C**	**B116 North**	**B116 South**	**B131**	**B131 SAEX1**	**B2 Pond A**	**B2 Pond B**
Amorpha fruticosa L.	AMFR1	Y	OBL						0.25							
Elaeagnus angustifolia L.	ELAN1	N	FAC													
Populus deltoides Marsh. ssp. monilifera (Ait.) Eckenw.	PODE1	Y	FAC			0.25	0.25	0.25								
Prunus americana Marsh.	PRAM1	Y	UPL													
Prunus virginiana L. var. melanocarpa (A. Nels.) Sarg.	PRVI1	Y	FACU	0.25												
Rosa arkansana Porter	ROAR1	Y	NI													
Rubus idaeus L. ssp. sachalinensis (Levl.) Focke var. sachalinensis	RUID1	Y														
Salix amygdaloides Anderss.	SAAM1	Y	FACW			0.25									0.25	
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	Y	OBL	1.00	7.00	0.25	25.00	0.25	80.00		35.00	60.00		75.00	0.25	90.00
Salix irrorata Andersson	SAIR1	Y	FACW+													
Symphoricarpos occidentalis Hook.	SYOC1	Y			0.25			0.25	8.00	0.25						10.00
Tamarix ramosissima Ledeb.	TARA1	N	FACW					0.25				0.25			0.25	0.25
Total Shrub/Sapling Cover				1.25	7.25	0.75	25.25	1.00	88.25	0.25	35.00	60.25	0.00	75.00	0.75	100.25
50/20 Rule: 50% of Total Cover				0.63	3.63	0.38	12.63	0.50	44.13	0.13	17.50	30.13	0.00	37.50	0.38	50.13
50/20 Rule: 20% of Total Cover				0.25	1.45	0.15	5.05	0.20	17.65	0.05	7.00	12.05	0.00	15.00	0.15	20.05
Total Native Shrub/Sapling Cover				1.25	7.25	0.75	25.25	0.75	88.25	0.25	35.00	60.00	0.00	75.00	0.50	100.00
Total Non-Native Shrub/Sapling Cover				0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.25

Table 4. Wetland Vegetation Data Summary 2009 (cont.)

Tree Cover

			GIS #	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**A1 Pond A**	**A1 Pond B**	**A2 Pond A**	**A2 Pond B**	**B1 Pond A**	**B1 Pond B**	**B1 Pond C**	**B116 North**	**B116 South**	**B131**	**B131 SAEX1**	**B2 Pond A**	**B2 Pond B**
Salix amygdaloides Anderss.	SAAM1	Y	FACW													
Total Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 50% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 20% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrophytic Vegetation Indicator 1: Dominance Test

Wetland Indicator			**Wetland Indicator Code**													
Obligate Species			OBL		1	1	3	2	1	1	1	1	4	1	2	1
Facultative Wet Species			FACW+										1			
Facultative Wet Species			FACW			1										
Facultative Species			FAC+													
Facultative Species			FAC	1			1				2	2		1		1
Facultative Species			FAC-													
Facultative Upland Species			FACU				2							2		3
Facultative Upland Species			FACU-													
Upland Species			UPL													
Non-Indicator Species			NI													
Not Applicable/Available - Not listed in USFWS species lists			NA						1					1		
Unknown																
# Dominant Species That Are OBL, FACW, or FAC (exluding FAC-)				1	1	2	4	2	1	1	3	3	5	2	2	2
Total # Dominant Species Across All Strata				1	1	2	6	2	2	1	3	3	5	5	2	5
% of Dominant Species That Are OBL, FACW, or FAC				100.00	100.00	100.00	66.67	100.00	50.00	100.00	100.00	100.00	100.00	40.00	100.00	40.00

Hydrophytic Vegetation Indicator 2: Prevalence Index

			GIS #	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13
				A1 Pond A	**A1 Pond B**	**A2 Pond A**	**A2 Pond B**	**B1 Pond A**	**B1 Pond B**	**B1 Pond C**	**B116 North**	**B116 South**	**B131**	**B131 SAEX1**	**B2 Pond A**	**B2 Pond B**
Prevalence Index				2.79	1.30	1.83	1.69	1.36	2.37	1.92	2.47	1.60	1.29	1.76	1.68	2.19

Wetland Determination

Hydophytic Vegetation Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Hydrology Indicators Present? Y/N				Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y
Wetland Soils Present? Y/N				Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y
Is the Sampled Area a Wetland? Y/N				Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y

Dominant Species based on 50/20 rule based on Great Plains Region Interim Regional Supplement - March 2008
Total Absolute Vegetation Cover less than 5 percent
Passed Test
Failed Test

Table 5. Wetland Vegetation Data Summary 2009

Herbaceous Cover

				#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25	#26
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**B3 Pond A**	**B3 Pond B**	**B3 Pond C**	**B371 Hillside A**	**B371 Hillside B**	**B4 Pond A**	**B4 Pond B**	**B771 - N**	**B771 - NW**	**B881**	**Bowman's Pond**	**C1 Pond A**	**C1 Pond B**
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	Y	FACU	2.00	5.00			10.00	0.25		1.00	1.00	0.25	4.00	1.00	
Agropyron cristatum (L.) Gaertn.	AGCR1	N														
Agropyron intermedium (Host) Beauv.	AGIN1	N												0.25		
Agropyron repens (L.) Beauv.	AGRE1	N	FAC													
Agrostis scabra Willd.	AGSC1	Y	FAC	1.00												
Agropyron smithii Rydb.	AGSM1	Y	FACU			0.25	5.00	5.00			0.25	1.00	0.25	0.25		
Agrostis stolonifera L.	AGST1	N	FAC+					10.00								
Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1	N														
Alisma triviale Pursh	ALTR1	Y	OBL													
Ambrosia artemisiifolia L.	AMAR1	Y		0.25							0.25				2.00	
Ambrosia psilostachya DC.	AMPS1	Y	FAC		0.25											
Andropogon gerardii Vitman	ANGE1	Y	FAC-													
Andropogon scoparius Michx.	ANSC1	Y	FACU													
Apocynum cannabinum L.	APCA1	Y	FAC													
Artemisia campestris L. ssp. caudata (Michx.) Hall & Clem.	ARCA1	Y														
Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1	Y	FACU-													
Aster falcatus Lindl.	ASFA1	Y	FAC		2.00											
Astragalus flexuosus (Hook.) G. Don	ASFL1	Y														
Aster hesperius A. Gray var. hesperius	ASHE1	Y	OBL		0.25									0.25		
Aster porteri Gray	ASPO1	Y														
Asclepias speciosa Torr.	ASSP1	Y	FAC		0.25				0.25				0.25			
Asclepias viridiflora Raf.	ASVI1	Y														
Barbarea vulgaris R. Br.	BAVU1	N	FAC						0.25	0.25						
Bouteloua curtipendula (Michx.) Torr.	BOCU1	Y														
Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1	Y														
Bromus inermis Leyss. ssp. inermis	BRIN1	N		0.25	1.00	0.25			0.25		0.25		0.25			10.00
Bromus japonicus Thunb. ex Murr.	BRJA1	N	FACU	0.25											0.25	
Bromus tectorum L.	BRTE1	N														
Buchloe dactyloides (Nutt.) Engelm.	BUDA1	Y	FACU									0.25	0.25			
Calamagrostis canadensis (Michx.) Beauv.	CACA1	Y	OBL													
Carex lanuginosa Michx.	CALA1	Y	OBL													
Carex nebrascensis Dew.	CANE1	Y	OBL										0.25			
Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi	CANU1	N														
Carex praegracilis W. Boott.	CAPR1	Y	FACW													
Ceratophyllum demersum L.	CEDE1	Y	OBL	25.00												
Centaurea diffusa Lam.	CEDI1	N			0.25										0.25	0.25
Chenopodium glaucum L.	CHGL1	Y	FACW	0.25					0.25							
Chrysopsis villosa Pursh.	CHVI1	Y														
Cirsium arvense (L.) Scop.	CIAR1	N	FACU	0.25	7.00				0.25				0.25	0.25	25.00	25.00
Cichorium intybus L.	CIIN1	N												0.25		
Convolvulus arvensis L.	COAR1	N									0.25					
Conyza canadensis (L.) Cronq.	COCA1	Y	FACU-													
Crepis occidentalis Nutt.	CROC1	Y														
Cynoglossum officinale L.	CYOF1	N			0.25										0.25	
Dalea candida Michx. ex Willd. var. oligophylla (Torr.) Shinners.	DACA1	Y											0.25			
Dactylis glomerata L.	DAGL1	N	FACU													
Distichlis spicata (L.) Greene var. stricta (Torr.) Beetle	DISP1	Y	NI													
Echinochloa crus-galli (L.) Beauv.	ECCR1	N	FACW	0.25				1.00	0.25		5.00	45.00	0.25	0.25	0.25	
Elymus canadensis L.	ELCA1	Y	FACU		0.25									1.00		
Eleocharis macrostachya Britt.	ELMA1	Y	OBL	0.25	0.25				10.00				1.00	0.25	3.00	
Epilobium ciliatum Raf. ssp. glandulosum (Lehm.) Hock & Raven	EPCI1	Y	OBL	0.25												
Equisetum arvense L.	EQAR1	Y	FAC													
Erigeron strigosus Muhl. ex Willd.	ERST1	Y	FAC													
Euphorbia marginata Pursh.	EUMA1	Y	FACU													
Euphorbia serpyllifolia Pers.	EUSE1	Y														

Table 5. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25	#26
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**B3 Pond A**	**B3 Pond B**	**B3 Pond C**	**B371 Hillside A**	**B371 Hillside B**	**B4 Pond A**	**B4 Pond B**	**B771 - N**	**B771 - NW**	**B881**	**Bowman's Pond**	**C1 Pond A**	**C1 Pond B**
Festuca ovina L. var. rydbergii St. Yves	FEOV1	Y														
Festuca pratensis Huds.	FEPR1	N	FAC		0.25						0.25		0.25			
Gaura parviflora Dougl.	GAPA1	Y	NI													
Geum macrophyllum Willd.	GEMA1	Y	OBL		0.25											
Glycyrrhiza lepidota Pursh.	GLLE1	Y	FACU		3.00											
Grindelia squarrosa (Pursh.) Dun.	GRSQ1	Y	FACU-						0.25				0.25	0.25		
Helianthus annuus L.	HEAN1	Y	FACU	0.25							0.25					
Hordeum jubatum L.	HOJU1	Y	FACW	0.25	0.25						65.00	25.00	20.00	12.00		
Hypericum perforatum L.	HYPE1	N														
Juncus balticus Willd.	JUBA1	Y	OBL	0.25			40.00	1.00				1.00	0.25			
Juncus bufonius L.	JUBU1	Y	OBL													
Juncus dudleyi Wieg.	JUDU1	Y	FAC													0.25
Juncus longistylis Torr.	JULO1	Y	FACW+													
Juncus nodosus L.	JUNO1	Y	OBL													
Juncus torreyi Cov.	JUTO1	Y	FACW+	0.25	0.25	0.25	0.25	60.00			1.00	0.25	2.00	40.00		
Kochia scoparia (L.) Schrad.	KOSC1	N	FACU	0.25					0.25				0.25			
Lactuca serriola L.	LASE1	N	FAC		0.25						0.25			0.25		
Lepidium campestre (L.) R. Br.	LECA1	N														
Leptochloa fasicularis (Lam.) A. Gray	LEFA1	Y	OBL	0.25					0.25							
Lemna minor L.	LEMI1	Y	OBL						1.00							
Linaria dalmatica (L.) Mill.	LIDA1	N														
Lotus corniculatus L.	LOCO1	N	FACU													
Lycopus americanus Muhl. ex Barton	LYAM1	Y	OBL		0.25											
Melilotus alba Medic.	MEAL1	N	FACU		0.25											
Mentha arvensis L.	MEAR1	Y	FACW						0.25							
Medicago lupulina L.	MELU1	N	FAC													
Melilotus officinalis (L.) Pall.	MEOF1	N	FACU	0.25	0.25				0.25		0.25					
Medicago sativa L. ssp. sativa	MESA1	N														
Muhlenbergia asperifolia (Nees. & Mey.) Parodi	MUAS1	Y	FACW										0.25			
Muhlenbergia racemosa (Michx.) B. S. P.	MURA1	Y	FACW													
Nepeta cataria L.	NECA1	N	FACU	0.25	1.00											
Oenothera villosa Thunb. ssp. strigosa (Rydb.) Dietrich & Raven	OEVI1	Y	FAC		0.25											
Onosmodium molle Michx. var. occidentale (Mack.) Johnst.	ONMO1	Y														
Opuntia macrorhiza Engelm.	OPMA1	Y														
Panicum capillare L.	PACA1	Y	FAC			0.25							0.25	0.25		
Panicum virgatum L.	PAVI1	Y	FAC	0.25	15.00									0.25		
Phleum pratense L.	PHPR1	N	FACU													
Plantago lanceolata L.	PLLA1	N	FAC								0.25					
Plantago major L.	PLMA1	N	FAC					1.00					0.25	0.25		
Poa annua L.	POAN1	N	FACU													10.00
Polygonum arenastrum Jord. ex Bor.	POAR1	N														
Poa compressa L.	POCO1	N	FACU								0.25	0.25		0.25		
Polygonum convolvulus L.	POCO2	N	FACU													
Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1	Y	FAC-													
Polygonum lapathifolium L.	POLA1	N	OBL								0.25					
Polypogon monspeliensis (L.) Desf.	POMO1	N	OBL	0.25	0.25				0.25		0.25		1.00			
Potamogeton natans L.	PONA1	Y	OBL													
Polygonum persicaria L.	POPE2	N	OBL	0.25					0.25					0.25		
Poa pratensis L.	POPR1	N	FACU													
Polygonum ramosissimum Michx.	PORA1	Y	FAC	0.25												
Prunella vulgaris L.	PRVU1	Y	FAC													
Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1	Y														
Ranunculus trichophyllus Chaix	RATR1	Y	OBL						0.25							
Rumex crispus L.	RUCR1	N	FACW		0.25										0.25	
Rumex salicifolius Weinm. ssp. triangulivalvis Danser	RUME1	Y														

Table 5. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25	#26
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**B3 Pond A**	**B3 Pond B**	**B3 Pond C**	**B371 Hillside A**	**B371 Hillside B**	**B4 Pond A**	**B4 Pond B**	**B771 - N**	**B771 - NW**	**B881**	**Bowman's Pond**	**C1 Pond A**	**C1 Pond B**
Salix sp.	SAL1															
Scirpus pallidus (Britt.) Fern	SCPA1	Y	OBL										0.25	0.25		
Scirpus pungens Vahl	SCPU1	Y	OBL	10.00	0.25								1.00	2.00		
Scirpus validus Vahl.	SCVA1	Y	OBL	18.00	0.25		25.00	10.00	0.25			1.00	30.00	0.25		
Setaria viridis (L.) Beauv.	SEVI1	N							0.25							
Sisymbrium altissimum L.	SIAL1	N	FACU													
Sonchus arvensis L. ssp. arvensis L.	SOAR1	N	FAC	0.25					0.25		0.25					
Solidago canadensis L.	SOCA1	Y	FACU													
Solidago missouriensis Nutt.	SOMI1	Y			0.25											
Sorghastrum nutans (L.) Nash	SONU1	Y	FACU													
Solidago rigida L.	SORI1	Y	FACU													
Sporobolus cryptandrus (Torr.) A. Gray	SPCR1	Y	FACU-										0.25			
Spergularia media (L.) Presl.	SPME1	Y	NI	0.25									0.25	0.25		
Sporobolus neglectus Nash	SPNE1	Y	UPL													
Spartina pectinata Link	SPPE1	Y	FACW	0.25									0.25			
Stipa viridula Trin.	STVI1	Y														
Taraxacum officinale Weber	TAOF1	N	FACU													
Tragopogon dubius Scop.	TRDU1	N														
Triglochin maritima L.	TRMA1	Y	OBL													
Typha angustifolia L.	TYAN1	N	OBL	10.00					20.00							
Typha latifolia L.	TYLA1	Y	OBL	20.00	3.00	25.00					1.00	1.00	35.00	12.00	25.00	0.25
Unknown Species	UNKN															
Veronica anagallis-aquatica L.	VEAN1	N	OBL						0.25	0.25						
Verbascum blattaria L.	VEBL1	N	UPL													
Verbena bracteata Lag. & Rodr.	VEBR1	Y	FACU						0.25							
Verbascum thapsus L.	VETH1	N		0.25	0.25				0.25						0.25	
Xanthium strumarium L.	XAST1	Y	FAC		0.25										3.00	
Total Herbaceous Foliar Cover				92.00	42.75	26.00	70.25	98.00	36.25	0.50	76.25	75.75	95.00	75.25	60.50	45.75
50/20 Rule: 50% of Total Cover				46.00	21.38	13.00	35.13	49.00	18.13	0.25	38.13	37.88	47.50	37.63	30.25	22.88
50/20 Rule: 20% of Total Cover				18.40	8.55	5.20	14.05	19.60	7.25	0.10	15.25	15.15	19.00	15.05	12.10	9.15
Total Native Herbaceous Cover				79.25	31.50	25.75	70.25	86.00	13.25	0.00	68.75	30.50	92.50	73.25	34.00	0.50
Total Non-Native Herbaceous Cover				12.75	11.25	0.25	0.00	12.00	23.00	0.50	7.50	45.25	2.50	2.00	26.50	45.25

Shrub/Sapling Cover

				#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25	#26
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**B3 Pond A**	**B3 Pond B**	**B3 Pond C**	**B371 Hillside A**	**B371 Hillside B**	**B4 Pond A**	**B4 Pond B**	**B771 - N**	**B771 - NW**	**B881**	**Bowman's Pond**	**C1 Pond A**	**C1 Pond B**
Amorpha fruticosa L.	AMFR1	Y	OBL													
Elaeagnus angustifolia L.	ELAN1	N	FAC										0.25			
Populus deltoides Marsh. ssp. monilifera (Ait.) Eckenw.	PODE1	Y	FAC						0.25	0.25	1.00			0.25	1.00	
Prunus americana Marsh.	PRAM1	Y	UPL													
Prunus virginiana L. var. melanocarpa (A. Nels.) Sarg.	PRVI1	Y	FACU		2.00											
Rosa arkansana Porter	ROAR1	Y	NI													
Rubus idaeus L. ssp. sachalinensis (Levl.) Focke var. sachalinensis	RUID1	Y														
Salix amygdaloides Anderss.	SAAM1	Y	FACW	0.25									0.25			
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	Y	OBL	1.00	80.00				2.00					2.00	70.00	75.00
Salix irrorata Andersson	SAIR1	Y	FACW+													
Symphoricarpos occidentalis Hook.	SYOC1	Y			4.00					0.25					4.00	
Tamarix ramosissima Ledeb.	TARA1	N	FACW	0.25										1.00		
Total Shrub/Sapling Cover				1.50	86.00	0.00	0.00	0.00	2.25	0.50	1.00	0.00	0.50	3.25	75.00	75.00
50/20 Rule: 50% of Total Cover				0.75	43.00	0.00	0.00	0.00	1.13	0.25	0.50	0.00	0.25	1.63	37.50	37.50
50/20 Rule: 20% of Total Cover				0.30	17.20	0.00	0.00	0.00	0.45	0.10	0.20	0.00	0.10	0.65	15.00	15.00
Total Native Shrub/Sapling Cover				1.25	86.00	0.00	0.00	0.00	2.25	0.50	1.00	0.00	0.25	2.25	75.00	75.00
Total Non-Native Shrub/Sapling Cover				0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.00	0.00	0.00

Table 5. Wetland Vegetation Data Summary 2009 (cont.)

Tree Cover

				#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25	#26
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**B3 Pond A**	**B3 Pond B**	**B3 Pond C**	**B371 Hillside A**	**B371 Hillside B**	**B4 Pond A**	**B4 Pond B**	**B771 - N**	**B771 - NW**	**B881**	**Bowman's Pond**	**C1 Pond A**	**C1 Pond B**
Salix amygdaloides Anderss.	SAAM1	Y	FACW													
Total Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 50% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 20% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrophytic Vegetation Indicator 1: Dominance Test

Wetland Indicator			**Wetland Indicator Code**													
Obligate Species			OBL	3	1	1	2		2				2		2	1
Facultative Wet Species			FACW+					1						1		
Facultative Wet Species			FACW								1	2	1			
Facultative Species			FAC+													
Facultative Species			FAC		1											
Facultative Species			FAC-													
Facultative Upland Species			FACU		1										1	2
Facultative Upland Species			FACU-													
Upland Species			UPL													
Non-Indicator Species			NI													
Not Applicable/Available - Not listed in USACOE species lists			NA													1
Unknown																
# Dominant Species That Are OBL, FACW, or FAC (exluding FAC-)				3	2	1	2	1	2	0	1	2	3	1	2	1
Total # Dominant Species Across All Strata				3	3	1	2	1	2	0	1	2	3	1	3	4
% of Dominant Species That Are OBL, FACW, or FAC				100.00	66.67	100.00	100.00	100.00	100.00		100.00	100.00	100.00	100.00	66.67	25.00

Hydrophytic Vegetation Indicator 2: Prevalence Index

				#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25	#26
				B3 Pond A	**B3 Pond B**	**B3 Pond C**	**B371 Hillside A**	**B371 Hillside B**	**B4 Pond A**	**B4 Pond B**	**B771 - N**	**B771 - NW**	**B881**	**Bowman's Pond**	**C1 Pond A**	**C1 Pond B**
Prevalence Index				1.21	1.92	1.10	1.22	2.31	1.27	3.00	2.09	2.03	1.35	1.98	1.84	2.21

Wetland Determination

Hydophytic Vegetation Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Hydrology Indicators Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Soils Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Is the Sampled Area a Wetland? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Dominant Species based on 50/20 rule based on Great Plains Region Interim Regional Supplement - March 2008
Total Absolute Vegetation Cover less than 5 percent
Passed Test
Failed Test

Table 6. Wetland Vegetation Data Summary 2009

Herbaceous Cover

				#27	#28	#29	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39	#40	#41	#42	#43	#44
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**C1 Pond C**	**C-2 Pond**	**East Shooting Range**	**East Trenches**	**FC1 Road Crossing**	**FC1 A**	**FC1 B**	**FC1 C**	**FC1 D**	**FC1 E**	**FC1 F**	**FC1 G**	**FC1 H**	**FC1 I**	**FC1 J**	**FC1 K**	**FC1 L**	**FC1 M**
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	Y	FACU					3.00	10.00	3.00	1.00	1.00	0.25	0.25	0.25	10.00	5.00	0.25	1.00	5.00	3.00
Agropyron cristatum (L.) Gaertn.	AGCR1	N																			
Agropyron intermedium (Host) Beauv.	AGIN1	N																			
Agropyron repens (L.) Beauv.	AGRE1	N	FAC			3.00															
Agrostis scabra Willd.	AGSC1	Y	FAC					1.00	0.25		0.25	2.00		2.00	1.00	2.00		3.00			7.00
Agropyron smithii Rydb.	AGSM1	Y	FACU							1.00							0.25			2.00	
Agrostis stolonifera L.	AGST1	N	FAC+			10.00		0.25			0.25	0.25	0.25				0.25	0.25	0.25		3.00
Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1	N																			
Alisma triviale Pursh	ALTR1	Y	OBL																0.25		
Ambrosia artemisiifolia L.	AMAR1	Y								0.25	0.25	0.25				0.25					
Ambrosia psilostachya DC.	AMPS1	Y	FAC			0.25	0.25														
Andropogon gerardii Vitman	ANGE1	Y	FAC-			0.25		0.25	0.25		0.25	0.25	0.25	0.25	0.25	0.25					
Andropogon scoparius Michx.	ANSC1	Y	FACU									0.25		0.25							
Apocynum cannabinum L.	APCA1	Y	FAC																		
Artemisia campestris L. ssp. caudata (Michx.) Hall & Clem.	ARCA1	Y																0.25			
Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1	Y	FACU-																		
Aster falcatus Lindl.	ASFA1	Y	FAC				0.25														
Astragalus flexuosus (Hook.) G. Don	ASFL1	Y																			
Aster hesperius A. Gray var. hesperius	ASHE1	Y	OBL												0.25						
Aster porteri Gray	ASPO1	Y												0.25	0.25	0.25		0.25			
Asclepias speciosa Torr.	ASSP1	Y	FAC																		
Asclepias viridiflora Raf.	ASVI1	Y																			
Barbarea vulgaris R. Br.	BAVU1	N	FAC					0.25													
Bouteloua curtipendula (Michx.) Torr.	BOCU1	Y													0.25						
Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1	Y																			
Bromus inermis Leyss. ssp. inermis	BRIN1	N				2.00															
Bromus japonicus Thunb. ex Murr.	BRJA1	N	FACU													0.25					
Bromus tectorum L.	BRTE1	N																			
Buchloe dactyloides (Nutt.) Engelm.	BUDA1	Y	FACU											0.25							
Calamagrostis canadensis (Michx.) Beauv.	CACA1	Y	OBL																		
Carex lanuginosa Michx.	CALA1	Y	OBL																		
Carex nebrascensis Dew.	CANE1	Y	OBL			2.00			5.00	1.00	1.00	5.00	15.00	12.00	1.00	1.00		0.25		0.25	
Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi	CANU1	N																			
Carex praegracilis W. Boott.	CAPR1	Y	FACW			2.00															
Ceratophyllum demersum L.	CEDE1	Y	OBL																40.00		
Centaurea diffusa Lam.	CEDI1	N								0.25	0.25										
Chenopodium glaucum L.	CHGL1	Y	FACW																		
Chrysopsis villosa Pursh.	CHVI1	Y																			
Cirsium arvense (L.) Scop.	CIAR1	N	FACU		0.25	5.00	1.00	2.00	0.25	1.00	0.25	0.25	0.25	0.25		0.25			0.25		
Cichorium intybus L.	CIIN1	N																			
Convolvulus arvensis L.	COAR1	N																			
Conyza canadensis (L.) Cronq.	COCA1	Y	FACU-																		
Crepis occidentalis Nutt.	CROC1	Y																			
Cynoglossum officinale L.	CYOF1	N																			
Dalea candida Michx. ex Willd. var. oligophylla (Torr.) Shinners.	DACA1	Y																			
Dactylis glomerata L.	DAGL1	N	FACU																		
Distichlis spicata (L.) Greene var. stricta (Torr.) Beetle	DISP1	Y	NI																	0.25	
Echinochloa crus-galli (L.) Beauv.	ECCR1	N	FACW					0.25									2.00	1.00		0.25	2.00
Elymus canadensis L.	ELCA1	Y	FACU			0.25		1.00		1.00	1.00		0.25	1.00		0.25	0.25			3.00	1.00
Eleocharis macrostachya Britt.	ELMA1	Y	OBL						0.25						2.00	0.25	0.25		1.00	0.25	
Epilobium ciliatum Raf. ssp. glandulosum (Lehm.) Hock & Raven	EPCI1	Y	OBL				0.25														
Equisetum arvense L.	EQAR1	Y	FAC																		
Erigeron strigosus Muhl. ex Willd.	ERST1	Y	FAC																		
Euphorbia marginata Pursh.	EUMA1	Y	FACU																		
Euphorbia serpyllifolia Pers.	EUSE1	Y																			

Table 6. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#27	#28	#29	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39	#40	#41	#42	#43	#44
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**C1 Pond C**	**C-2 Pond**	**East Shooting Range**	**East Trenches**	**FC1 Road Crossing**	**FC1 A**	**FC1 B**	**FC1 C**	**FC1 D**	**FC1 E**	**FC1 F**	**FC1 G**	**FC1 H**	**FC1 I**	**FC1 J**	**FC1 K**	**FC1 L**	**FC1 M**
Festuca ovina L. var. rydbergii St. Yves	FEOV1	Y							0.25												
Festuca pratensis Huds.	FEPR1	N	FAC				0.25					0.25									0.25
Gaura parviflora Dougl.	GAPA1	Y	NI																		
Geum macrophyllum Willd.	GEMA1	Y	OBL																		
Glycyrrhiza lepidota Pursh.	GLLE1	Y	FACU				0.25														
Grindelia squarrosa (Pursh.) Dun.	GRSQ1	Y	FACU-			0.25							0.25	0.25			0.25	0.25	0.25		
Helianthus annuus L.	HEAN1	Y	FACU											0.25							
Hordeum jubatum L.	HOJU1	Y	FACW		1.00			0.25							0.25		0.25		0.25	0.25	0.25
Hypericum perforatum L.	HYPE1	N																			
Juncus balticus Willd.	JUBA1	Y	OBL			0.25	25.00				22.00	25.00	0.25	40.00	10.00	3.00	0.25	0.25	1.00	10.00	0.25
Juncus bufonius L.	JUBU1	Y	OBL																		
Juncus dudleyi Wieg.	JUDU1	Y	FAC												0.25						
Juncus longistylis Torr.	JULO1	Y	FACW+											0.25							
Juncus nodosus L.	JUNO1	Y	OBL												0.25						
Juncus torreyi Cov.	JUTO1	Y	FACW+				0.25			30.00	10.00	4.00	2.00	0.25	8.00	0.25	15.00	0.25	0.25	1.00	4.00
Kochia scoparia (L.) Schrad.	KOSC1	N	FACU		0.25																
Lactuca serriola L.	LASE1	N	FAC																		
Lepidium campestre (L.) R. Br.	LECA1	N																			
Leptochloa fasicularis (Lam.) A. Gray	LEFA1	Y	OBL														5.00				
Lemna minor L.	LEMI1	Y	OBL																		
Linaria dalmatica (L.) Mill.	LIDA1	N																			
Lotus corniculatus L.	LOCO1	N	FACU																		
Lycopus americanus Muhl. ex Barton	LYAM1	Y	OBL																		
Melilotus alba Medic.	MEAL1	N	FACU						0.25		0.25		0.25	0.25							
Mentha arvensis L.	MEAR1	Y	FACW																		
Medicago lupulina L.	MELU1	N	FAC																		
Melilotus officinalis (L.) Pall.	MEOF1	N	FACU						0.25	0.25	0.25		0.25	0.25		0.25					
Medicago sativa L. ssp. sativa	MESA1	N																			
Muhlenbergia asperifolia (Nees. & Mey.) Parodi	MUAS1	Y	FACW																		
Muhlenbergia racemosa (Michx.) B. S. P.	MURA1	Y	FACW																		
Nepeta cataria L.	NECA1	N	FACU			0.25															
Oenothera villosa Thunb. ssp. strigosa (Rydb.) Dietrich & Raven	OEVI1	Y	FAC				0.25								0.25			0.25	0.25		
Onosmodium molle Michx. var. occidentale (Mack.) Johnst.	ONMO1	Y																			
Opuntia macrorhiza Engelm.	OPMA1	Y																			
Panicum capillare L.	PACA1	Y	FAC																		
Panicum virgatum L.	PAVI1	Y	FAC			0.25		3.00	20.00	20.00	8.00	3.00	35.00	15.00	1.00					0.25	
Phleum pratense L.	PHPR1	N	FACU					0.25													2.00
Plantago lanceolata L.	PLLA1	N	FAC																		
Plantago major L.	PLMA1	N	FAC		0.25																
Poa annua L.	POAN1	N	FACU																		
Polygonum arenastrum Jord. ex Bor.	POAR1	N																			
Poa compressa L.	POCO1	N	FACU						0.25	1.00			0.25	0.25		0.25		0.25			
Polygonum convolvulus L.	POCO2	N	FACU																		
Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1	Y	FAC-																		
Polygonum lapathifolium L.	POLA1	N	OBL																		
Polypogon monspeliensis (L.) Desf.	POMO1	N	OBL					1.00		0.25	0.25	1.00		1.00			0.25	0.25	1.00	0.25	5.00
Potamogeton natans L.	PONA1	Y	OBL																		
Polygonum persicaria L.	POPE2	N	OBL														0.25				
Poa pratensis L.	POPR1	N	FACU																		
Polygonum ramosissimum Michx.	PORA1	Y	FAC														0.25				
Prunella vulgaris L.	PRVU1	Y	FAC															0.25			
Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1	Y																			
Ranunculus trichophyllus Chaix	RATR1	Y	OBL																		
Rumex crispus L.	RUCR1	N	FACW				0.25	0.25						0.25							0.25
Rumex salicifolius Weinm. ssp. triangulivalvis Danser	RUME1	Y																			

Table 6. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#27	#28	#29	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39	#40	#41	#42	#43	#44
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**C1 Pond C**	**C-2 Pond**	**East Shooting Range**	**East Trenches**	**FC1 Road Crossing**	**FC1 A**	**FC1 B**	**FC1 C**	**FC1 D**	**FC1 E**	**FC1 F**	**FC1 G**	**FC1 H**	**FC1 I**	**FC1 J**	**FC1 K**	**FC1 L**	**FC1 M**
Salix sp.	SAL1																				
Scirpus pallidus (Britt.) Fern	SCPA1	Y	OBL			2.00	15.00							0.25							
Scirpus pungens Vahl	SCPU1	Y	OBL								1.00	0.25	0.25		1.00					0.25	
Scirpus validus Vahl.	SCVA1	Y	OBL	5.00					0.25	2.00	23.00	23.00	10.00	8.00	45.00	0.25	1.00	10.00	21.00	8.00	9.00
Setaria viridis (L.) Beauv.	SEVI1	N																			
Sisymbrium altissimum L.	SIAL1	N	FACU																		
Sonchus arvensis L. ssp. arvensis L.	SOAR1	N	FAC																		
Solidago canadensis L.	SOCA1	Y	FACU																		
Solidago missouriensis Nutt.	SOMI1	Y																			
Sorghastrum nutans (L.) Nash	SONU1	Y	FACU						0.25												
Solidago rigida L.	SORI1	Y	FACU																		
Sporobolus cryptandrus (Torr.) A. Gray	SPCR1	Y	FACU-											0.25							
Spergularia media (L.) Presl.	SPME1	Y	NI																		0.25
Sporobolus neglectus Nash	SPNE1	Y	UPL																		
Spartina pectinata Link	SPPE1	Y	FACW							0.25		2.00		0.25				0.25			
Stipa viridula Trin.	STVI1	Y																			
Taraxacum officinale Weber	TAOF1	N	FACU																		
Tragopogon dubius Scop.	TRDU1	N																			
Triglochin maritima L.	TRMA1	Y	OBL																		
Typha angustifolia L.	TYAN1	N	OBL	45.00														2.00	0.25		
Typha latifolia L.	TYLA1	Y	OBL	15.00	40.00		40.00	0.25		0.25	5.00	15.00		4.00	2.00	0.25	0.25	20.00	23.00		1.00
Unknown Species	UNKN																				
Veronica anagallis-aquatica L.	VEAN1	N	OBL					0.25													
Verbascum blattaria L.	VEBL1	N	UPL					0.25													
Verbena bracteata Lag. & Rodr.	VEBR1	Y	FACU					0.25													
Verbascum thapsus L.	VETH1	N																0.25			
Xanthium strumarium L.	XAST1	Y	FAC		15.00									0.25							
Total Herbaceous Foliar Cover				65.00	56.75	27.75	83.00	13.75	37.50	61.50	74.25	82.75	64.75	87.50	73.25	19.00	30.75	39.50	90.00	31.00	38.25
50/20 Rule: 50% of Total Cover				32.50	28.38	13.88	41.50	6.88	18.75	30.75	37.13	41.38	32.38	43.75	36.63	9.50	15.38	19.75	45.00	15.50	19.13
50/20 Rule: 20% of Total Cover				13.00	11.35	5.55	16.60	2.75	7.50	12.30	14.85	16.55	12.95	17.50	14.65	3.80	6.15	7.90	18.00	6.20	7.65
Total Native Herbaceous Cover				20.00	56.00	7.50	81.50	9.00	36.50	58.75	72.75	81.00	63.50	85.25	73.25	18.00	28.00	35.50	88.25	30.50	25.75
Total Non-Native Herbaceous Cover				45.00	0.75	20.25	1.50	4.75	1.00	2.75	1.50	1.75	1.25	2.25	0.00	1.00	2.75	4.00	1.75	0.50	12.50

Shrub/Sapling Cover

				#27	#28	#29	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39	#40	#41	#42	#43	#44
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**C1 Pond C**	**C-2 Pond**	**East Shooting Range**	**East Trenches**	**FC1 Road Crossing**	**FC1 A**	**FC1 B**	**FC1 C**	**FC1 D**	**FC1 E**	**FC1 F**	**FC1 G**	**FC1 H**	**FC1 I**	**FC1 J**	**FC1 K**	**FC1 L**	**FC1 M**
Amorpha fruticosa L.	AMFR1	Y	OBL			4.00		8.00						1.00	0.25	8.00		0.25			
Elaeagnus angustifolia L.	ELAN1	N	FAC							0.25											
Populus deltoides Marsh. ssp. monilifera (Ait.) Eckenw.	PODE1	Y	FAC			2.00				1.00	0.25	1.00	0.25	0.25	0.25	20.00	1.00	0.25	0.25	0.25	
Prunus americana Marsh.	PRAM1	Y	UPL											0.25							
Prunus virginiana L. var. melanocarpa (A. Nels.) Sarg.	PRVI1	Y	FACU									0.25		0.25	0.25						
Rosa arkansana Porter	ROAR1	Y	NI				0.25														
Rubus idaeus L. ssp. sachalinensis (Levl.) Focke var. sachalinensis	RUID1	Y																			
Salix amygdaloides Anderss.	SAAM1	Y	FACW		2.00	25.00							0.25	0.25	0.25						
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	Y	OBL		0.25	20.00		45.00			0.25	0.25		6.00	15.00	15.00	25.00	55.00	2.00		
Salix irrorata Andersson	SAIR1	Y	FACW+																		
Symphoricarpos occidentalis Hook.	SYOC1	Y					1.00														
Tamarix ramosissima Ledeb.	TARA1	N	FACW																	0.25	
Total Shrub/Sapling Cover				0.00	2.25	51.00	1.25	53.00	0.00	1.25	0.50	1.50	0.50	8.00	16.00	43.00	26.00	55.50	2.25	0.50	0.00
50/20 Rule: 50% of Total Cover				0.00	1.13	25.50	0.63	26.50	0.00	0.63	0.25	0.75	0.25	4.00	8.00	21.50	13.00	27.75	1.13	0.25	0.00
50/20 Rule: 20% of Total Cover				0.00	0.45	10.20	0.25	10.60	0.00	0.25	0.10	0.30	0.10	1.60	3.20	8.60	5.20	11.10	0.45	0.10	0.00
Total Native Shrub/Sapling Cover				0.00	2.25	51.00	1.25	53.00	0.00	1.00	0.50	1.50	0.50	8.00	16.00	43.00	26.00	55.50	2.25	0.25	0.00
Total Non-Native Shrub/Sapling Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00

Table 6. Wetland Vegetation Data Summary 2009 (cont.)

Tree Cover

				#27	#28	#29	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39	#40	#41	#42	#43	#44
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**C1 Pond C**	**C-2 Pond**	**East Shooting Range**	**East Trenches**	**FC1 Road Crossing**	**FC1 A**	**FC1 B**	**FC1 C**	**FC1 D**	**FC1 E**	**FC1 F**	**FC1 G**	**FC1 H**	**FC1 I**	**FC1 J**	**FC1 K**	**FC1 L**	**FC1 M**
Salix amygdaloides Anderss.	SAAM1	Y	FACW																		
Total Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 50% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 20% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrophytic Vegetation Indicator 1: Dominance Test

Wetland Indicator			**Wetland Indicator Code**																		
Obligate Species			OBL	2	1	1	2	1			2	2	1	2	2	1	1	3	3	2	2
Facultative Wet Species			FACW+							1							1				
Facultative Wet Species			FACW			1															
Facultative Species			FAC+			1															
Facultative Species			FAC					1	1	1			1	1		1					1
Facultative Species			FAC-																		
Facultative Upland Species			FACU			1		2	1							1	1				
Facultative Upland Species			FACU-																		
Upland Species			UPL																		
Non-Indicator Species			NI																		
Not Applicable/Available - Not listed in USFWS species lists			NA																		
Unknown																					
# Dominant Species That Are OBL, FACW, or FAC (exluding FAC-)				2	1	3	2	2	1	2	2	2	2	3	2	2	2	3	3	2	3
Total # Dominant Species Across All Strata				2	1	4	2	4	2	2	2	2	2	3	2	3	3	3	3	2	3
% of Dominant Species That Are OBL, FACW, or FAC				100.00	100.00	75.00	100.00	50.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	66.67	66.67	100.00	100.00	100.00	100.00

Hydrophytic Vegetation Indicator 2: Prevalence Index

				#27	#28	#29	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39	#40	#41	#42	#43	#44
				C1 Pond C	**C-2 Pond**	**East Shooting Range**	**East Trenches**	**FC1 Road Crossing**	**FC1 A**	**FC1 B**	**FC1 C**	**FC1 D**	**FC1 E**	**FC1 F**	**FC1 G**	**FC1 H**	**FC1 I**	**FC1 J**	**FC1 K**	**FC1 L**	**FC1 M**
Prevalence Index				1.00	1.59	2.06	1.13	1.46	3.02	2.54	1.51	1.31	2.21	1.52	1.20	2.30	1.66	1.16	1.07	2.07	2.20

Wetland Determination

Hydophytic Vegetation Present? Y/N				Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Hydrology Indicators Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Soils Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Is the Sampled Area a Wetland? Y/N				Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Dominant Species based on 50/20 rule based on Great Plains Region Interim Regional Supplement - March 2008
Total Absolute Vegetation Cover less than 5 percent
Passed Test
Failed Test

Table 7. Wetland Vegetation Data Summary 2009

Herbaceous Cover

				#45	#46	#47	#48	#49	#50	#52	#53	#54	#55	#56	#57	#58	#59	#60	#61
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC1 N**	**FC1 O**	**FC2 Hillside A**	**FC2 Hillside B**	**FC2/FC3 Confluence A**	**FC2/FC3 Confluence B**	**FC2 A**	**FC2 B**	**FC3 Lower**	**FC3 Upper**	**FC4 Hillside A**	**FC4 Hillside B**	**FC4 Hillside C**	**FC4 A**	**FC4 B**	**FC4 C**
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	Y	FACU	1.00	2.00	2.00	2.00	20.00			15.00	1.00	10.00	0.25			0.25	3.00	
Agropyron cristatum (L.) Gaertn.	AGCR1	N																	
Agropyron intermedium (Host) Beauv.	AGIN1	N				0.25				0.25			0.25				0.25	0.25	
Agropyron repens (L.) Beauv.	AGRE1	N	FAC																
Agrostis scabra Willd.	AGSC1	Y	FAC	2.00	0.25														0.25
Agropyron smithii Rydb.	AGSM1	Y	FACU			1.00	2.00	15.00		3.00	20.00	1.00	3.00						
Agrostis stolonifera L.	AGST1	N	FAC+	5.00			0.25	0.25		0.25	0.25				15.00	1.00	0.25	0.25	
Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1	N																	
Alisma triviale Pursh	ALTR1	Y	OBL																
Ambrosia artemisiifolia L.	AMAR1	Y															0.25	0.25	
Ambrosia psilostachya DC.	AMPS1	Y	FAC																
Andropogon gerardii Vitman	ANGE1	Y	FAC-																
Andropogon scoparius Michx.	ANSC1	Y	FACU																
Apocynum cannabinum L.	APCA1	Y	FAC															0.25	
Artemisia campestris L. ssp. caudata (Michx.) Hall & Clem.	ARCA1	Y																	
Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1	Y	FACU-																
Aster falcatus Lindl.	ASFA1	Y	FAC																
Astragalus flexuosus (Hook.) G. Don	ASFL1	Y																	
Aster hesperius A. Gray var. hesperius	ASHE1	Y	OBL																
Aster porteri Gray	ASPO1	Y						0.25											
Asclepias speciosa Torr.	ASSP1	Y	FAC			0.25	0.25								0.25				
Asclepias viridiflora Raf.	ASVI1	Y																	
Barbarea vulgaris R. Br.	BAVU1	N	FAC																
Bouteloua curtipendula (Michx.) Torr.	BOCU1	Y						0.25										0.25	
Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1	Y						0.25			0.25							0.25	
Bromus inermis Leyss. ssp. inermis	BRIN1	N					1.00				1.00		0.25	0.25	8.00	10.00	0.25	0.25	
Bromus japonicus Thunb. ex Murr.	BRJA1	N	FACU			0.25					1.00	0.25					0.25		
Bromus tectorum L.	BRTE1	N																	
Buchloe dactyloides (Nutt.) Engelm.	BUDA1	Y	FACU								0.25								
Calamagrostis canadensis (Michx.) Beauv.	CACA1	Y	OBL											0.25	0.25	2.00			
Carex lanuginosa Michx.	CALA1	Y	OBL																
Carex nebrascensis Dew.	CANE1	Y	OBL			0.25								0.25					0.25
Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi	CANU1	N									0.25								
Carex praegracilis W. Boott.	CAPR1	Y	FACW																
Ceratophyllum demersum L.	CEDE1	Y	OBL														0.25		
Centaurea diffusa Lam.	CEDI1	N									1.00		0.25				0.25		
Chenopodium glaucum L.	CHGL1	Y	FACW																
Chrysopsis villosa Pursh.	CHVI1	Y						0.25											
Cirsium arvense (L.) Scop.	CIAR1	N	FACU			0.25		0.25		0.25	10.00	0.25	1.00	0.25	0.25	0.25	0.25	1.00	
Cichorium intybus L.	CIIN1	N													0.25				
Convolvulus arvensis L.	COAR1	N																0.25	
Conyza canadensis (L.) Cronq.	COCA1	Y	FACU-																1.00
Crepis occidentalis Nutt.	CROC1	Y																	
Cynoglossum officinale L.	CYOF1	N																	
Dalea candida Michx. ex Willd. var. oligophylla (Torr.) Shinners.	DACA1	Y															0.25	0.25	
Dactylis glomerata L.	DAGL1	N	FACU																
Distichlis spicata (L.) Greene var. stricta (Torr.) Beetle	DISP1	Y	NI																
Echinochloa crus-galli (L.) Beauv.	ECCR1	N	FACW				0.25	0.25		0.25			0.25				0.25	3.00	
Elymus canadensis L.	ELCA1	Y	FACU	0.25	0.25					0.25	1.00						0.25	0.25	
Eleocharis macrostachya Britt.	ELMA1	Y	OBL	0.25		3.00	0.25	4.00		1.00		2.00	2.00		2.00		1.00		
Epilobium ciliatum Raf. ssp. glandulosum (Lehm.) Hock & Raven	EPCI1	Y	OBL																
Equisetum arvense L.	EQAR1	Y	FAC															0.25	
Erigeron strigosus Muhl. ex Willd.	ERST1	Y	FAC					0.25									0.25		
Euphorbia marginata Pursh.	EUMA1	Y	FACU																
Euphorbia serpyllifolia Pers.	EUSE1	Y																0.25	

Table 7. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#45	#46	#47	#48	#49	#50	#52	#53	#54	#55	#56	#57	#58	#59	#60	#61
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC1 N**	**FC1 O**	**FC2 Hillside A**	**FC2 Hillside B**	**FC2/FC3 Confluence A**	**FC2/FC3 Confluence B**	**FC2 A**	**FC2 B**	**FC3 Lower**	**FC3 Upper**	**FC4 Hillside A**	**FC4 Hillside B**	**FC4 Hillside C**	**FC4 A**	**FC4 B**	**FC4 C**
Festuca ovina L. var. rydbergii St. Yves	FEOV1	Y															0.25		
Festuca pratensis Huds.	FEPR1	N	FAC					0.25						0.25	0.25		0.25		
Gaura parviflora Dougl.	GAPA1	Y	NI																
Geum macrophyllum Willd.	GEMA1	Y	OBL																
Glycyrrhiza lepidota Pursh.	GLLE1	Y	FACU																
Grindelia squarrosa (Pursh.) Dun.	GRSQ1	Y	FACU-			0.25					0.25		0.25				0.25	0.25	
Helianthus annuus L.	HEAN1	Y	FACU				0.25			0.25	0.25	0.25			0.25	0.25	0.25	0.25	
Hordeum jubatum L.	HOJU1	Y	FACW		0.25			0.25		0.25	0.25	0.25	0.25		0.25	0.25	0.25		0.25
Hypericum perforatum L.	HYPE1	N																	
Juncus balticus Willd.	JUBA1	Y	OBL		2.00	1.00	10.00	0.25		40.00	2.00	1.00	0.25	55.00	17.00	30.00	25.00	4.00	0.25
Juncus bufonius L.	JUBU1	Y	OBL																
Juncus dudleyi Wieg.	JUDU1	Y	FAC														0.25		
Juncus longistylis Torr.	JULO1	Y	FACW+																
Juncus nodosus L.	JUNO1	Y	OBL																
Juncus torreyi Cov.	JUTO1	Y	FACW+	3.00	2.00	1.00	0.25	0.25			0.25	0.25		3.00	1.00	0.25	5.00	2.00	0.25
Kochia scoparia (L.) Schrad.	KOSC1	N	FACU					0.25		0.25	0.25	0.25					0.25	2.00	0.25
Lactuca serriola L.	LASE1	N	FAC			0.25	0.25	0.25		0.25	0.25						0.25	0.25	
Lepidium campestre (L.) R. Br.	LECA1	N																	
Leptochloa fasicularis (Lam.) A. Gray	LEFA1	Y	OBL																
Lemna minor L.	LEMI1	Y	OBL																
Linaria dalmatica (L.) Mill.	LIDA1	N																	
Lotus corniculatus L.	LOCO1	N	FACU												0.25				
Lycopus americanus Muhl. ex Barton	LYAM1	Y	OBL																
Melilotus alba Medic.	MEAL1	N	FACU					0.25					0.25				0.25		
Mentha arvensis L.	MEAR1	Y	FACW					0.25									0.25		
Medicago lupulina L.	MELU1	N	FAC																
Melilotus officinalis (L.) Pall.	MEOF1	N	FACU					0.25			0.25						0.25	0.25	
Medicago sativa L. ssp. sativa	MESA1	N									0.25								
Muhlenbergia asperifolia (Nees. & Mey.) Parodi	MUAS1	Y	FACW									0.25		0.25	8.00		0.25		0.25
Muhlenbergia racemosa (Michx.) B. S. P.	MURA1	Y	FACW																
Nepeta cataria L.	NECA1	N	FACU			0.25													
Oenothera villosa Thunb. ssp. strigosa (Rydb.) Dietrich & Raven	OEVI1	Y	FAC			1.00					0.25				0.25				
Onosmodium molle Michx. var. occidentale (Mack.) Johnst.	ONMO1	Y																	
Opuntia macrorhiza Engelm.	OPMA1	Y																	
Panicum capillare L.	PACA1	Y	FAC			0.25						0.25					0.25	1.00	
Panicum virgatum L.	PAVI1	Y	FAC			0.25	0.25	0.25		0.25							0.25		
Phleum pratense L.	PHPR1	N	FACU																
Plantago lanceolata L.	PLLA1	N	FAC					0.25					0.25						
Plantago major L.	PLMA1	N	FAC			0.25				0.25	0.25						0.25	4.00	
Poa annua L.	POAN1	N	FACU																
Polygonum arenastrum Jord. ex Bor.	POAR1	N																	
Poa compressa L.	POCO1	N	FACU		1.00							0.25						0.25	
Polygonum convolvulus L.	POCO2	N	FACU																
Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1	Y	FAC-					0.25											
Polygonum lapathifolium L.	POLA1	N	OBL																
Polypogon monspeliensis (L.) Desf.	POMO1	N	OBL	1.00		1.00	15.00			0.25	0.25	1.00		0.25			4.00	2.00	1.00
Potamogeton natans L.	PONA1	Y	OBL																
Polygonum persicaria L.	POPE2	N	OBL				0.25												
Poa pratensis L.	POPR1	N	FACU									0.25			0.25		0.25		
Polygonum ramosissimum Michx.	PORA1	Y	FAC																
Prunella vulgaris L.	PRVU1	Y	FAC																
Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1	Y																	
Ranunculus trichophyllus Chaix	RATR1	Y	OBL																
Rumex crispus L.	RUCR1	N	FACW								0.25				0.25			0.25	
Rumex salicifolius Weinm. ssp. triangulivalvis Danser	RUME1	Y				0.25													

Table 7. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#45	#46	#47	#48	#49	#50	#52	#53	#54	#55	#56	#57	#58	#59	#60	#61
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC1 N**	**FC1 O**	**FC2 Hillside A**	**FC2 Hillside B**	**FC2/FC3 Confluence A**	**FC2/FC3 Confluence B**	**FC2 A**	**FC2 B**	**FC3 Lower**	**FC3 Upper**	**FC4 Hillside A**	**FC4 Hillside B**	**FC4 Hillside C**	**FC4 A**	**FC4 B**	**FC4 C**
Salix sp.	SAL1																		
Scirpus pallidus (Britt.) Fern	SCPA1	Y	OBL																
Scirpus pungens Vahl	SCPU1	Y	OBL				8.00			6.00	0.25			4.00	2.00	5.00			0.25
Scirpus validus Vahl.	SCVA1	Y	OBL	0.25	4.00	40.00		0.25		4.00									0.25
Setaria viridis (L.) Beauv.	SEVI1	N																	
Sisymbrium altissimum L.	SIAL1	N	FACU															0.25	
Sonchus arvensis L. ssp. arvensis L.	SOAR1	N	FAC			0.25					0.25								
Solidago canadensis L.	SOCA1	Y	FACU																
Solidago missouriensis Nutt.	SOMI1	Y																	
Sorghastrum nutans (L.) Nash	SONU1	Y	FACU																
Solidago rigida L.	SORI1	Y	FACU																
Sporobolus cryptandrus (Torr.) A. Gray	SPCR1	Y	FACU-			0.25					0.25			0.25	0.25			0.25	
Spergularia media (L.) Presl.	SPME1	Y	NI			0.25	1.00			0.25	0.25						0.25		
Sporobolus neglectus Nash	SPNE1	Y	UPL																
Spartina pectinata Link	SPPE1	Y	FACW			1.00	0.25	1.00		6.00	0.25			12.00	33.00	45.00	10.00	0.25	
Stipa viridula Trin.	STVI1	Y																	
Taraxacum officinale Weber	TAOF1	N	FACU					0.25											
Tragopogon dubius Scop.	TRDU1	N									0.25								
Triglochin maritima L.	TRMA1	Y	OBL																0.25
Typha angustifolia L.	TYAN1	N	OBL			2.00						25.00					0.25		0.25
Typha latifolia L.	TYLA1	Y	OBL			30.00	0.25	15.00	95.00	25.00	0.25	45.00		10.00	15.00		52.00	4.00	30.00
Unknown Species	UNKN			1.00															
Veronica anagallis-aquatica L.	VEAN1	N	OBL									0.25							
Verbascum blattaria L.	VEBL1	N	UPL			0.25		0.25				0.25	0.25						
Verbena bracteata Lag. & Rodr.	VEBR1	Y	FACU															0.25	
Verbascum thapsus L.	VETH1	N				0.25		0.25			0.25	0.25	0.25					0.25	
Xanthium strumarium L.	XAST1	Y	FAC				0.25			0.25								0.25	
Total Herbaceous Foliar Cover				13.75	11.75	87.25	42.00	61.00	95.00	88.50	57.00	79.25	18.75	86.25	104.00	94.00	104.75	32.00	34.75
50/20 Rule: 50% of Total Cover				6.88	5.88	43.63	21.00	30.50	47.50	44.25	28.50	39.63	9.38	43.13	52.00	47.00	52.38	16.00	17.38
50/20 Rule: 20% of Total Cover				2.75	2.35	17.45	8.40	12.20	19.00	17.70	11.40	15.85	3.75	17.25	20.80	18.80	20.95	6.40	6.95
Total Native Herbaceous Cover				6.75	10.75	82.00	25.00	58.00	95.00	86.50	41.00	51.25	15.75	85.25	79.50	82.75	97.00	17.50	33.25
Total Non-Native Herbaceous Cover				6.00	1.00	5.25	17.00	3.00	0.00	2.00	16.00	28.00	3.00	1.00	24.50	11.25	7.75	14.50	1.50

Shrub/Sapling Cover

				#45	#46	#47	#48	#49	#50	#52	#53	#54	#55	#56	#57	#58	#59	#60	#61
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC1 N**	**FC1 O**	**FC2 Hillside A**	**FC2 Hillside B**	**FC2/FC3 Confluence A**	**FC2/FC3 Confluence B**	**FC2 A**	**FC2 B**	**FC3 Lower**	**FC3 Upper**	**FC4 Hillside A**	**FC4 Hillside B**	**FC4 Hillside C**	**FC4 A**	**FC4 B**	**FC4 C**
Amorpha fruticosa L.	AMFR1	Y	OBL					0.25		0.25			0.25						
Elaeagnus angustifolia L.	ELAN1	N	FAC					4.00							0.25		0.25	0.25	
Populus deltoides Marsh. ssp. monilifera (Ait.) Eckenw.	PODE1	Y	FAC			0.25	0.25	0.25			0.25							0.25	
Prunus americana Marsh.	PRAM1	Y	UPL																
Prunus virginiana L. var. melanocarpa (A. Nels.) Sarg.	PRVI1	Y	FACU																
Rosa arkansana Porter	ROAR1	Y	NI																
Rubus idaeus L. ssp. sachalinensis (Levl.) Focke var. sachalinensis	RUID1	Y																	
Salix amygdaloides Anderss.	SAAM1	Y	FACW					0.25			10.00	0.25					0.25	1.00	
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	Y	OBL	1.00		10.00	0.25	60.00		3.00	55.00	35.00	85.00				0.25	65.00	0.25
Salix irrorata Andersson	SAIR1	Y	FACW+																
Symphoricarpos occidentalis Hook.	SYOC1	Y																	
Tamarix ramosissima Ledeb.	TARA1	N	FACW		1.00			0.25									0.25		
Total Shrub/Sapling Cover				1.00	1.00	10.25	0.50	65.00	0.00	3.25	65.25	35.25	85.25	0.00	0.25	0.00	1.00	66.50	0.25
50/20 Rule: 50% of Total Cover				0.50	0.50	5.13	0.25	32.50	0.00	1.63	32.63	17.63	42.63	0.00	0.13	0.00	0.50	33.25	0.13
50/20 Rule: 20% of Total Cover				0.20	0.20	2.05	0.10	13.00	0.00	0.65	13.05	7.05	17.05	0.00	0.05	0.00	0.20	13.30	0.05
Total Native Shrub/Sapling Cover				1.00	0.00	10.25	0.50	60.75	0.00	3.25	65.25	35.25	85.25	0.00	0.00	0.00	0.50	66.25	0.25
Total Non-Native Shrub/Sapling Cover				0.00	1.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.50	0.25	0.00

Table 7. Wetland Vegetation Data Summary 2009 (cont.)

Tree Cover

				#45	#46	#47	#48	#49	#50	#52	#53	#54	#55	#56	#57	#58	#59	#60	#61
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC1 N**	**FC1 O**	**FC2 Hillside A**	**FC2 Hillside B**	**FC2/FC3 Confluence A**	**FC2/FC3 Confluence B**	**FC2 A**	**FC2 B**	**FC3 Lower**	**FC3 Upper**	**FC4 Hillside A**	**FC4 Hillside B**	**FC4 Hillside C**	**FC4 A**	**FC4 B**	**FC4 C**
Salix amygdaloides Anderss.	SAAM1	Y	FACW																
Total Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 50% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 20% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrophytic Vegetation Indicator 1: Dominance Test

Wetland Indicator			**Wetland Indicator Code**																
Obligate Species			OBL		2	3	2	2	1	2	1	3	1	1	2	1	2	3	1
Facultative Wet Species			FACW+	1	1														
Facultative Wet Species			FACW												1	1		1	
Facultative Species			FAC+	1											1				
Facultative Species			FAC															1	
Facultative Species			FAC-																
Facultative Upland Species			FACU		1			2			2		1					1	
Facultative Upland Species			FACU-																
Upland Species			UPL																
Non-Indicator Species			NI																
Not Applicable/Available - Not listed in USFWS species lists			NA																
Unknown																			
# Dominant Species That Are OBL, FACW, or FAC (exluding FAC-)				2	3	3	2	2	1	2	1	3	1	1	4	2	2	5	1
Total # Dominant Species Across All Strata				2	4	3	2	4	1	2	3	3	2	1	4	2	2	6	1
% of Dominant Species That Are OBL, FACW, or FAC				100.00	75.00	100.00	100.00	50.00	100.00	100.00	33.33	100.00	50.00	100.00	100.00	100.00	100.00	83.33	100.00

Hydrophytic Vegetation Indicator 2: Prevalence Index

				#45	#46	#47	#48	#49	#50	#52	#53	#54	#55	#56	#57	#58	#59	#60	#61
				FC1 N	**FC1 O**	**FC2 Hillside A**	**FC2 Hillside B**	**FC2/FC3 Confluence A**	**FC2/FC3 Confluence B**	**FC2 A**	**FC2 B**	**FC3 Lower**	**FC3 Upper**	**FC4 Hillside A**	**FC4 Hillside B**	**FC4 Hillside C**	**FC4 A**	**FC4 B**	**FC4 C**
Prevalence Index				2.68	2.06	1.26	1.58	2.03	1.00	1.25	2.42	1.12	1.48	1.22	2.07	1.95	1.34	1.54	1.14

Wetland Determination

Hydophytic Vegetation Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Hydrology Indicators Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Soils Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Is the Sampled Area a Wetland? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Dominant Species based on 50/20 rule based on Great Plains Region Interim Regional Supplement - March 2008
Total Absolute Vegetation Cover less than 5 percent
Passed Test
Failed Test

Table 8. Wetland Vegetation Data Summary 2009

Herbaceous Cover

				#62	#63	#64	#65	#66	#67	#68	#69	#70	#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC5 East**	**FC5 West**	**Ridge Road Wetland**	**Mound East**	**Mound SW**	**Mound Well**	**Mound West**	**Mound WW**	**OLF A**	**OLF B**	**OLF C**	**OLF D**	**OLF E**	**OLF F**	**OLF G**	**OLF H**	**OLF I**	**PLF A**	**PLF B**
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	Y	FACU	1.00	3.00	1.00	1.00	5.00	25.00	10.00	0.25	1.00			1.00	0.25	25.00	30.00	20.00	30.00		1.00
Agropyron cristatum (L.) Gaertn.	AGCR1	N																				
Agropyron intermedium (Host) Beauv.	AGIN1	N																				
Agropyron repens (L.) Beauv.	AGRE1	N	FAC																			
Agrostis scabra Willd.	AGSC1	Y	FAC		0.25			0.25					2.00									
Agropyron smithii Rydb.	AGSM1	Y	FACU	0.25	0.25	2.00	0.25	2.00	2.00	20.00	10.00		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
Agrostis stolonifera L.	AGST1	N	FAC+	0.25			8.00	1.00		5.00			0.25				5.00	0.25	2.00		0.25	
Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1	N														0.25						
Alisma triviale Pursh	ALTR1	Y	OBL																			
Ambrosia artemisiifolia L.	AMAR1	Y		0.25		0.25							0.25		0.25	0.25	0.25		0.25	0.25	0.25	0.25
Ambrosia psilostachya DC.	AMPS1	Y	FAC																			
Andropogon gerardii Vitman	ANGE1	Y	FAC-																		0.25	
Andropogon scoparius Michx.	ANSC1	Y	FACU																			
Apocynum cannabinum L.	APCA1	Y	FAC																			
Artemisia campestris L. ssp. caudata (Michx.) Hall & Clem.	ARCA1	Y																				
Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1	Y	FACU-																		0.25	
Aster falcatus Lindl.	ASFA1	Y	FAC																			
Astragalus flexuosus (Hook.) G. Don	ASFL1	Y																				
Aster hesperius A. Gray var. hesperius	ASHE1	Y	OBL										0.25									
Aster porteri Gray	ASPO1	Y																				
Asclepias speciosa Torr.	ASSP1	Y	FAC																			
Asclepias viridiflora Raf.	ASVI1	Y																				
Barbarea vulgaris R. Br.	BAVU1	N	FAC																			
Bouteloua curtipendula (Michx.) Torr.	BOCU1	Y					0.25			0.25	0.25		0.25		0.25	0.25						
Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1	Y					0.25			0.25	0.25			0.25		0.25						
Bromus inermis Leyss. ssp. inermis	BRIN1	N									0.25											0.25
Bromus japonicus Thunb. ex Murr.	BRJA1	N	FACU													0.25				0.25		
Bromus tectorum L.	BRTE1	N			0.25																	
Buchloe dactyloides (Nutt.) Engelm.	BUDA1	Y	FACU												0.25	0.25			0.25			0.25
Calamagrostis canadensis (Michx.) Beauv.	CACA1	Y	OBL																			
Carex lanuginosa Michx.	CALA1	Y	OBL																			
Carex nebrascensis Dew.	CANE1	Y	OBL										1.00									
Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi	CANU1	N														0.25						
Carex praegracilis W. Boott.	CAPR1	Y	FACW																			
Ceratophyllum demersum L.	CEDE1	Y	OBL																			
Centaurea diffusa Lam.	CEDI1	N													0.25	0.25						
Chenopodium glaucum L.	CHGL1	Y	FACW																			
Chrysopsis villosa Pursh.	CHVI1	Y																				
Cirsium arvense (L.) Scop.	CIAR1	N	FACU				0.25	2.00					0.25	0.25		0.25						
Cichorium intybus L.	CIIN1	N												0.25								
Convolvulus arvensis L.	COAR1	N																				0.25
Conyza canadensis (L.) Cronq.	COCA1	Y	FACU-												0.25	0.25						
Crepis occidentalis Nutt.	CROC1	Y																				
Cynoglossum officinale L.	CYOF1	N																				
Dalea candida Michx. ex Willd. var. oligophylla (Torr.) Shinners.	DACA1	Y					0.25			0.25						0.25						
Dactylis glomerata L.	DAGL1	N	FACU																			0.25
Distichlis spicata (L.) Greene var. stricta (Torr.) Beetle	DISP1	Y	NI																			
Echinochloa crus-galli (L.) Beauv.	ECCR1	N	FACW	1.00	0.25	15.00		0.25	0.25			1.00					0.25		0.25	3.00	1.00	3.00
Elymus canadensis L.	ELCA1	Y	FACU																			
Eleocharis macrostachya Britt.	ELMA1	Y	OBL		0.25		3.00	35.00		1.00			2.00	0.25			15.00	15.00	10.00	7.00	2.00	0.25
Epilobium ciliatum Raf. ssp. glandulosum (Lehm.) Hock & Raven	EPCI1	Y	OBL											5.00			0.25	0.25				
Equisetum arvense L.	EQAR1	Y	FAC													0.25						
Erigeron strigosus Muhl. ex Willd.	ERST1	Y	FAC							0.25												
Euphorbia marginata Pursh.	EUMA1	Y	FACU																			
Euphorbia serpyllifolia Pers.	EUSE1	Y				0.25		0.25														

Table 8. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#62	#63	#64	#65	#66	#67	#68	#69	#70	#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC5 East**	**FC5 West**	**Ridge Road Wetland**	**Mound East**	**Mound SW**	**Mound Well**	**Mound West**	**Mound WW**	**OLF A**	**OLF B**	**OLF C**	**OLF D**	**OLF E**	**OLF F**	**OLF G**	**OLF H**	**OLF I**	**PLF A**	**PLF B**
Festuca ovina L. var. rydbergii St. Yves	FEOV1	Y																				
Festuca pratensis Huds.	FEPR1	N	FAC	0.25	0.25		0.25			0.25				0.25	0.25					0.25	0.25	0.25
Gaura parviflora Dougl.	GAPA1	Y	NI																			
Geum macrophyllum Willd.	GEMA1	Y	OBL											0.25		0.25						
Glycyrrhiza lepidota Pursh.	GLLE1	Y	FACU													0.25						
Grindelia squarrosa (Pursh.) Dun.	GRSQ1	Y	FACU-			0.25									0.25							
Helianthus annuus L.	HEAN1	Y	FACU			0.25	0.25		0.25										1.00	0.25		0.25
Hordeum jubatum L.	HOJU1	Y	FACW	55.00	25.00	65.00				0.25		25.00	1.00	0.25			0.25		0.25	0.25	8.00	1.00
Hypericum perforatum L.	HYPE1	N													0.25							
Juncus balticus Willd.	JUBA1	Y	OBL	1.00	20.00			0.25		3.00			3.00	55.00	0.25				2.00			
Juncus bufonius L.	JUBU1	Y	OBL																		0.25	5.00
Juncus dudleyi Wieg.	JUDU1	Y	FAC										0.25				10.00				2.00	3.00
Juncus longistylis Torr.	JULO1	Y	FACW+										0.25									
Juncus nodosus L.	JUNO1	Y	OBL																			
Juncus torreyi Cov.	JUTO1	Y	FACW+		0.25		0.25	10.00		3.00		18.00	2.00				0.25	12.00	40.00	30.00	20.00	15.00
Kochia scoparia (L.) Schrad.	KOSC1	N	FACU	0.25	0.25		0.25															
Lactuca serriola L.	LASE1	N	FAC			0.25	0.25		0.25				0.25	0.25	0.25	0.25				0.25		
Lepidium campestre (L.) R. Br.	LECA1	N																				
Leptochloa fasicularis (Lam.) A. Gray	LEFA1	Y	OBL	0.25	0.25																	
Lemna minor L.	LEMI1	Y	OBL																			
Linaria dalmatica (L.) Mill.	LIDA1	N																				
Lotus corniculatus L.	LOCO1	N	FACU																			
Lycopus americanus Muhl. ex Barton	LYAM1	Y	OBL																			
Melilotus alba Medic.	MEAL1	N	FACU													0.25						
Mentha arvensis L.	MEAR1	Y	FACW										0.25									
Medicago lupulina L.	MELU1	N	FAC																			
Melilotus officinalis (L.) Pall.	MEOF1	N	FACU						0.25	0.25	0.25				0.25	0.25	0.25	0.25		0.25		
Medicago sativa L. ssp. sativa	MESA1	N																				
Muhlenbergia asperifolia (Nees. & Mey.) Parodi	MUAS1	Y	FACW																			
Muhlenbergia racemosa (Michx.) B. S. P.	MURA1	Y	FACW																	0.25		
Nepeta cataria L.	NECA1	N	FACU													0.25						
Oenothera villosa Thunb. ssp. strigosa (Rydb.) Dietrich & Raven	OEVI1	Y	FAC	0.25			0.25			0.25					0.25						0.25	
Onosmodium molle Michx. var. occidentale (Mack.) Johnst.	ONMO1	Y																				
Opuntia macrorhiza Engelm.	OPMA1	Y												0.25								
Panicum capillare L.	PACA1	Y	FAC	0.25			0.25											0.25				0.25
Panicum virgatum L.	PAVI1	Y	FAC		0.25									0.25		0.25	0.25				52.00	2.00
Phleum pratense L.	PHPR1	N	FACU														0.25					
Plantago lanceolata L.	PLLA1	N	FAC		0.25								0.25	0.25			0.25			0.25	0.25	
Plantago major L.	PLMA1	N	FAC	0.25			0.25	0.25		1.00												
Poa annua L.	POAN1	N	FACU																			
Polygonum arenastrum Jord. ex Bor.	POAR1	N				0.25																
Poa compressa L.	POCO1	N	FACU							0.25		15.00			0.25		0.25				1.00	2.00
Polygonum convolvulus L.	POCO2	N	FACU																			
Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1	Y	FAC-																			
Polygonum lapathifolium L.	POLA1	N	OBL																			
Polypogon monspeliensis (L.) Desf.	POMO1	N	OBL	0.25	30.00		1.00						1.00									
Potamogeton natans L.	PONA1	Y	OBL																			
Polygonum persicaria L.	POPE2	N	OBL	0.25															0.25			
Poa pratensis L.	POPR1	N	FACU		0.25							1.00										
Polygonum ramosissimum Michx.	PORA1	Y	FAC																			
Prunella vulgaris L.	PRVU1	Y	FAC																			
Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1	Y																				
Ranunculus trichophyllus Chaix	RATR1	Y	OBL																			
Rumex crispus L.	RUCR1	N	FACW				0.25							0.25								
Rumex salicifolius Weinm. ssp. triangulivalvis Danser	RUME1	Y																				

Table 8. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#62	#63	#64	#65	#66	#67	#68	#69	#70	#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC5 East**	**FC5 West**	**Ridge Road Wetland**	**Mound East**	**Mound SW**	**Mound Well**	**Mound West**	**Mound WW**	**OLF A**	**OLF B**	**OLF C**	**OLF D**	**OLF E**	**OLF F**	**OLF G**	**OLF H**	**OLF I**	**PLF A**	**PLF B**
Salix sp.	SAL1									0.25												
Scirpus pallidus (Britt.) Fern	SCPA1	Y	OBL																			
Scirpus pungens Vahl	SCPU1	Y	OBL		0.25					30.00	70.00		2.00				1.00					
Scirpus validus Vahl.	SCVA1	Y	OBL		0.25								55.00				0.25					0.25
Setaria viridis (L.) Beauv.	SEVI1	N													0.25							
Sisymbrium altissimum L.	SIAL1	N	FACU																			
Sonchus arvensis L. ssp. arvensis L.	SOAR1	N	FAC				0.25									0.25						
Solidago canadensis L.	SOCA1	Y	FACU													0.25						
Solidago missouriensis Nutt.	SOMI1	Y																				
Sorghastrum nutans (L.) Nash	SONU1	Y	FACU																		0.25	
Solidago rigida L.	SORI1	Y	FACU																			
Sporobolus cryptandrus (Torr.) A. Gray	SPCR1	Y	FACU-																			5.00
Spergularia media (L.) Presl.	SPME1	Y	NI		0.25																	
Sporobolus neglectus Nash	SPNE1	Y	UPL																			0.25
Spartina pectinata Link	SPPE1	Y	FACW	25.00	20.00								5.00									
Stipa viridula Trin.	STVI1	Y																				
Taraxacum officinale Weber	TAOF1	N	FACU																			
Tragopogon dubius Scop.	TRDU1	N																				
Triglochin maritima L.	TRMA1	Y	OBL																			
Typha angustifolia L.	TYAN1	N	OBL																			
Typha latifolia L.	TYLA1	Y	OBL		0.25		80.00	1.00	40.00	12.00		35.00	4.00	20.00			10.00	25.00	0.25	15.00	10.00	0.25
Unknown Species	UNKN																					
Veronica anagallis-aquatica L.	VEAN1	N	OBL														30.00					
Verbascum blattaria L.	VEBL1	N	UPL				0.25							0.25	0.25		0.25					
Verbena bracteata Lag. & Rodr.	VEBR1	Y	FACU																			
Verbascum thapsus L.	VETH1	N				0.25	0.25			0.25				0.25	0.25	0.25						
Xanthium strumarium L.	XAST1	Y	FAC																			
Total Herbaceous Foliar Cover				85.75	102.00	84.75	97.25	57.25	68.00	87.75	81.25	96.00	80.75	83.75	5.25	6.00	99.25	83.25	76.75	87.50	98.25	40.00
50/20 Rule: 50% of Total Cover				42.88	51.00	42.38	48.63	28.63	34.00	43.88	40.63	48.00	40.38	41.88	2.63	3.00	49.63	41.63	38.38	43.75	49.13	20.00
50/20 Rule: 20% of Total Cover				17.15	20.40	16.95	19.45	11.45	13.60	17.55	16.25	19.20	16.15	16.75	1.05	1.20	19.85	16.65	15.35	17.50	19.65	8.00
Total Native Herbaceous Cover				83.25	70.50	69.00	86.00	53.75	67.25	80.50	80.75	79.00	78.75	81.75	3.00	3.25	62.75	82.75	74.25	83.25	95.50	34.00
Total Non-Native Herbaceous Cover				2.50	31.50	15.75	11.25	3.50	0.75	7.00	0.50	17.00	2.00	2.00	2.25	2.75	36.50	0.50	2.50	4.25	2.75	6.00

Shrub/Sapling Cover

				#62	#63	#64	#65	#66	#67	#68	#69	#70	#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC5 East**	**FC5 West**	**Ridge Road Wetland**	**Mound East**	**Mound SW**	**Mound Well**	**Mound West**	**Mound WW**	**OLF A**	**OLF B**	**OLF C**	**OLF D**	**OLF E**	**OLF F**	**OLF G**	**OLF H**	**OLF I**	**PLF A**	**PLF B**
Amorpha fruticosa L.	AMFR1	Y	OBL													0.25						
Elaeagnus angustifolia L.	ELAN1	N	FAC										0.25			0.25						
Populus deltoides Marsh. ssp. monilifera (Ait.) Eckenw.	PODE1	Y	FAC					0.25				0.25	0.25			1.00						
Prunus americana Marsh.	PRAM1	Y	UPL																			
Prunus virginiana L. var. melanocarpa (A. Nels.) Sarg.	PRVI1	Y	FACU													0.25						
Rosa arkansana Porter	ROAR1	Y	NI																			
Rubus idaeus L. ssp. sachalinensis (Levl.) Focke var. sachalinensis	RUID1	Y														0.25						
Salix amygdaloides Anderss.	SAAM1	Y	FACW				10.00	1.00	70.00		8.00	15.00	0.25			1.00	23.00	3.00	1.00	6.00	10.00	0.25
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	Y	OBL		0.25		7.00	7.00	15.00		4.00	10.00	5.00	2.00	95.00	90.00	22.00	0.25	0.25	1.00	1.00	0.25
Salix irrorata Andersson	SAIR1	Y	FACW+																			
Symphoricarpos occidentalis Hook.	SYOC1	Y					0.25							7.00	0.25	0.25						
Tamarix ramosissima Ledeb.	TARA1	N	FACW		0.25																	
Total Shrub/Sapling Cover				0.00	0.50	0.00	17.25	8.25	85.00	0.00	12.00	25.25	5.75	9.00	95.25	93.25	45.00	3.25	1.25	7.00	11.00	0.50
50/20 Rule: 50% of Total Cover				0.00	0.25	0.00	8.63	4.13	42.50	0.00	6.00	12.63	2.88	4.50	47.63	46.63	22.50	1.63	0.63	3.50	5.50	0.25
50/20 Rule: 20% of Total Cover				0.00	0.10	0.00	3.45	1.65	17.00	0.00	2.40	5.05	1.15	1.80	19.05	18.65	9.00	0.65	0.25	1.40	2.20	0.10
Total Native Shrub/Sapling Cover				0.00	0.25	0.00	17.25	8.25	85.00	0.00	12.00	25.25	5.50	9.00	95.25	93.00	45.00	3.25	1.25	7.00	11.00	0.50
Total Non-Native Shrub/Sapling Cover				0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00

Table 8. Wetland Vegetation Data Summary 2009 (cont.)

Tree Cover

				#62	#63	#64	#65	#66	#67	#68	#69	#70	#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**FC5 East**	**FC5 West**	**Ridge Road Wetland**	**Mound East**	**Mound SW**	**Mound Well**	**Mound West**	**Mound WW**	**OLF A**	**OLF B**	**OLF C**	**OLF D**	**OLF E**	**OLF F**	**OLF G**	**OLF H**	**OLF I**	**PLF A**	**PLF B**
Salix amygdaloides Anderss.	SAAM1	Y	FACW																			
Total Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 50% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 20% of Total Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrophytic Vegetation Indicator 1: Dominance Test

Wetland Indicator			**Wetland Indicator Code**																			
Obligate Species			OBL		1		2	2	1	1	2	2	2	2	2	2	2	1				1
Facultative Wet Species			FACW+								1	2							1	1	1	1
Facultative Wet Species			FACW	2	1	1	1		1								1			1	1	
Facultative Species			FAC+																			
Facultative Species			FAC												3	4					1	
Facultative Species			FAC-																			
Facultative Upland Species			FACU						1	1					5	10	1	1	1	1		
Facultative Upland Species			FACU-												2	1						1
Upland Species			UPL												1							
Non-Indicator Species			NI																			
Not Applicable/Available - Not listed in USFWS species lists			NA											1	6	8						
Unknown																						
# Dominant Species That Are OBL, FACW, or FAC (exluding FAC-)				2	2	1	3	2	2	1	3	4	2	2	5	6	3	1	1	2	3	2
Total # Dominant Species Across All Strata				2	2	1	3	2	3	2	3	4	2	3	19	25	4	2	2	3	3	3
% of Dominant Species That Are OBL, FACW, or FAC				100.00	100.00	100.00	100.00	100.00	66.67	50.00	100.00	100.00	100.00	66.67	26.32	24.00	75.00	50.00	50.00	66.67	100.00	66.67

Hydrophytic Vegetation Indicator 2: Prevalence Index

				#62	#63	#64	#65	#66	#67	#68	#69	#70	#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
				FC5 East	**FC5 West**	**Ridge Road Wetland**	**Mound East**	**Mound SW**	**Mound Well**	**Mound West**	**Mound WW**	**OLF A**	**OLF B**	**OLF C**	**OLF D**	**OLF E**	**OLF F**	**OLF G**	**OLF H**	**OLF I**	**PLF A**	**PLF B**
Prevalence Index				2.04	1.60	2.12	1.36	1.65	2.22	2.06	1.46	1.91	1.22	1.40	1.17	1.25	1.93	2.24	2.42	2.43	2.42	2.49

Wetland Determination

Hydophytic Vegetation Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Hydrology Indicators Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wetland Soils Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Is the Sampled Area a Wetland? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Dominant Species based on 50/20 rule based on Great Plains Region Interim Regional Supplement - March 2008
Total Absolute Vegetation Cover less than 5 percent
Passed Test
Failed Test

Table 9. Wetland Vegetation Data Summary 2009

Herbaceous Cover

				#81	#82	#83	#84	#85	#86	#87	#88	#89	#90	#91	#92	#93
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**PLF C**	**PLF D**	**PLF E**	**PLF F**	**PLF G**	**PLF H**	**PLF I**	**PLF J**	**SPPTS Discharge Gallery**	**SPPTS Sump Installation Wetland**	**SPPTS Well**	**SW093 A**	**SW093 B**
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	Y	FACU	0.25	1.00		3.00	15.00						4.00		10.00
Agropyron cristatum (L.) Gaertn.	AGCR1	N												0.25		0.25
Agropyron intermedium (Host) Beauv.	AGIN1	N														
Agropyron repens (L.) Beauv.	AGRE1	N	FAC					12.00								
Agrostis scabra Willd.	AGSC1	Y	FAC													
Agropyron smithii Rydb.	AGSM1	Y	FACU		2.00		0.25	8.00	0.25	1.00				10.00		5.00
Agrostis stolonifera L.	AGST1	N	FAC+													
Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1	N														
Alisma triviale Pursh	ALTR1	Y	OBL													
Ambrosia artemisiifolia L.	AMAR1	Y		0.25												2.00
Ambrosia psilostachya DC.	AMPS1	Y	FAC		0.25			0.25								
Andropogon gerardii Vitman	ANGE1	Y	FAC-	10.00	2.00				0.25							
Andropogon scoparius Michx.	ANSC1	Y	FACU		0.25											
Apocynum cannabinum L.	APCA1	Y	FAC													
Artemisia campestris L. ssp. caudata (Michx.) Hall & Clem.	ARCA1	Y														
Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1	Y	FACU-													
Aster falcatus Lindl.	ASFA1	Y	FAC				0.25									
Astragalus flexuosus (Hook.) G. Don	ASFL1	Y						0.25								
Aster hesperius A. Gray var. hesperius	ASHE1	Y	OBL													
Aster porteri Gray	ASPO1	Y		0.25	0.25											
Asclepias speciosa Torr.	ASSP1	Y	FAC					0.25								0.25
Asclepias viridiflora Raf.	ASVI1	Y							0.25							
Barbarea vulgaris R. Br.	BAVU1	N	FAC													
Bouteloua curtipendula (Michx.) Torr.	BOCU1	Y						0.25								
Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1	Y														
Bromus inermis Leyss. ssp. inermis	BRIN1	N										2.00	20.00		0.25	40.00
Bromus japonicus Thunb. ex Murr.	BRJA1	N	FACU		0.25		0.25		0.25				1.00		0.25	
Bromus tectorum L.	BRTE1	N														
Buchloe dactyloides (Nutt.) Engelm.	BUDA1	Y	FACU	2.00	0.25											
Calamagrostis canadensis (Michx.) Beauv.	CACA1	Y	OBL											1.00		
Carex lanuginosa Michx.	CALA1	Y	OBL													
Carex nebrascensis Dew.	CANE1	Y	OBL		3.00				0.25							
Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi	CANU1	N						0.25								
Carex praegracilis W. Boott.	CAPR1	Y	FACW													
Ceratophyllum demersum L.	CEDE1	Y	OBL								30.00					
Centaurea diffusa Lam.	CEDI1	N						1.00								1.00
Chenopodium glaucum L.	CHGL1	Y	FACW											0.25		
Chrysopsis villosa Pursh.	CHVI1	Y														
Cirsium arvense (L.) Scop.	CIAR1	N	FACU			0.25		5.00	0.25			15.00	60.00	3.00		10.00
Cichorium intybus L.	CIIN1	N														
Convolvulus arvensis L.	COAR1	N														
Conyza canadensis (L.) Cronq.	COCA1	Y	FACU-		0.25											
Crepis occidentalis Nutt.	CROC1	Y					4.00									
Cynoglossum officinale L.	CYOF1	N								0.25			0.25			
Dalea candida Michx. ex Willd. var. oligophylla (Torr.) Shinners.	DACA1	Y														
Dactylis glomerata L.	DAGL1	N	FACU													
Distichlis spicata (L.) Greene var. stricta (Torr.) Beetle	DISP1	Y	NI													
Echinochloa crus-galli (L.) Beauv.	ECCR1	N	FACW	0.25	0.25		3.00		0.25						0.25	
Elymus canadensis L.	ELCA1	Y	FACU		0.25			15.00	0.25	0.25				0.25		0.25
Eleocharis macrostachya Britt.	ELMA1	Y	OBL	0.25					0.25	1.00					20.00	
Epilobium ciliatum Raf. ssp. glandulosum (Lehm.) Hock & Raven	EPCI1	Y	OBL		0.25				0.25							
Equisetum arvense L.	EQAR1	Y	FAC													
Erigeron strigosus Muhl. ex Willd.	ERST1	Y	FAC													
Euphorbia marginata Pursh.	EUMA1	Y	FACU							0.25						
Euphorbia serpyllifolia Pers.	EUSE1	Y				0.25			0.25	0.25						

Table 9. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#81	#82	#83	#84	#85	#86	#87	#88	#89	#90	#91	#92	#93
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**PLF C**	**PLF D**	**PLF E**	**PLF F**	**PLF G**	**PLF H**	**PLF I**	**PLF J**	**SPPTS Discharge Gallery**	**SPPTS Sump Installation Wetland**	**SPPTS Well**	**SW093 A**	**SW093 B**
Festuca ovina L. var. rydbergii St. Yves	FEOV1	Y														
Festuca pratensis Huds.	FEPR1	N	FAC	0.25	0.25											
Gaura parviflora Dougl.	GAPA1	Y	NI													
Geum macrophyllum Willd.	GEMA1	Y	OBL					0.25								
Glycyrrhiza lepidota Pursh.	GLLE1	Y	FACU													0.25
Grindelia squarrosa (Pursh.) Dun.	GRSQ1	Y	FACU-	0.25												
Helianthus annuus L.	HEAN1	Y	FACU		0.25		0.25			0.25		0.25		3.00	0.25	
Hordeum jubatum L.	HOJU1	Y	FACW	0.25	20.00		0.25		0.25			25.00		40.00	0.25	
Hypericum perforatum L.	HYPE1	N				0.25				0.25			3.00			
Juncus balticus Willd.	JUBA1	Y	OBL	0.25	8.00	8.00			6.00	1.00		0.25		8.00		
Juncus bufonius L.	JUBU1	Y	OBL	8.00												
Juncus dudleyi Wieg.	JUDU1	Y	FAC	0.25	0.25	0.25										
Juncus longistylis Torr.	JULO1	Y	FACW+													
Juncus nodosus L.	JUNO1	Y	OBL													
Juncus torreyi Cov.	JUTO1	Y	FACW+	40.00	45.00	1.00			4.00	2.00					0.25	
Kochia scoparia (L.) Schrad.	KOSC1	N	FACU											0.25		0.25
Lactuca serriola L.	LASE1	N	FAC				0.25					0.25		0.25		
Lepidium campestre (L.) R. Br.	LECA1	N										0.25			0.25	
Leptochloa fasicularis (Lam.) A. Gray	LEFA1	Y	OBL													
Lemna minor L.	LEMI1	Y	OBL													
Linaria dalmatica (L.) Mill.	LIDA1	N														
Lotus corniculatus L.	LOCO1	N	FACU													
Lycopus americanus Muhl. ex Barton	LYAM1	Y	OBL						0.25							
Melilotus alba Medic.	MEAL1	N	FACU													
Mentha arvensis L.	MEAR1	Y	FACW						0.25	3.00						
Medicago lupulina L.	MELU1	N	FAC													
Melilotus officinalis (L.) Pall.	MEOF1	N	FACU													
Medicago sativa L. ssp. sativa	MESA1	N														
Muhlenbergia asperifolia (Nees. & Mey.) Parodi	MUAS1	Y	FACW													
Muhlenbergia racemosa (Michx.) B. S. P.	MURA1	Y	FACW													
Nepeta cataria L.	NECA1	N	FACU									1.00				0.25
Oenothera villosa Thunb. ssp. strigosa (Rydb.) Dietrich & Raven	OEVI1	Y	FAC				0.25		0.25	0.25						
Onosmodium molle Michx. var. occidentale (Mack.) Johnst.	ONMO1	Y						0.25								
Opuntia macrorhiza Engelm.	OPMA1	Y														
Panicum capillare L.	PACA1	Y	FAC	0.25		0.25				0.25						
Panicum virgatum L.	PAVI1	Y	FAC	0.25	5.00				0.25	0.25						
Phleum pratense L.	PHPR1	N	FACU													
Plantago lanceolata L.	PLLA1	N	FAC	0.25				0.25		0.25						
Plantago major L.	PLMA1	N	FAC						0.25	0.25				1.00	0.25	
Poa annua L.	POAN1	N	FACU													
Polygonum arenastrum Jord. ex Bor.	POAR1	N														
Poa compressa L.	POCO1	N	FACU	0.25	0.25		1.00								0.25	
Polygonum convolvulus L.	POCO2	N	FACU													
Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1	Y	FAC-													
Polygonum lapathifolium L.	POLA1	N	OBL													
Polypogon monspeliensis (L.) Desf.	POMO1	N	OBL		1.00				0.25	2.00		13.00		0.25		
Potamogeton natans L.	PONA1	Y	OBL								20.00					
Polygonum persicaria L.	POPE2	N	OBL												0.25	
Poa pratensis L.	POPR1	N	FACU				1.00									
Polygonum ramosissimum Michx.	PORA1	Y	FAC												0.25	
Prunella vulgaris L.	PRVU1	Y	FAC													
Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1	Y														0.25
Ranunculus trichophyllus Chaix	RATR1	Y	OBL													
Rumex crispus L.	RUCR1	N	FACW										0.25			
Rumex salicifolius Weinm. ssp. triangulivalvis Danser	RUME1	Y														

Table 9. Wetland Vegetation Data Summary 2009 (cont.)

Herbaceous Cover

				#81	#82	#83	#84	#85	#86	#87	#88	#89	#90	#91	#92	#93
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**PLF C**	**PLF D**	**PLF E**	**PLF F**	**PLF G**	**PLF H**	**PLF I**	**PLF J**	**SPPTS Discharge Gallery**	**SPPTS Sump Installation Wetland**	**SPPTS Well**	**SW093 A**	**SW093 B**
Salix sp.	SAL1															
Scirpus pallidus (Britt.) Fern	SCPA1	Y	OBL						0.25					0.25		
Scirpus pungens Vahl	SCPU1	Y	OBL											1.00		
Scirpus validus Vahl.	SCVA1	Y	OBL	0.25	0.25		0.25		0.25	13.00		0.25		1.00	1.00	
Setaria viridis (L.) Beauv.	SEVI1	N														
Sisymbrium altissimum L.	SIAL1	N	FACU													
Sonchus arvensis L. ssp. arvensis L.	SOAR1	N	FAC		0.25	0.25										
Solidago canadensis L.	SOCA1	Y	FACU			0.25										
Solidago missouriensis Nutt.	SOMI1	Y						0.25								
Sorghastrum nutans (L.) Nash	SONU1	Y	FACU	3.00												
Solidago rigida L.	SORI1	Y	FACU				0.25									
Sporobolus cryptandrus (Torr.) A. Gray	SPCR1	Y	FACU-													
Spergularia media (L.) Presl.	SPME1	Y	NI													
Sporobolus neglectus Nash	SPNE1	Y	UPL													
Spartina pectinata Link	SPPE1	Y	FACW	0.25	0.25		0.25			0.25				15.00		
Stipa viridula Trin.	STVI1	Y						0.25								
Taraxacum officinale Weber	TAOF1	N	FACU													
Tragopogon dubius Scop.	TRDU1	N														
Triglochin maritima L.	TRMA1	Y	OBL											0.25		
Typha angustifolia L.	TYAN1	N	OBL												30.00	
Typha latifolia L.	TYLA1	Y	OBL	1.00	1.00	53.00	45.00		85.00	60.00		23.00	0.25		30.00	
Unknown Species	UNKN			0.25												
Veronica anagallis-aquatica L.	VEAN1	N	OBL													
Verbascum blattaria L.	VEBL1	N	UPL				0.25									
Verbena bracteata Lag. & Rodr.	VEBR1	Y	FACU													
Verbascum thapsus L.	VETH1	N					0.25		0.25	0.25						
Xanthium strumarium L.	XAST1	Y	FAC							0.25						
Total Herbaceous Foliar Cover				68.25	92.00	63.75	60.00	58.50	100.25	86.50	50.00	80.25	84.75	89.00	83.75	69.75
50/20 Rule: 50% of Total Cover				34.13	46.00	31.88	30.00	29.25	50.13	43.25	25.00	40.13	42.38	44.50	41.88	34.88
50/20 Rule: 20% of Total Cover				13.65	18.40	12.75	12.00	11.70	20.05	17.30	10.00	16.05	16.95	17.80	16.75	13.95
Total Native Herbaceous Cover				67.00	89.75	63.00	54.00	40.00	98.75	83.25	50.00	48.75	0.25	84.00	52.00	18.00
Total Non-Native Herbaceous Cover				1.00	2.25	0.75	6.00	18.50	1.50	3.25	0.00	31.50	84.50	5.00	31.75	51.75

Shrub/Sapling Cover

				#81	#82	#83	#84	#85	#86	#87	#88	#89	#90	#91	#92	#93
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**PLF C**	**PLF D**	**PLF E**	**PLF F**	**PLF G**	**PLF H**	**PLF I**	**PLF J**	**SPPTS Discharge Gallery**	**SPPTS Sump Installation Wetland**	**SPPTS Well**	**SW093 A**	**SW093 B**
Amorpha fruticosa L.	AMFR1	Y	OBL													
Elaeagnus angustifolia L.	ELAN1	N	FAC				2.00	7.00		0.25						
Populus deltoides Marsh. ssp. monilifera (Ait.) Eckenw.	PODE1	Y	FAC	0.25				2.00		0.25					0.25	15.00
Prunus americana Marsh.	PRAM1	Y	UPL													
Prunus virginiana L. var. melanocarpa (A. Nels.) Sarg.	PRVI1	Y	FACU													
Rosa arkansana Porter	ROAR1	Y	NI													
Rubus idaeus L. ssp. sachalinensis (Levl.) Focke var. sachalinensis	RUID1	Y														
Salix amygdaloides Anderss.	SAAM1	Y	FACW	45.00	0.25		50.00		0.25	0.25						
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	Y	OBL	7.00			55.00	50.00	2.00	30.00					0.25	65.00
Salix irrorata Andersson	SAIR1	Y	FACW+	0.25												
Symphoricarpos occidentalis Hook.	SYOC1	Y					15.00		0.25							5.00
Tamarix ramosissima Ledeb.	TARA1	N	FACW													
Total Shrub/Sapling Cover				52.50	0.25	0.00	122.00	59.00	2.50	30.75	0.00	0.00	0.00	0.00	0.50	85.00
50/20 Rule: 50% of Total Cover				26.25	0.13	0.00	61.00	29.50	1.25	15.38	0.00	0.00	0.00	0.00	0.25	42.50
50/20 Rule: 20% of Total Cover				10.50	0.05	0.00	24.40	11.80	0.50	6.15	0.00	0.00	0.00	0.00	0.10	17.00
Total Native Shrub/Sapling Cover				52.50	0.25	0.00	120.00	52.00	2.50	30.50	0.00	0.00	0.00	0.00	0.50	85.00
Total Non-Native Shrub/Sapling Cover				0.00	0.00	0.00	2.00	7.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00

Table 9. Wetland Vegetation Data Summary 2009 (cont.)

Tree Cover

				#81	#82	#83	#84	#85	#86	#87	#88	#89	#90	#91	#92	#93
Scientific Name	**Speccode**	**Native**	**Wetland Indicator**	**PLF C**	**PLF D**	**PLF E**	**PLF F**	**PLF G**	**PLF H**	**PLF I**	**PLF J**	**SPPTS Discharge Gallery**	**SPPTS Sump Installation Wetland**	**SPPTS Well**	**SW093 A**	**SW093 B**
Salix amygdaloides Anderss.	SAAM1	Y	FACW				50.00									
Total Tree Cover				0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 50% of Total Cover				0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50/20 Rule: 20% of Total Cover				0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Native Tree Cover				0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Native Tree Cover				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrophytic Vegetation Indicator 1: Dominance Test

Wetland Indicator			**Wetland Indicator Code**													
Obligate Species			OBL			1	2	1	1	2	2	1			3	1
Facultative Wet Species			FACW+	1	1											
Facultative Wet Species			FACW	1	1		2					1		2		
Facultative Species			FAC+													
Facultative Species			FAC					1								
Facultative Species			FAC-													
Facultative Upland Species			FACU					2					1			
Facultative Upland Species			FACU-													
Upland Species			UPL													
Non-Indicator Species			NI													
Not Applicable/Available - Not listed in USFWS species lists			NA										1			1
Unknown																
# Dominant Species That Are OBL, FACW, or FAC (exluding FAC-)				2	2	1	4	2	1	2	2	2	0	2	3	1
Total # Dominant Species Across All Strata				2	2	1	4	4	1	2	2	2	2	2	3	2
% of Dominant Species That Are OBL, FACW, or FAC				100.00	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	0.00	100.00	100.00	50.00

Hydrophytic Vegetation Indicator 2: Prevalence Index

				#81	#82	#83	#84	#85	#86	#87	#88	#89	#90	#91	#92	#93
				PLF C	**PLF D**	**PLF E**	**PLF F**	**PLF G**	**PLF H**	**PLF I**	**PLF J**	**SPPTS Discharge Gallery**	**SPPTS Sump Installation Wetland**	**SPPTS Well**	**SW093 A**	**SW093 B**
Prevalence Index				2.07	2.06	1.09	1.85	2.55	1.14	1.16	1.00	2.04	4.26	2.35	1.08	2.95

Wetland Determination

Hydophytic Vegetation Present? Y/N				Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
Wetland Hydrology Indicators Present? Y/N				Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N
Wetland Soils Present? Y/N				Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N
Is the Sampled Area a Wetland? Y/N				Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N

Dominant Species based on 50/20 rule based on Great Plains Region Interim Regional Supplement - March 2008
Total Absolute Vegetation Cover less than 5 percent
Passed Test
Failed Test

Table 10. Dominant Herbaceous Species at Locations Meeting Wetland Indicator Criteria in 2009

Scientific Name	Speccode	Growth Form	Wetland Indicator	Absolute Cover (%)
Typha latifolia L.	TYLA1	H	OBL	14.59
Juncus balticus Willd.	JUBA1	H	OBL	5.68
Juncus torreyi Cov.	JUTO1	H	FACW+	5.33
Scirpus validus Vahl.	SCVA1	H	OBL	4.81
Hordeum jubatum L.	HOJU1	H	FACW	4.61
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	H	FACU	3.58
Panicum virgatum L.	PAVI1	H	FAC	2.43
Spartina pectinata Link	SPPE1	H	FACW	2.10
Typha angustifolia L.	TYAN1	H	OBL	2.04
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	S	OBL	16.06
Salix amygdaloides Anderss.	SAAM1	S	FACW	3.31
Salix amygdaloides Anderss.	SAAM1	T	FACW	0.58

Table 11. Dominant Herbaceous Species at Locations Not Meeting Wetland Indicator Criteria in 2009

Scientific Name	Speccode	Growth Form	Wetland Indicator	Absolute Cover (%)
Cirsium arvense (L.) Scop.	CIAR1	H	FACU	12.58
Juncus balticus Willd.	JUBA1	H	OBL	11.67
Bromus inermis Leyss. ssp. inermis	BRIN1	H		11.67
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	H	FACU	7.00
Panicum virgatum L.	PAVI1	H	FAC	3.33
Elymus canadensis L.	ELCA1	H	FACU	2.54
Agropyron smithii Rydb.	AGSM1	H	FACU	2.17
Agropyron repens (L.) Beauv.	AGRE1	H	FAC	2.04
Salix exigua Nutt. ssp. interior (Rowlee) Cronq.	SAEX1	S	OBL	31.67
Populus deltoides Marsh. ssp. monilifera (Ait.) Eckenw.	PODE1	S	FAC	2.83

Table 12. 2009 Woody Plant Summary at Wetland Mitigation Locations

		Woody Species											
GIS_Number	Location	Coyote Willow	Peach Leaf Willow	Lead Plant	American Plum	Chokecherry	Tamarisk	Cottonwood*	Russian Olive	Snowberry	Arkansas Rose	Dewy Stem Willow	Unknown Willow
		SAEX1	SAAM1	AMFR1	PRAM1	PRVI1	TARA1	PODE1/ POAN1	ELAN1	SYOC1	ROAR1	SAIR1	SAL1
1	A-1 Pond Wetland - A	17				1							
2	A-1 Pond Wetland - B	4								1			
3	A-2 Pond Wetland - A	6	2					TN					
4	A-2 Pond Wetland - B	TN						5					
5	B-1 Pond Wetland - A	TN					1	TN		5			
6	B-1 Pond Wetland - B	TN		1						TN			
7	B-1 Pond Wetland - C									TN			
8	B116 Wetland - North	TN											
9	B116 Wetland - South	TN					1						
10	B131 Wetland												
11	B131 SAEX1	TN											
12	B-2 Pond Wetland - A	TN	4				2						
13	B-2 Pond Wetland - B	TN					1			TN			
14	B-3 Pond Wetland - A	TN	1				1						
15	B-3 Pond Wetland - B	TN				TN				TN			
16	B-3 Pond Wetland - C												
17	B371 Hillside Wetland - A												
18	B371 Hillside Wetland - B												
19	B-4 Pond Wetland - A	19	2					TN					
20	B-4 Pond Wetland - B							5	1				
21	B771 North Wetland							7					
22	B771 Northwest Wetland												
23	B881		1						2				
24	Bowman's Pond Wetland	7					12	1					
25	C-1 Pond Wetland - A	TN						1		TN			
26	C-1 Pond Wetland - B	TN						TN					
27	C-1 Pond Wetland - C												
28	C-2 Pond Wetland	3	4										
29	East Shooting Range Wetland	TN	9	2				1					
30	East Trenches Wetland									TN	1		
31	FC1 Road Crossing	TN		TN									
32	FC1 Wetland - A												
33	FC1 Wetland - B							27	1				
34	FC1 Wetland - C	2						14					
35	FC1 Wetland - D	1				3		TN					
36	FC1 Wetland - E		1					9					
37	FC1 Wetland - F	TN	3	TN	10	10		TN					
38	FC1 Wetland - G	TN	1	2		9		TN					
39	FC1 Wetland - H	TN		TN				TN					
40	FC1 Wetland - I	TN						12					
41	FC1 Wetland - J	TN		TN				3					
42	FC1 Wetland - K	15						1					
43	FC1 Wetland - L						2	1					
44	FC1 Wetland - M												
45	FC1 Wetland - N	19											
46	FC1 Wetland - O						1						
47	FC2 Hillside Wetland - A	TN						4					
48	FC2 Hillside Wetland - B	5						7					
49	FC2/FC3 Confluence Wetland - A	TN	1	TN			1	1	6				
50	FC2/FC3 Confluence Wetland - B												
51	FC2/FC3 Confluence Wetland - C												
52	FC2 Wetland - A	TN	1						1				
53	FC2 Wetland - B	TN	TN					20					
54	FC3 Lower Wetland	TN	1										
55	FC3 Upper Wetland	TN		1									
56	FC4 Hillside Wetland - A												
57	FC4 Hillside Wetland - B								1				
58	FC4 Hillside Wetland - C												
59	FC4 Wetland - A	TN	TN				1		1				
60	FC4 Wetland - B	TN	5					4	6				
61	FC4 Wetland - C	1											
62	FC5 East Wetland												
63	FC5 West Wetland	3					2						
64	Ridge Road Wetland												
65	Mound East Wetland	TN	TN							1			
66	Mound Southwest Wetland	14	5					2					
67	Mound Well Wetland												
68	Mound West Wetland	TN	TN										1
69	Mound West-West Wetland	1	2										
70	OLF - A	16	32					1					
71	OLF - B	TN	4					10	1				
72	OLF - C	20								TN			
73	OLF - D	TN								1			
74	OLF - E	TN	3	TN		1		5	1	TN			
75	OLF - F	TN	TN										
76	OLF - G	5	17										
77	OLF - H	1	8										
78	OLF - I	17	TN										
79	PLF Wetland - A	4	21					1					
80	PLF Wetland - B	17	1										
81	PLF Wetland - C	TN	TN					1				1	2
82	PLF Wetland - D		1										
83	PLF Wetland - E												
84	PLF Wetland - F	TN	1						1	TN			
85	PLF Wetland - G	TN						15	TN				
86	PLF Wetland - H	TN	2							2			
87	PLF Wetland - I	TN	2					2					
88	PLF Wetland - J												
89	SPPTS Discharge Gallery Wetland												
90	SPPTS Sump Installation Wetland												
91	SPPTS Well Wetland												
92	SW093 Wetland - A	4						4					
93	SW093 Wetland - B	TN						TN		TN			

TN = too numerous to count

* Cottonwoods include both plains cottonwood and lanceleaf cottonwood counts combined.