MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Camp Creek
Ravalli County, Montana



Prepared for:

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MORRISON MAIERLE, INC.
An Employee-Owned Company

December 2010

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Camp Creek
Sula, Ravalli County, Montana

MDT Project Number NH 41(24)
Control Number 1285

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1. INTRODUCTION

The Camp Creek Wetland Mitigation 2010 Monitoring Report documents the results of the eighth year of monitoring completed at the Camp Creek mitigation site. The Montana Department of Transportation (MDT) developed the Camp Creek mitigation project to compensate for stream and wetland impacts associated with the Sula-North and South construction projects. Excess credits potentially may be applied toward future MDT projects in the Bitterroot Valley. Camp Creek is located in the Lower Clark Fork region within MDT Watershed #3, approximately three miles south of Sula, Montana (Figure 1). The property is located in Sections 27 and 34, Township 1 North and Range 19 West, Ravalli County. Elevations at the site range from 4,600 feet at the north boundary to 4,730 feet at the south boundary. The approximate site boundary is delineated on Figure 2 (Appendix A).

Figures 2 and 3 (Appendix A) show the mapped site features and monitoring activity locations, respectively. Appendix B contains the MDT Mitigation Monitoring Forms, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the Montana Department of Transportation (MDT) Wetland Assessment Forms. Appendix C contains relevant site photographs and Appendix D contains the project plan sheet.

The project is located along the historic Camp Creek floodplain within the Sula Basin. Camp Creek traverses the valley bottom, eventually draining into the East Fork of the Bitterroot River. The primary source of hydrology for the restored channel and floodplain margins is seasonal flooding and perennial surface water flow (PBS&J 2009). Groundwater stored in the deep alluvial substrate of the Sula Basin serves as a secondary hydrology source. Andrews and Praine Creeks drain to Camp Creek within the project boundaries.

Construction at the Camp Creek mitigation site was completed during spring 2002. Long-term project goals included restoration of the Camp Creek channel bottom; restoration of wetland functions, creation, and enhancement of riverine wetlands; and enhancement of heavily grazed and cleared riparian vegetation. Construction diagrams are presented in Appendix D. The project goals are summarized below (PBS&J 2009).

Functional Restoration

- Return Camp Creek to its historic channel and establish new channel.
- Restore hydrology and vegetation, re-creating high value wetland habitat along the Camp Creek riparian corridor.
- Fill existing ditches.

Enhancement

- Plant riparian shrubs and trees throughout the created floodplain margins.
- Plant drier upland species in constructed upland slopes.

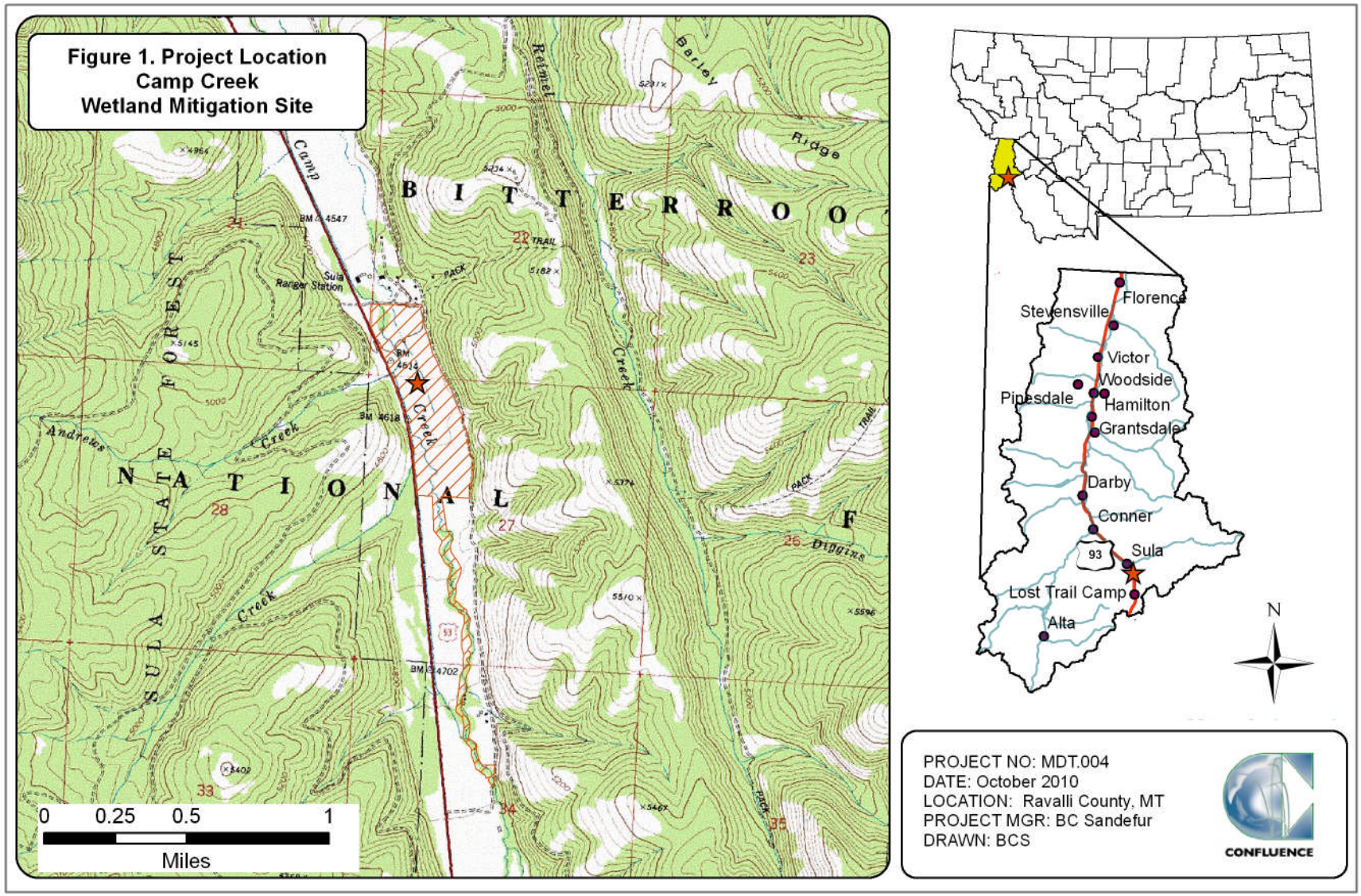


Figure 1. Project Location Camp Creek Wetland Mitigation Site

Creation

- Create emergent/scrub-shrub wetlands along the floodplain margins of the new channel.

The mitigation site design focused on replacing specific wetland functions affected by MDT roadway projects including stormwater retention, roadway runoff filtration, sediment and nutrient retention, water quality, groundwater recharge, and wildlife habitat. The MDT and the USACE developed the credit allocation method for this project in 2006 (PBS&J 2009). The method is functional-unit based, where the wetland acreage for each assessment area (AA) is multiplied by the total score of the AA to yield the overall functional unit score. The calculation is completed both before and after project construction. The difference between the two numbers, or functional unit gain, is divided by the post-project score to arrive at the approximate credit acreage for that AA. Credit acreages for each AA are summed to arrive at a total for the site.

Created wetlands within the project corridor will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the *1987 US Army Corps of Engineers Wetland Delineation Manual for the Determination of Wetlands* (Environmental Laboratory 1987).

2. METHODS

The Camp Creek mitigation site encompasses two parcels that were assessed on August 18, 2010. Monitoring was conducted on the MDT-owned portion of the site and the fenced portion of the adjacent, upstream Grasser property, consistent with previous monitoring years.

Information contained on the Wetland Mitigation Site Monitoring Form and USACE Routine Wetland Determination Data Form (Environmental Laboratory 1987) was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Monitoring activity locations were mapped using a global positioning system (GPS) (Figure 2, Appendix A). Information collected included the wetland delineation, wetland/open water/aquatic habitat boundary mapping, vegetation community mapping, vegetation transect monitoring, soil data collection, hydrology data collection, bird and wildlife use documentation, photographs, stream cross-section data at two established points, functional assessment, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as “permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season” (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered wetlands.

Hydrological indicators as outlined on the USACE wetland determination data form were documented at five data points established within the project area (Figure 2, Appendix A). Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on electronic field data sheets (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

No groundwater monitoring wells were present on the site. Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data was recorded electronically on the wetland determination form (Appendix B).

Two cross-section locations across Camp Creek were surveyed on the MDT-owned parcel, one upstream and one downstream of the Praine Creek confluence (Appendix E). These are designated as "XS 3-A" and "XS 4-A" on Figure 2 (Appendix A). The cross-sectional surveys measured the potential lateral and vertical migration of the channel.

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on aerial photographs. The percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (less than 1 percent)4 1 (1 to 5 percent), 2 (6 to10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects (Figure 2, Appendix A). Vegetation composition was assessed and recorded on one vegetation belt transect approximately 10 feet wide and 471 feet long (Figure 2, Appendix A). The transect location was recorded with a GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent cover of each vegetation species within the "belt" was estimated using the same values and cover ranges listed for the community polygon data on the aerial photograph (Appendix B). Photographs were taken at the endpoints of the transect during the monitoring event (Appendix C).

A comprehensive plant species list has been maintained for the site. Trees and shrubs were planted in spring 2002 and 2008 for revegetation enhancement credit. Survival of the planted species was evaluated during the monitoring event.

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "+", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1.0 acre, or greater than 1 acre in extent, respectively. Cover classes are represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent,

2 to 25 percent, and 25 to 100 percent, respectively, as listed on Figure 3 (Appendix A).

2.3. Soil

Soil information was obtained from the Soil Survey for *Ravalli County* and *in situ* soil descriptions (USDA 2010). Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the USACE 1987 Wetland Delineation Manual. A description of the soil profile, including hydric indicators when present, was recorded on the USACE wetland determination form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and other special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 USACE delineation manual. In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology, as described in the 1987 Manual, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 Onsite Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the USACE wetland determination data form (Appendix B).

The USACE determined that the 1987 Wetland Manual should continue to be used at MDT mitigation sites where baseline wetland conditions had been established prior to 2008. Consequently, the use of the 2010 Interim Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010b) was not required.

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area, or special aquatic site, i.e., mudflat. The wetland boundary was identified on the aerial photograph. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded (Appendix B). These signs were recorded while

traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive list of wildlife species observed directly and indirectly from 2002 to 2010 was compiled.

2.6. Functional Assessment

The baseline functional assessment was completed by Turnstone Biological in 2001. The 1999 MDT Montana Wetland Assessment Method (Berglund 1999) has been used since then to complete functional assessments of the site. Field data for this assessment were collected during the site visit. A Wetland Assessment Form was completed for each wetland or group of wetlands (Assessment Areas) (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting wetland condition, trends, current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site during the site visit (Appendix C). Photo point locations were recorded with a GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2010 monitoring season. Points were collected using WAAS-enabled differential corrected satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, exported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginnings and endings, wetland boundaries, and vegetation community boundaries.

2.9. Maintenance Needs

Channels, engineered structures, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination and not an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

The frost-free period recorded for the area defined by the predominant soil map unit, Beehive-Jeru-Jurvannah complex, is 40 to 75 days (USDA 2010). Areas defined as wetlands would require at least 5 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

The closest weather station to the project area is Sula 3 ENE (247964). The average annual total precipitation recorded from December 1955 to April 2010 was 16.03 inches. Monthly precipitation recorded from January through July

totaled 10.01 historically, 7.89 inches in 2009, and 9.75 inches in 2010 (WRCC 2010).

The average surface water depth of Camp Creek was 0.5 feet with a range of between 0.0 and 1.5 feet. Approximately 15 percent of the site was inundated. Data points CC-1 through CC-4 (Figure 2, Appendix A) were located within the stream corridor. Hydrological indicators at CC-1 were drainage patterns in wetlands (primary) and local soil survey data (secondary). The soils in test pits CC-2w and CC-3 were saturated at 12 inches below the ground surface (bgs) and the soil map unit was listed as hydric. Saturation present at 10 inches bgs, water marks, and local soil survey data were positive indicators of wetland hydrology at CC-4. Test pit CC-2u did not meet the hydrology criteria although the mapped soil unit was hydric.

The main source of hydrology for the mitigation site is Camp Creek, a perennial stream that flows out of the south end of the Bitterroot Mountains. The creek floods seasonally providing surface water inflow to a hydrologically connected swale that flows through the floodplain east of the main channel. Secondary hydrological sources include runoff from ephemeral drainages east of the site, groundwater moving through coarse alluvium materials located throughout the valley bottom, and surface runoff. The mitigation site, located within the historic Camp Creek floodplain, consists of a constructed main channel, streambanks, and floodplain terraces. There are depression wetlands on the site supported by seasonal overland flooding of Camp Creek and groundwater flows. The creek was historically diverted into a channel that flowed along the edge of Highway 93. Several ditches designed to drain the wetland meadow complex were filled and abandoned during construction. The ditches were located south of the MDT-owned parcel and where the creek leaves Grasser's parcel. The removal of the drain ditches has allowed the localized groundwater system to recharge (PBS&J 2009).

Average peak surface water flow rates in Camp Creek were recorded at 222 cubic feet second (cfs) (PBS&J 2009). Low water flow rates averaged 10 cfs. The 2009 stream flow rates for the closest operating US Geological Survey river gauge, the Bitterroot River near Darby, were above normal for the month of May and below normal for June (Chart 1). Stream flow rates in May 2010 were more than 1,500 cfs below average. Stream flows were 500 cfs higher than the mean in June 2010 and average in July and August 2010. The August 2010 flows were slightly lower than the August 2009 rates (Chart 1). The mitigation site was drier overall in 2010 than in 2009. One reason for the difference in moisture levels may be the result of the investigation being conducted later in the year, August 18, 2010 versus July 25, 2009. Stream flows in the Bitterroot River typically decrease approximately 500 cfs from July to August (Chart 1).

Ravalli County was assigned "severe drought" status in 2007 by the Montana Department of Natural Resources and Conservation (DNRC). Ravalli County was not under drought status in 2009 or 2010 (as of July 10, 2010) (NRIS 2010).

Cross-section results are presented in Figure 4 of Appendix E. Photographs of the cross-sections are shown on pages C-7 and C-8 of Appendix C. The cross-sections present post-project baseline (2002) and 2009 channel conditions.

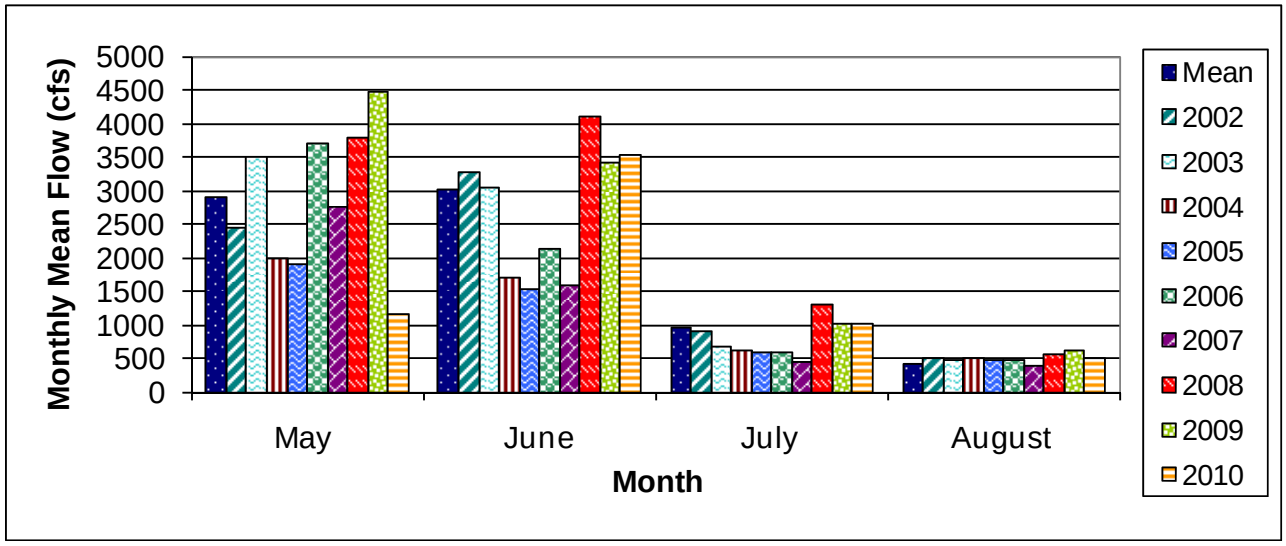


Chart 1. Graph of mean monthly flows for May to August of 2002 to 2010 as compared to long-term mean monthly flows (1937-2008) on the Bitterroot River near Darby, Montana.

Cross Section 3-A is located below the Praine Creek confluence. Annual flows in Camp Creek increased significantly during the 2008 and 2009 seasonal runoffs, which contributed to channel and bank movement at this cross section location (PBS&J 2009). The left bank was stable from 2007 to 2009. Sand and gravel deposition increased slightly in the middle of the channel bottom. The right bank shifted east significantly in 2009. A large ponderosa pine fell into the creek upstream of the transect during the 2008 spring runoff, resulting in additional cross-sectional changes in 2009 (PBS&J 2009). A comparison with the 2010 data shows active deposition and the formation of a mid-channel bar that split the stream flow between the active side-channel left of the bar and the thalweg on the right bank. Natural hydrogeomorphic processes are acting on the channel and do not appear to be compromising stream stability.

Cross Section 4-A is located above the Praine Creek confluence. The right bank shifted to the east and the channel bottom increased slightly in depth in 2009. The 2010 survey data show the stream reach has remained relatively stable since 2009.

3.2. Vegetation

A comprehensive list of 97 vegetation species identified on the site from 2002 to 2010 is presented in Table 1. Three wetland and three upland community types were identified and mapped at the mitigation site (Figure 3, Appendix A). The vegetation community types included Type 1 – *Agropyron repens/Trifolium* species (spp.) Upland, Type 2 – *Carex* spp*. /Phalaris arundinacea* Wetland, Type 3 – *Agrostis alba/Deschampsia cespitosa* Wetland, Type 5 – *Agropyron repens/Centaurea maculosa* Upland, Type 6 – *Populus* spp*./Salix* spp. Wetland, and Type 8 – *Phalaris arundinacea/Juncus balticus* Wetland. Plant species observed within each of these communities are listed on the Monitoring Form (Appendix B). Open water below the ordinary high water mark (OHWM) of the stream channel was identified on Figure 3 (Appendix A) by polygon 9. The dominant species for each vegetation community type are listed below in descending order of abundance.

Wetland Types 2 and 6 were present before construction of the main channel (PBS& 2009). A pre-construction wetland delineation mapped a majority of the site as emergent wetlands. Type 2 encompassed a remnant wetland historically altered by livestock grazing and riparian vegetation removal. The community was characterized by saturated to shallow water (inundated) conditions and emergent vegetation. Type 6 contained willow (*Salix*), dogwood (*Cornus*), aspen (*Populus*), snowberry (*Symphoricarpos*), and rose (*Rosa*) shrubs within historic dry oxbows and depressions. Mature cottonwoods inhabit the historic terraces above the channel.

Community Type 1 – *Agropyron repens/Trifolium* spp. was identified in the higher elevation upland areas outside the stream corridor. The community was dominated by quackgrass (*Agropyron repens*), red and white clover (*Trifolium pratense* and r*epens*, respectively), Kentucky bluegrass (*Poa pratensis),* Japanese brome (*Bromus japonicus*), smooth brome (*Bromus inermis*), and common timothy (*Phleum pratense*).

The Type 2 – *Carex* spp*./Phalaris arundinacea* community characterized the remnant wetland located in the center and the southeast corner of the MDT property. Beaked sedge (*Carex utriculata*), Nebraska sedge (*Carex nebrascensis*), water sedge (*Carex aquatilis*), blue-eyed wildrye (*Elymus glaucus*), reed canary grass (*Phalaris arundinacea*). Japanese brome and spotted knotweed (*Centaurea maculosa*) dominated the vegetation species.

Wetland community Type 3 – *Agrostis alba/Deschampsia cespitosa* was found on the floodplain corridor adjacent to the stream channel. The predominant species were redtop (*Agrostis alba*), tufted hairgrass (*Deschampsia cespitosa*), beaked sedge, clustered field sedge, sandbar willow (*Salix exigua*), Eastern cottonwood (*Populus deltoides*), and yellow willow (*Salix lutea*).

Type 5 – *Agropyron repens/Centaurea maculosa* was located in isolated upland segments adjacent to the creek corridor on the Grasser property. The community was dominated by quackgrass, spotted knapweed, meadow foxtail (*Alopecurus pratensis*), smooth brome, and Japanese brome.

Community 6 – *Populus spp./Salix* spp. was characterized by a remnant wetland with a woody overstory. The dominant species were black cottonwood (*Populus trichocarpa*), quaking aspen (*Populus tremuloides*), Wood's rose (*Rosa woodsii*), Geyer willow (*Salix geyerana*), and Bebb willow (*Salix bebbiana*).

The Type 8 – *Phalaris arundinacea/Juncus balticus* community was defined in a small wetland area located in the south half of the MDT property near the channel. The dominant species were reed canary grass, Baltic rush (*Juncus balticus*), smooth brome, meadow foxtail, and field pennycress (*Thlaspi arvense*).

Polygon 9 was characterized by open water below the ordinary high water mark (OHWM) of the channel. The area was considered a water of the US and, consequently, jurisdictional.

Vegetation transect results are detailed on the Monitoring Form (Appendix B) and summarized from 2002 to 2010 in tabular and graphic formats (Table 2, Charts 2 and 3, respectively). Photos of the transect endpoints are shown on page C-1 of Appendix C. The transect intersected wetland communities Types 3 and 8 and upland community Type 1 and crossed the creek represented by polygon 9. Hydrophytic species dominated 40 percent of the transect, a decrease of 20 percent from 2009. The site was apparently drier in 2010. The reduction in site-wide water levels was discussed in Section 1. Hydrology. The transect intervals and communities did not vary from 2003 to 2009 based on a review of the data recorded in Chart 2 and the monitoring forms. The community on one of the transect intervals transitioned from Type 2 – Carex/Phalaris Wetland in previous years to Type 1 – Agropyron/Trifolium Upland in 2010 resulting in the overall decrease in hydrophytic plant dominance.

Table 1. Vegetation species identified from 2002 to 2010 at the Camp Creek Wetland Mitigation Site.

Scientific Name	Common Name	Region 9 Wetland Indicator[1]
Achillea millefolium	yarrow,common	FACU
Agropyron repens	quackgrass	FACU
Agrostis alba	redtop	FACW
Alnus incana	alder,speckled	FACW
Alopecurus pratensis	foxtail,meadow	FACW
Amelanchier alnifolia	service-berry, Saskatoon	FACU
Aster hesperius	**aster, Siskiyou**	OBL
Betula occidentalis	birch,spring	FACW
Betula pumila	**birch,bog**	OBL
Boehmeria cylindrica	false-nettle,small-spike	NO
Bromus inermis	smooth brome	NL
Bromus japonicus	brome, Japanese	FACU
Bromus tectorum	cheatgrass	NL
Calamagrostis canadensis	reedgrass,blue-joint	FACW+
Carex aquatilis	sedge,water	OBL
Carex bebbii	sedge, Bebb's	OBL
Carex crawfordii	sedge,Crawford's	FACU
Carex lanuginosa	sedge,wooly	OBL
Carex nebrascensis	sedge, Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex rostrata (utriculata)*	beaked sedge	OBL
Centaurea maculosa	spotted knapweed	NL
Chenopodium album	goosefoot,white	FAC
Chrysanthemum leucanthemum	oxeye daisy	NL
Cicuta douglasii	**water-hemlock, Western**	OBL
Cirsium arvense	thistle,creeping	FACU+
Cirsium vulgare	thistle,bull	FACU
Cornus stolonifera	dogwood,red-osier	FACW
Crataegus douglasii	hawthorn, Douglas'	FAC
Cynoglossum officinale	gypsy-flower	NL
Deschampsia cespitosa	hairgrass,tufted	FACW
Elymus glaucus	**wild-rye,blue**	FACU
Epilobium brachycarpum	willow-herb,panicled	UPL
Epilobium ciliatum	willow-herb,hairy	FACW-
Equisetum arvense	horsetail,field	FAC
Equisetum laevigatum	scouring-rush,smooth	FACW
Festuca pratensis	fescue,meadow	FACU+
Geum macrophyllum	avens,large-leaf	FACW+
Glyceria elata	grass,tall manna	FACW+
Glyceria grandis	mannagrass, American	NL
Glyceria striata	**grass,fowl manna**	OBL
Gnaphalium palustre	cudweed,western marsh	FAC+
Juncus balticus	rush, Baltic	OBL
Juncus bufonius	rush,toad	FACW+

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are show in **bold** type.
***Commonly accepted name not included on the 1988 list.

Table 1 (Continued). Vegetation species identified from 2002 to 2010 at the Camp Creek Wetland Mitigation Site

Scientific Name	Common Name	Region 9 Wetland Indicator[1]
Juncus confusus	rush, Colorado	FAC
Juncus effusus	**rush,soft**	FACW+
Juncus ensifolius	rush,three-stamen	FACW
Lactuca serriola	lettuce,prickly	FAC-
Lepidium perfoliatum	pepper-grass,clasping	FACU+
Linaria vulgaris	yellow toadflax	NL
Lonicera involucrata	honeysuckle,four-line	FAC
Lupinus wyethii	lupine, Wyeth's	NL
Lychnis alba	bladder campion	NL
Matricaria matricarioides	**pineapple-weed**	FACU
Melilotus officinalis	**sweetclover,yellow**	FACU
Mentha arvensis	mint,field	FAC
Mimulus guttatus	monkey-flower,common large	OBL
Myosotis alpestris	forget-me-not,alpine	FAC-
Pentaphylloides floribunda	cinquefoil, shrubby	NL
Phalaris arundinacea	grass,reed canary	FACW
Phleum pratense	timothy	FACU
Pinus ponderosa	**pine, Ponderosa**	FACU-
Plantago major	**plantain,common**	FAC+
Poa pratensis	**bluegrass, Kentucky**	FACU+
Polygonum amphibium	smartweed,water	OBL
Populus deltoides	**cotton-wood, Eastern**	FAC
Populus tremula (tremuloides)*	aspen,quaking	FAC+ (NL)
*Populus trichocarpa**	cottonwood, black	NL
Potamogeton filiformis	pondweed,fine-leaf	OBL
Potentilla fruticosa	cinquefoil,shrubby	FAC-
Potentilla gracilis	cinquefoil,northwest	FAC
Ranunculus aquatilis	butter-cup,white water	OBL
Ranunculus hispidus	butter-cup,bristly	NO
Ranunculus repens	butter-cup,creeping	FACW
Rosa woodsii	rose,woods	FACU
Rubus idaeus	raspberry,common red	FACU
Rumex crispus	dock,curly	FACW
Salix bebbiana	willow, Bebb	FACW
Salix boothii	willow, Booth's	OBL
Salix drummondiana	willow, Drummond	FACW
Salix exigua	willow,sandbar	OBL
Salix geyerana	willow, Geyer	FACW+
Salix lutea	willow,yellow	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are show in **bold** type.
***Commonly accepted name not included on the 1988 list.

Table 1 (Continued). Vegetation species identified from 2002 to 2010 at the Camp Creek Wetland Mitigation Site.

Scientific Name	Common Name	Region 9 Wetland Indicator[1]
Scirpus microcarpus	bulrush,small-fruit	OBL
Senecio vulgaris	groundsel,common	FACU
Sisymbrium altissimum	mustard,tall tumble	FACU-
Sium suave	water-parsnip,hemlock	OBL
Smilacina stellata	false-solomon's-seal,starry	FAC-
Solidago canadensis	golden-rod, Canada	FACU
Symphoricarpos albus	snowberry, common	FACU
Tanacetum vulgare	**tansy,common**	NL
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NL
Trifolium pratense	clover,red	FACU
Trifolium repens	clover,white	FACU+
Verbascum thapsus	mullein, common	NL
Veronica americana	speedwell, American	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are show in **bold** type.

Table 2. Data summary of Transect 1 from 2002 to 2010 at the Camp Creek Wetland Mitigation Site.

Monitoring Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
Transect Length (feet)	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**
Vegetation Community Transitions along Transect	4	4	4	4	4	4	4	4	6
Vegetation Communities along Transect	3	3	3	3	3	3	3	3	3
Hydrophytic Vegetation Communities along Transect	2	2	2	2	2	2	2	2	2
Total Vegetative Species	28	27	30	31	31	37	34	36	46
Total Hydrophytic Species	15	16	17	17	17	17	20	21	30
Total Upland Species	13	11	13	14	14	20	14	15	16
Estimated % Total Vegetative Cover	85	95	86	84	84	88	87	87	85
% Transect Length Comprised of Hydrophytic Vegetation Communities	59	59	59	60	60	60	60	60	40
% Transect Length Comprised of Upland Vegetation Communities	37	37	37	36	36	36	36	36	53
% Transect Length Comprised of Unvegetated Open Water	4	4	4	4	4	4	4	4	7
% Transect Length Comprised of Bare Substrate	0	0	0	0	0	0	0	0	0

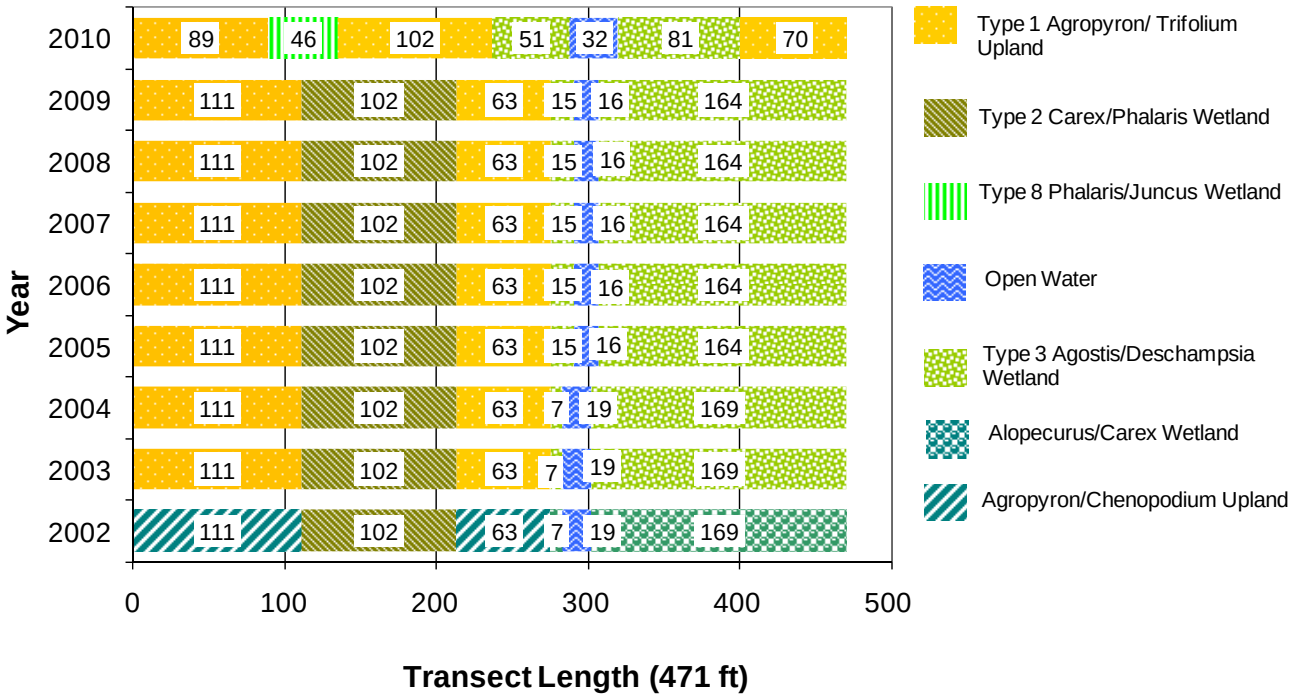


Chart 2. Transect 1 maps showing vegetation types from transect start (0 feet) to end (471 feet) from 2002 to 2010.

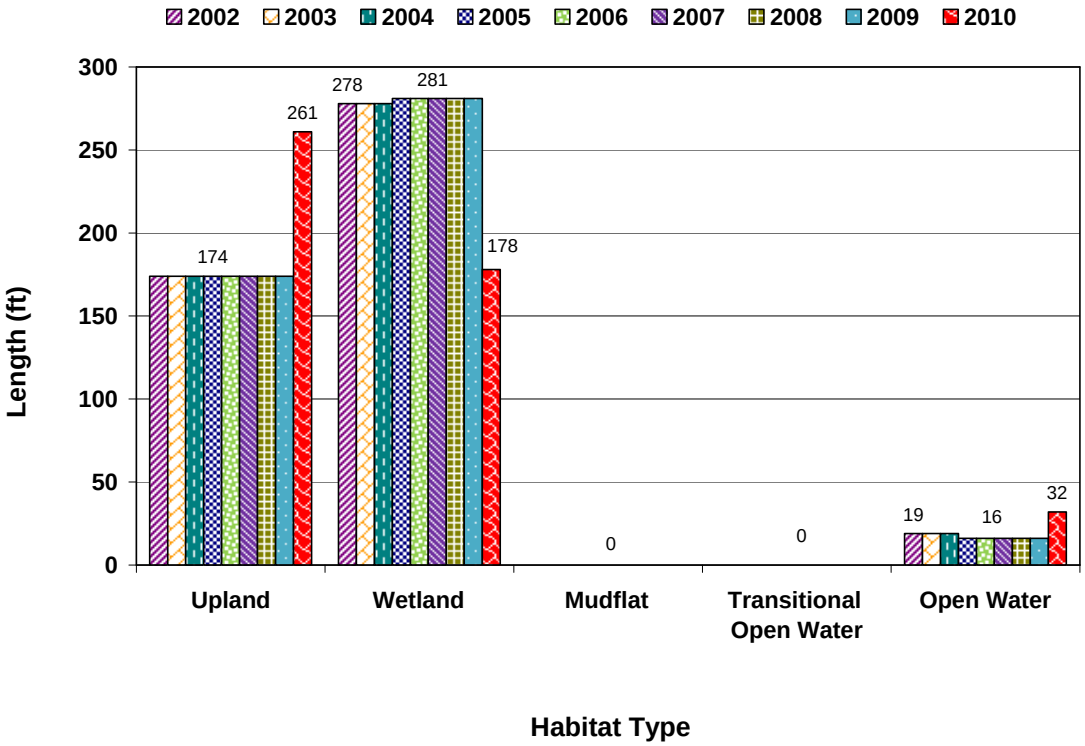


Chart 3. Length of vegetation communities within Transect 1 from 2002 to 2010.

Infestations of spotted knapweed and yellow toadflax (*Linaria vulgaris*), Priority 2B noxious weeds, were identified and mapped in 2010 (Figure 3, Appendix A; Monitoring Form, Appendix B). The size of the spotted knapweed infestations ranged from less than 0.1 acre to between 1.0 and 5.0 acres. The cover class ranged from low, (1 to 5 percent cover) to moderate (5 to 25 percent cover). A majority of the spotted knapweed was observed in the upland periphery of the site and in community 5. The cover of spotted knapweed within the stream corridor on the MDT parcel appeared to decrease between 2009 and 2010. The size of the yellow toadflax infestations ranged from less than 0.1 acre to 1.0 acre with 1 to 25 percent cover. Toadflax was identified primarily in the uplands surrounding the site. The prevalence of Canada thistle (*Cirsium arvense*) decreased from 2009 to 2010.

Ox-eye daisy (*Chrysanthemum leucanthemum*), a Priority 2B noxious weed, was recorded at the community level between 1 and 5 percent of cover. Common tansy (*Tanacetum vulgare*) was reported at less than 1 percent cover in upland community 1. Invasive, non- noxious weeds observed included clasping pepper-grass (*Lepidium perfoliatum*), field pennycress (*Thlaspi arvensis*), and quackgrass.

The streambanks and floodplain margins were revegetated during the 2002 construction season and again in 2008 when 120 willows cuttings were planted on several banks. The streambanks were seeded with a grass mix developed by MDT and 20,480 willow cuttings were sprigged through the fabric. One- and five-gallon containerized shrubs and trees and willow cuttings were also planted in 2002. Woody species included cottonwood, willows, dogwood (*Cornus stolonifera*), and quaking aspen (PBS&J 2009). Upland slopes were planted with Douglas-fir (*Pseudotsuga menziesii*), lodgepole pine (*Pinus contorta*), ponderosa pine (*Pinus ponderosa*), serviceberry (*Amelanchier alnifolia*), shrubby potentilla (*Potentilla fruticosa*), common snowberry (*Symphoricarpos albus*), and Wood's rose. Five exposed banks were planted with 120 willow cuttings during spring 2008 to promote stability.

The 2010 survival rates within the upland areas were similar to those observed during the 2004 to 2009 monitoring. Survival data recorded from 2004 to present show most upland species had a survival rate well below 50 percent. Upland species that have survived include Wood's rose, common snowberry, shrubby potentilla and red-osier dogwood. The majority of Douglas-fir plantings died after the first year.

Wetland species planted along the streambank and floodplain margins had a survival rate ranging from 60 percent to 90 percent in 2010. The vigorous growth of the woody species planted on the streambanks was apparent in 2010. The development of the riparian shrub canopy will continue to improve the quality of the aquatic hiding, nesting, and escape cover, and thermal cover. These woody

species include alder, aspen, cottonwood, and willows. The willow sprigs planted during 2002 continue to increase in size and density each growing season.

3.3. Soil

The mitigation site was mapped within the Beehive-Jeru-Jurvannah families, complex. The soils are rocky and somewhat poorly drained . The map unit is listed as hydric and taxonomically classified as Typic Cyaquents/Dystrocryepts. The test pits generally confirmed the map unit.

Soil test pits were excavated at data points CC-1 through CC-4. Test pits CC-1, CC-2u, and CC-2w were located near the stream corridor in the south half of the MDT parcel. Data collected at CC-1 and CC-2w met the wetland criteria. The soil profile at CC-1 revealed a very rocky silt loam (10 YR 4/1) with redoximorphic concentrations (10 YR 3/4) in the matrix. The soil at CC-2w was a silt loam (10 YR 3/1) with redoximorphic concentrations (10 YR 3/4) in the matrix. The low-chroma and redox features were positive indicators of hydric soil.

Data point CC-3 was located adjacent to the channel in the north half of the MDT parcel. The soil was identified as a silt loam (10 YR 2/1) with redox concentrations (10 YR 3/4) in the matrix. Test pit CC-4 was located in the stream corridor in the north half of the Grasser property. The soils were the same as CC-3 except the color was 10 YR 2/2. The low-chromas and redox features at CC-3 and CC-4 were indicative of hydric soils. Data point CC-2u met the hydric soil criteria and failed the vegetation and hydrology soil criteria. The soil was a very rocky, friable, dry silt loam (10YR 4/1) without redox features. The low chroma was a positive indicator of hydric soil.

3.4. Wetland Delineation

The wetlands delineated in 2010 are mapped on Figure 3 in Appendix A. The 2010 delineation identified approximately the same acreage of wetland within the MDT and Grasser parcels as in 2009 (Table 3). Approximately 47.23 wetland acres and 1.5 open water channel acres were identified within the monitoring area in 2000 prior to project implementation (PBS&J 2009).

Table 3. Summary of aquatic habitat acreages in 2000 (baseline) and from 2007 to 2010 at the Camp Creek Wetland Mitigation Site.

HABITAT	ACREAGES									
	2000 MDT Property	2000 Grasser Property	2007 MDT Property	2007 Grasser Property	2008 MDT Property	2008 Grasser Property	2009 MDT Property	2009 Grasser Property	2010 MDT Property	2010 Grasser Property
Wetland Area	42.61	4.62	34.84	6.93	32.44	6.93	32.33	6.93	31.51	6.22
Open Water Area	0.75	0.75	0.95	1.20	0.95	1.20	0.95	1.20	1.28	2.03
SUBTOTAL	43.36	5.37	35.79	8.13	33.39	8.13	33.28	8.13	32.79	8.25
Aquatic Habitat Total	**48.73**		**43.92**		**41.52**		**41.41**		**41.04**	

There was a decrease of approximately 0.37 wetland acres from the 2009 to 2010 monitoring years. This decrease may be attributed to sampling during late summer, when the project site is drier, or to variations in the georeferenced non-orthorectified aerial imagery. In 2008 changes were observed in the southeast corner of the MDT parcel near the Grasser/MDT boundary where an upland island located north of the flood channel expanded and in the remnant wetland located upstream of the Andrews Creek inlet (PBS&J 2009). The area in the southeast corner located upgradient and east of the flood channel historically received hydrological inputs from flood irrigation on the Grasser parcel (PBS&J 2009). The drainage pattern associated with the flood channel is currently confined to the lowest contour located north of the flood channel rather than east. The expanded upland island located on a higher topographical contour north of the flood channel is not inundated during seasonal runoff. The area upstream of the Andrews Creek inlet is located on the terrace above Camp Creek and the associated floodplain. These areas historically were flooded or saturated from irrigation practices prior to the reconstruction of the creek (PBS&J 2009). The changes will likely be permanent unless irrigation practices revert to the historical patterns.

3.5. Wildlife

A comprehensive list of fish and wildlife species observed directly or indirectly at the site from 2002 to 2010 is presented in Table 4 (Monitoring Forms, Appendix B). New species identified in 2010 included the common nighthawk (*Chordeiles minor*), great blue heron (*Ardea Herodias*), red-winged blackbird (*Agelaius phoeniceus*), yellow warbler (*Dendroica petechia*), badger (*Taxidea taxus*), and porcupine (*Erithizon dorsatum*).

Pre-project and post-project surveys along Camp Creek on the MDT parcel were conducted by Montana Fish Wildlife and Parks (MFWP) during 1999, 2003, 2004 to 2007, and 2009. The constructed channel provides habitat for several fish species including Westslope cutthroat (*Oncorhynchus clarkia lewisi*), hybrid cutthroat and rainbow trout, brook trout (*Salvelinus foninalis*), and brown trout (*Salmo trutta*) (Table 4). The 2007 survey documented 297 Westslope cutthroat crosses with rainbow trout ranging in size from 3 to 9 inches (PBS&J 2009). No fisheries data were collected during the 2008 monitoring season (PBS&J 2009). The 2009 survey documented 344 westslope cutthroat crosses with rainbow trout in the 3- to 9^{+}-inch size range (PBS&J 2009).

3.6. Functional Assessment

The 2010 functional assessment used the 1999 MDT Montana Wetland Assessment Method (Berglund 1999) on two assessment areas, the MDT parcel and the Grasser parcel (Table 5). This was consistent with the 2009 assessment.

Table 4. Wildlife species observed at the Camp Creek Mitigation Site from 2002 to 2010.

COMMON NAMES	SCIENTIFIC NAMES
AMPHIBIAN	
Columbia Spotted Frog	Rana luteiventris
BIRD	
American Crow	*Corvus brachyrhynchos*
American Dipper	*Cinclus mexicanus*
American Goldfinch	*Spinus tristus*
American Kestrel	*Falco sparverius*
American Robin	*Turdus migratorius*
Bald Eagle	*Haliaeetus leucocephalus*
BARN SWALLOW	***Hirundo rustica***
Black-billed Magpie	*Pica hudsonia*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
Canada Goose	*Branta canadensis*
Cedar Waxwing	*Bombycilla cedrorum*
CLARK'S NUTCRACKER	***Nucifraga columbiana***
Common Merganser	*Mergus merganser*
Common Nighthawk	***Chordeiles minor***
Common Raven	*Corvus corax*
COMMON YELLOWTHROAT	***Geothlypis trichas***
Dusky Grouse	*Dendragapus obscurus*
European Starling	*Sturnus vulgaris*
Grasshopper Sparrow	*Ammodramus savannarum*
Great Blue Heron	***Ardea herodias***
Killdeer	*Charadrius vociferus*
Mallard	*Anas platyrhynchos*
Mountain Bluebird	*Sialia currucoides*
NORTHERN FLICKER	***Colaptes auratus***
Wilson's Snipe	*Gallinago delicata*
Yellow Warbler	***Dendroica petechia***
Northern Harrier	*Circus cyaneus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	***Agelaius phoeniceus***
Spotted Sandpiper	*Actitis macularius*

Species first identified in 2010 are listed in **bold** type.
Species identified by MDT in 2010 are listed in **CAPS**.

Table 5. (Continued). Wildlife species observed at the Camp Creek Mitigation Site from 2002 to 2010.

COMMON NAMES	SCIENTIFIC NAMES
BIRD	
STARLING	
TREE SWALLOW	***Tachycineta bicolor***
UNKOWN FLYCATCHER	
Wilson's Snipe	*Gallinago delicata*
Yellow Warbler	***Dendroica petechia***
FISH	
Brook Trout	*Salvelinus fontinalis*
Brown Trout	*Salmo trutta*
CutthroatXRainbow Trout	
Westslope Cutthroat Trout	*Oncorhynchus clarkii lewisi*
MAMMAL	
Badger	***Taxidea taxus***
Bobcat	*Lynx rufus*
Coyote	*Canis latrans*
Deer Mouse	*Peromyscus maniculatus*
Elk or Wapiti	*Cervus canadensis*
Meadow Vole	*Microtus pennsylvanicus*
Moose	*Alces americanus*
Mule Deer	*Odocoileus hemionus*
Porcupine	***Erethizon dorsatum***
Red Fox	*Vulpes vulpes*
Richardson's Ground Squirrel	*Spermophilus richardsonii*
White-tailed Deer	*Odocoileus virginianus*
COMMON GARTERSNAKE	***Thamnophis sirtalis***

Species first identified in 2010 are listed in **bold** type.
Species identified by MDT in 2010 are listed in **CAPS**.

The 2001 baseline assessment was completed by Turnstone Biological. They separated the Grasser property into three assessment areas, emergent (Type I), scrub-shrub emergent (Type II), and rock bottom with narrow mixed wetland fringe (Type III) wetland classifications. The AA was later modified to encompass the entire Grasser parcel.

The AA on the MDT parcel was rated as a Category I wetland with 83 percent of the total points possible, which was consistent with the 2009 assessment (Functional Assessment Form, Appendix B). Ratings were high for the listed/proposed threatened and endangered (T&E) species habitat, Montana Natural Heritage Program (MTNHP) species habitat, general fish /aquatic species,

surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge/recharge, and recreation/education ratings (public ownership with excellent access). Acreages for the MDT AA varied slightly between 2009 and 2010 as a result of differences in the resolution of the GPS data between years.

The MFWP decided to classify Westslope cutthroat trout captured during surveys in 2006 as Westslope cutthroat / rainbow trout hybrids because they could be differentiated in the field (PBS&J 2009). These were the same species that had been captured during 2003 to 2005 surveys. Consequently, the "suspected primary habitat" rather than "documented primary habitat" MTNHP species habitat ranking for Westslope cutthroat trout was conservatively assigned.

The AA on the Grasser parcel is not within a conservation easement and, therefore, is subject to a higher degree of disturbance. The Grasser parcel was rated as a Category II wetland in 2010. The percent score increased from 68 percent in 2009 to 73 percent in 2010 as a result of point increases in the flood attenuation, production export/food chain support, and uniqueness categories (Functional Assessment Form, Appendix B). The increases were primarily the result of an increase in the structural diversity rating from moderate to high. The AA received high ratings for listed/proposed T&E species habitat, general fish habitat, MTNHP species habitat (based on the presence of Westslope cutthroat trout), sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge (Functional Assessment Form, Appendix B). Acreages of the Grasser AA varied slightly between 2009 and 2010 as a result of differences in the resolution of the GPS data between years, increasing from 8.13 acres in 2009 to 8.25 acres in 2010.

3.7. Photo Documentation

Representative photographs taken in 2010 from established photo points, transect end points, and stream cross-sections are provided in Appendix C. The 2009 and 2010 photos of the start and end of the transect (PP1 and PP2) are shown on page C-1 of Appendix C. Photos and panoramas of photo points PP3 through PP13 are included on pages C-1 through C-6. The stream cross-section photos are presented on C-7 of Appendix C.

Table 6. Summary of 2001 (baseline) and 2009 to 2010 wetland function/value ratings and functional points at the Camp Creek Wetland Mitigation Site.

Function and Value Parameters from the 1999[1] MDT Montana Wetland Assessment Method	2001 Type I, MDT Property	2001 Type III, MDT Property	2001 Type I, Grasser Property	2001 Type II, Grasser Property	2001 Type III, Grasser Property	2009 Grasser Property	2009 MDT Property	2010 Grasser Property	2010 MDT Property
Listed/Proposed T&E Species Habitat	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	High (0.8)	High (0.8)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
General Wildlife Habitat	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	Low (0.1)	Mod (0.5)	Low (0.1)	Low (0.1)	Mod (0.5)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Flood Attenuation	Mod (0.6)	Mod (0.4)	Mod (0.6)	Mod (0.5)	Mod (0.4)	Mod (0.4)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Short and Long Term Surface Water Storage	Low (0.3)	High (0.8)	Low (0.3)	Low (0.3)	High (0.8)	Mod (0.6)	High (1.0)	Mod (0.6)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.6)	Mod (0.7)	Mod (0.7)	Mod (0.6)	Mod (0.6)	High (0.9)	Mod (0.6)	High (0.9)
Sediment/Shoreline Stabilization	Low (0.2)	Low (0.3)	Low (0.2)	Mod (0.6)	Low (0.3)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	High (0.9)	Mod (0.7)	Mod (0.7)	High (0.9)	High (0.9)	High (0.9)	High (1.0)	High (0.9)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.1)	Low (0.2)	Low (0.1)	Low (0.3)	Low (0.2)	Low (0.2)	Mod (0.4)	Mod (0.5)	Mod (0.4)
Recreation/Education Potential	Low (0.2)	Low (0.1)	Low (0.2)	Low (0.3)	Low (0.1)	Low (0.3)	High (1.0)	Low (0.3)	High (1.0)
Actual Points / Possible Points	**5.1/12**	**6.1/12**	**5.1/12**	**5.9/12**	**6.2/12**	**8.2/12**	**10.0/12**	**8.2/12**	**10.0 / 12**
% of Possible Score Achieved	**42%**	**52%**	**42%**	**49%**	**52%**	**68%**	**83%**	**73%**	**83%**
Overall Category	**III**	**III**	**III**	**III**	**III**	**II**	**I**	**II**	**I**
Total Acreage of Assessed Wetlands and Open Water within Easement	**42.3**	**1.062**	**3.512**	**0.502**	**1.362**	**8.13**	**33.28**	**8.25**	**32.79**
Functional Units (fu) (acreage x actual points)	**215.73**	**6.57**	**17.90**	**2.95**	**8.43**	**66.66**	**332.80**	**72.60**	**327.90**
Functional Unit Gain to Date by Ownership	NA	NA	NA	NA	NA	**37.38**	**110.5**	**38.37**	**105.6**
Total Functional Unit Gain	NA	NA	NA	NA	NA	**147.88**		**143.97**	

[1](Berglund 1999).

3.8. Maintenance Needs

The flood channel created by MDT to inundate the large emergent complex was examined during 2010 monitoring. Minor aggrading of the right bank along this feature suggests the structural integrity of the high-flow rock diversion structure is not imminently threatened by erosion. However, localized streambank erosion along two reaches within the Grasser parcel (Figure 3, Appendix 1; C-8, Appendix C) has resulted in channel avulsion and minor lateral migration of the corridor from the original plan form. This natural stream process does not threaten any structures or the stability of this reach.

Infestations of spotted knapweed and yellow toadflax (*Linaria vulgaris*), Priority 2B noxious weeds, were identified and mapped in 2010 (Figure 3, Appendix A; Monitoring Form, Appendix B). Implementation of continued weed control is critical for managing the spread of noxious weeds.

3.9. Current Credit Summary

The credit allocation method for this site was determined by MDT and USACE in early 2006. The wetland acreage for each AA was multiplied by the total score for the AA to yield the overall functional unit score. The difference between the two numbers (functional unit "gain") was divided by the post-project score to arrive at an approximate credit acreage for that AA. Credit acreages from each AA were summed to arrive at the site total (Table 6). Approximately 143.97 functional units (functional points times wetland acreage) have been gained to date at the Camp Creek mitigation site. This is slightly less than the 147.88 acres reported in 2009, owing to a 0.49 acre decrease in the total assessment acreage. This decrease in assessment area is possibly a result of differences in acreages determined by different GIS databases. The current potential credit estimate for the Camp Creek site is 15.24 acres (Table 6).

Table 7. Functional unit-based credit estimate in 2010 for the Camp Creek Mitigation Site.

Property	2010 Wetland & Channel Acreage	2010 Functional Points	2010 Functional Units	Baseline Functional Units	Functional Unit "Gain"	"Gain" Divided by Current Score (potential credit acres)
MDT	32.79	10.0	327.90	222.30	105.60	10.56
Grasser	8.25	8.2	67.65	29.28	38.37	4.68
Total	**41.04**		**395.55**	**251.58**	**143.97**	**15.24**

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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana

Figure 2: 2010 Monitoring Activity Locations

0 125 250 500
Feet

Match Line
PP9
CC-3
PP6
XS 1-A
XS 3-A
Grasser
MDT
PP1
T-1, end
PP3
PP4
PP5
CC-2W
CC-2U
CC-1
T-1, start
PP2
PP7
PP8

N

PP13
CC-4
PP11
PP12
PP10
Match Line

0 125 250 500
Feet

N

Legend

- Vegetation Transect
- Monitoring Limits
- DataPoints
- PhotoPoints
- Cross Section

Base Photography Date: July 15, 2010

LOCATION: Ravalli Co., MT

PROJ NO: NH 41(24)

FILE: CampCreek/Monitor2010.mxd

Project Name
Camp Creek Wetland Mitigation

Drawing Title
2010 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JL

SCALE: Noted

Drawn: October 11, 2010

PROJ MGR: B Sandefur

CONFLUENCE
consulting Incorporated

Figure 2

REV -

Figure 3: 2010 Mapped Site Features

0 125 250 500
Feet

Match Line

Grasser MDT

PP13 CC-4 PP11 PP12 PP10

Noxious Weeds
Centaurea maculosa
Linaria vulgaris
Infestation SIze
X = <0.1 acre
▲= 0.1 to 1 acre
■= 1 to 5 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover(
M = Moderate (5-25% cover)
H = High (25-100% cover)

Vegetation Community Types

1 Agropyron repens/Trifolium spp
2 Carex spp./Phalaris arundinacea
3 Agrostis alba/Deschampsia cespitosa
5 Agropyron repens/Centaurea maculosa
6 Populus spp./Salix spp.
8 Phalaris arundinacea/Juncus balticus

Legend

Monitoring Limits
Wetland Limits
Vegetation Communities
Localized Bank Erosion

Base Photography Date: July 15, 2010

Wetlands and Other Special Aquatic Sites

Gross Wetland Area 41.04 acres
Open Water (9) 3.32 acres

0 125 250 500
Feet

LOCATION: Ravalli Co., MT
PROJ NO: NH 41(24)
FILE: CampCreek/Monitor2010.mxd

Project Name: Camp Creek Wetland Mitigation
Drawing Title: 2010 Mapped Site Features

DRAWN BCS
CHECKED BV
APPROVED JL
SCALE: Noted
Drawn: October 11, 2010
PROJ MGR: B Sandefur

CONFLUENCE consulting Incorporated

Figure 3

REV -

Appendix B

2010 Wetland Mitigation Site Monitoring Form
2010 USACE Wetland Delineation Form
2010 MDT Functional Assessment Form

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana

3043

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Camp Creek Assessment Date/Time 8/18/2010 9:05:08 AM

Person(s) conducting the assessment: B. Sandefur

Weather: Clear & sunny, warm, light breeze Location: Sula Valley

MDT District: Lower Clark Fork Milepost: 0

Legal Description: T 1N R 19W Section(s) 27 & 34

Initial Evaluation Date: 9/5/2002 Monitoring Year: 8 #Visits in Year: 1

Size of Evaluation Area: 101.6 (acres)

Land use surrounding wetland:

Residential, ag (livestock), & national forest

HYDROLOGY

Surface Water Source: Camp Creek

Inundation: ☑ Average Depth: 0.5 **(ft)** Range of Depths: 0-1.5 **(ft)**

Percent of assessment area under inundation: 15 %

Depth at emergent vegetation-open water boundary: **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes

Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc**:**

Groundwater Monitoring Wells

Record depth of water surface below ground

Additional Activities Checklist:

☑ Map emergent vegetation-open water boundary on aerial photograph.

☑ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

VEGETATION COMMUNITIES

Site Camp Creek

(Cover Class Codes **0** = < 1%, **1** = 1-5%, **2** = 6-10%, **3** = 11-20%, **4** = 21-50% , **5** = >50%)

* Indicates accepted spp name not on '88 list.

Community # 1 **Community Type:** Agropyron repens / Trifolium spp

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	4
Alopecurus pratensis	1	Bromus inermis	2
Bromus japonicus	2	Bromus tectorum	1
Centaurea maculosa	1	Lepidium perfoliatum	1
Linaria vulgaris	1	Phleum pratense	2
Poa pratensis	2	Potentilla fruticosa	1
Potentilla gracilis	1	Sisymbrium altissimum	1
Solidago canadensis	1	Tanacetum vulgare	0
Thlaspi arvense	1	Trifolium pratense	1
Trifolium repens	2	Verbascum thapsus	1

Comments:

Community # 2 **Community Type:** Carex spp / Phalaris arundinacea

Species	Cover class	Species	Cover class
Agropyron repens	2	Bromus japonicus	2
Carex aquatilis	1	Carex nebrascensis	2
Carex utriculata*	3	Centaurea maculosa	2
Elymus glaucus	2	Festuca pratensis	1
Glyceria striata	1	Lepidium perfoliatum	1
Phalaris arundinacea	3	Potentilla fruticosa	1
Sisymbrium altissimum	1	Verbascum thapsus	1

Comments:

Community # 3 Community Type: Agrostis alba / Deschampsia cespitosa

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis alba	3
Alnus incana	1	Aster hesperius	1
Betula pumila	1	Carex crawfordii	1
Carex praegracilis	2	Carex utriculata*	2
Chrysanthemum leucanthe	1	Deschampsia cespitosa	3
Linaria vulgaris	1	Lupinus wyethii	1
Mimulus guttatus	1	Populus deltoides	2
Populus tremuloides*	1	Potamogeton filiformis	0
Rumex crispus	1	Salix bebbiana	1
Salix exigua	2	Salix lutea	2
Solidago canadensis	1		

Comments:

Community # 5 Community Type: Agropyron repens / Centaurea maculosa

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	3
Alopecurus pratensis	2	Aster spp.	1
Bromus inermis	2	Bromus japonicus	2
Centaurea maculosa	3	Chrysanthemum leucanthe	1
Linaria vulgaris	1	Lychnis alba	1
Pinus ponderosa	0	Potentilla fruticosa	1
Potentilla gracilis	1	Rosa woodsii	1
Sisymbrium altissimum	1	Thlaspi arvense	1
Verbascum thapsus	1		

Comments:

Community # 6 Community Type: Populus spp / Salix spp

Species	Cover class	Species	Cover class
Cornus stolonifera	0	Populus tremuloides*	2
Populus trichocarpa*	5	Rosa woodsii	2
Salix bebbiana	2	Salix drummondiana	1
Salix exigua	1	Salix geyerana	2
Symphoricarpos albus	0		

Comments:

Community # 8 **Community Type:** Phalaris arundinacea / Juncus balticus

Species	Cover class	Species	Cover class
Achillea millefolium	1	Alopecurus pratensis	2
Bromus inermis	3	Carex praegracilis	1
Centaurea maculosa	1	Cirsium arvense	0
Epilobium ciliatum	1	Juncus balticus	3
Linaria vulgaris	1	Phalaris arundinacea	5
Populus tremula	0	Potentilla gracilis	1
Rosa woodsii	0	Rumex crispus	1
Salix exigua	1	Sisymbrium altissimum	1
Solidago canadensis	1	Thlaspi arvense	2

Comments:

Community # 9 **Community Type:** Open Water /

Species	Cover class	Species	Cover class
Open Water	5		

Comments:

VEGETATION TRANSECTS

Site: Camp Creek Date: 18/2010 9:05:08 AM

Transect Number: 1 **Compass Direction from Start:** 180

Interval Data:

Ending Station 89 **Community Type:** Agropyron repens / Trifolium spp

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	3
Alopecurus pratensis	2	Bromus inermis	3
Centaurea maculosa	2	Elymus glaucus	2
Glyceria elata	2	Phalaris arundinacea	1
Potentilla fruticosa	1	Potentilla gracilis	1
Trifolium pratense	0		

Ending Station 135 **Community Type:** Phalaris arundinacea / Juncus balticus

Species	Cover class	Species	Cover class
Carex nebrascensis	2	Carex praegracilis	1
Centaurea maculosa	2	Cirsium arvense	2
Cirsium vulgare	1	Geum macrophyllum	1
Juncus balticus	2	Lepidium perfoliatum	1
Phalaris arundinacea	5	Salix exigua	1
Salix lutea	1	Sisymbrium altissimum	2
Thlaspi arvense	1		

Ending Station 237 **Community Type:** Agropyron repens / Trifolium spp

Species	Cover class	Species	Cover class
Agropyron repens	3	Alopecurus pratensis	2
Bromus inermis	2	Centaurea maculosa	1
Cirsium arvense	1	Festuca pratensis	2
Linaria vulgaris	1	Potentilla gracilis	1
Trifolium repens	1		

Ending Station 288 **Community Type:** Agrostis alba / Deschampsia cespitosa

Species	Cover class	Species	Cover class
Agrostis alba	2	Alnus incana	2
Aster hesperius	1	Carex aquatilis	1
Carex praegracilis	2	Carex utriculata*	1
Chrysanthemum leucanthe	0	Cicuta douglasii	1
Deschampsia cespitosa	2	Epilobium ciliatum	1
Equisetum arvense	2	Juncus effusus	1
Juncus ensifolius	1	Mentha arvensis	1
Myosotis alpestris	0	Salix bebbiana	2
Salix exigua	2	Salix lutea	2
Scirpus microcarpus	1		

Ending Station 320 **Community Type:** Open Water /

Species	Cover class	Species	Cover class
Open Water	5		

Ending Station 401 **Community Type:** Agrostis alba / Deschampsia cespitosa

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis alba	2
Aster hesperius	1	Carex aquatilis	2
Carex nebrascensis	2	Chrysanthemum leucanthe	1
Deschampsia cespitosa	2	Epilobium ciliatum	1
Glyceria elata	3	Juncus balticus	2
Juncus effusus	1	Juncus ensifolius	1
Phalaris arundinacea	3	Populus balsamifera	1
Populus tremula	1	Potentilla gracilis	1
Salix boothii	1	Salix drummondiana	2
Salix geyerana	2	Trifolium pratense	1

Ending Station 471 **Community Type:** Agropyron repens / Trifolium spp

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	5
Bromus inermis	4	Centaurea maculosa	1
Sisymbrium altissimum	1	Thlaspi arvense	1
Trifolium pratense	1		

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Camp Creek

Planting Type	#Planted	#Alive	Notes
Alnus incana	4		
Amelanchier alnifolia	4		
Betula occidentalis	6		
Cornus stolinifera	22		
Pinus ponderosa	19		
Populus tremuloides	11		
Populus trichocarpa	55		
Potentilla fruitcosa	30		
Pseudotsuga menziesii	17		
Rosa woodsii	8		
Salix bebbiana			
Salix boothii			
Salix drummondiana			
Salix exigua			
Salix geyeriana			
Salix lutea	3		
Symphoricarpos albus	17		
Willow suckers/sprouts	225		

Comments

Surviving plantings observed in the upland areas included shrubby potentilla, apparent high mortality for other species planted within the uplands. Shrubs and trees planted along the creek and adjacent floodplain show are thriving and have established a healthy shrub riparian corridor, providing good shading for reaches of Camp Creek.

Camp Creek

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Bluebird

How many? 6

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Dipper	1		AB, OW
American Robin	2		UP,
Common Nighthawk	1	FO	OW,UP,
Great Blue Heron	1		AB, OW, SS, WM
Red-tailed Hawk	2		WM
Red-winged Blackbird	5	L	SS, WM
Yellow Warbler	1	FO	SS

BEHAVIOR CODES

BP = One of a breeding pair **BD** = Breeding display **F** = Foraging **FO** = Flyover **L** = Loafing **N** = Nesting

HABITAT CODES

AB = Aquatic bed **SS** = Scrub/Shrub **FO** = Forested **UP** = Upland buffer **I** = Island

WM = Wet meadow **MA** = Marsh **US** = Unconsolidated shore **MF** = Mud Flat **OW** = Open Water

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Badger		No	No	Yes	
Columbia Spotted Frog		No	No	No	
Common Gartersnake		No	No	No	
Deer Mouse	1	No	No	No	
Mule Deer		No	No	No	
Porcupine		No	No	No	Chewed branches
Red Fox	1	No	No	No	
Richardson's Ground Squirrel		No	No	Yes	
White-tailed Deer		Yes	Yes	No	

Wildlife Comments:

Camp Creek

PHOTOGRAPHS

Take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

Photograph Checklist:

☑ One photograph for each of the four cardinal directions surrounding the wetland.

☑ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☑ At least one photograph showing the buffer surrounding the wetland.

☑ One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
6020	45.818058	-113.956543		pp7
6023			210	Veg Tran, start, pp2
6025			45	Veg Tran, end, pp1
6026			0	pp4
6028			45	Camp Creek floodplain, pp3
6030				PP5, pano 6030-6034
6045			270	PP8, pano: 6045-6051
6055			0	PP13
6059			0	PP11, pano: 6059-6063
6067			180	PP12
6082			270	PP10, pano: 6082-6093
6096			0	PP9
6098			0	PP6, pano: 6098-6101

Comments:

ADDITIONAL ITEMS CHECKLIST

Hydrology

☑ Map emergent vegetation/open water boundary on aerial photos.
☑ Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc).

Photos

☑ One photo from the wetland toward each of the four cardinal directions
☑ One photo showing upland use surrounding the wetland.
☑ One photo showing the buffer around the wetland
☑ One photo from each end of each vegetation transect, toward the transect

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

☑ Delineate wetlands according to applicable USACE protocol (1987 form or Supplement)
☑ Delineate wetland – upland boundary onto aerial photograph.

Wetland Delineation Comments

Functional Assessments

☑ Complete and attach full MDT Montana Wetland Assessment Method field forms.

Functional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site? Yes

If yes, do they need to be repaired? No

If yes, describe the problems below and indicate if any actions were taken to remedy the problems

Were man-made structures built or installed to impound water or control water flow

into or out of the wetland? No

If yes, are the structures working properly and in good working order? No

If no, describe the problems below.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/18/2010

Applicant/Owner: MDT | State: MT | Sampling Point: CC-1

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): flat | Slope (%):

Subregion (LRR): LRR E | Lat: 45.8159883333333 | Long: -113.955041666667 | Datum: WGS 84

Soil Map Unit Name: Beehive-Jeru-Jurvannah

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Salix bebbiana	20	☑	FACW
2. Salix exigua	30	☑	OBL
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	50 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Bromus inermis	30	☑	NL
2. Carex praegracilis	10	☐	FACW
3. Juncus balticus	25	☑	OBL
4. Carex bebbii	10	☐	OBL
5. 0	0	☐	0
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	75 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: CC-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					Silt Loam	
3-12	10YR 4/1	95	10YR 3/4	5	C	M	Silt Loam	Very rocky

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Typic Cryaquents/Dystrocryepts

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/18/2010

Applicant/Owner: MDT | State: MT | Sampling Point: CC-2u

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.8159883333333 | Long: -113.955041666667 | Datum: WGS 84

Soil Map Unit Name: Beehive-Jeru-Jurvannah

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☐	No ☑	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Bromus inermis	40	☑	NL
2. Linaria vulgaris	5	☐	NL
3. Phleum pratense	10	☐	FACU
4. Verbascum thapsus	5	☐	NL
5. Agropyron dasystachyum	20	☑	FACU-
6. Achillea millefolium	3	☐	FACU
7. Bromus japonicus	10	☐	FACU
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	93 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:
0

SOIL

Sampling Point: CC-2u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Loam	Abundant coase roots
4-9	10YR 4/1	100					Loam	Very rocky, friable, dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Typic Cryaquents/Dystrocryepts

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: No hydro

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/18/2010

Applicant/Owner: MDT | State: MT | Sampling Point: CC-2w

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.8159883333333 | Long: -113.955041666667 | Datum: WGS 84

Soil Map Unit Name: Beehive-Jeru-Jurvannah

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremula ssp. Tremuloides	20	☑	FAC+
2. Populus balsamifera ssp. Tricocarpa	15	☑	FAC
3. 0	0	☐	0
4. 0	0	☐	0
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Salix exigua	25	☑	OBL
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	25	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. Carex utriculata	15	☑	OBL
2. Glyceria elata	20	☑	FACW+
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	35	= Total Cover	
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: CC-2w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Loam	
5-12	10YR 3/1	95	10YR 3/4	5	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Typic Cryaquents/Dystrocryepts

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 12

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/18/2010

Applicant/Owner: MDT | State: MT | Sampling Point: CC-3

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.8159883333333 | Long: -113.955041666667 | Datum: WGS 84

Soil Map Unit Name: Beehive-Jeru-Jurvannah

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft)			
1. Salix bebbiana	20	☑	FACW
2. Salix drummondiana	20	☑	FACW
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	40 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Carex utriculata	60	☑	OBL
2. Phalaris arundinacea	25	☑	FACW
3. Alopecurus pratensis	20	☐	FACW
4. Eleocharis palustris	10	☐	OBL
5. 0	0	☐	0
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	115 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: CC-3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	95	10YR 3/4	5	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Typic Cryaquents/Dystrocryepts

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 12

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/18/2010

Applicant/Owner: MDT | State: MT | Sampling Point: CC-4

Investigator(s): B. Sandefur | Section, Township, Range: S 34 T 1N R 19W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.8159883333333 | Long: -113.955041666667 | Datum: WGS 84

Soil Map Unit Name: Beehive-Jeru-Jurvannah

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Salix exigua	25	☑	OBL
2. Salix geyerana	45	☑	FACW+
3. Salix lutea	15	☐	OBL
4. 0	0	☐	0
5. 0	0	☐	0
	100 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Carex crawfordii	25	☑	FACU
2. Carex bebbii	20	☑	OBL
3. Carex aquatilis	15	☑	OBL
4. Juncus effusus	15	☑	FACW+
5. Eleocharis palustris	10	☐	OBL
6. Aster hesperius	10	☐	OBL
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	95 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.333 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: CC-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2	97	10YR 3/4	3	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Typic Cryaquents/Dystrocryepts

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☑ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 10

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Camp Creek **2. MDT project#** NH 41(24) **Control#**

3. Evaluation Date 8/18/2010 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** AA-1, MDT Property

6. Wetland Location(s): T 1N **R** 19W **Sec1** 27 & 34 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 3-Lower Clark Fork **County** Ravalli

7. Evaluating Agency Confluence for MDT **8. Wetland size acres** 32.79

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 32.79

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Riverine	upper perennial	Rock Bottom		Permanently flooded	4
Riverine	Palustrine		Emergent Wetland		seasonally flooded	76
Riverine	Palustrine		Scrub-Shrub Wetland		seasonally flooded	20

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is ?15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is ?30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is ?15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is ?30%.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

AA classifies as undisturbed; surrounding disturbances include grazing, clearing.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Spotted knapweed, Canada thistle, yellow toadflax

iii. Brief descriptive summary of surrounding land use/habitat

AA located in Sula Basin, Camp Creek and adjacent wetlands. USFS land and private ownership. Abundant weed infestation surrounding AA.

13. Structural Diversity: (Based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 above)

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments:

SECTION PERTAINING TO FUNCTION _VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species)	○ **D** ◉ **S**	
Secondary habitat (list Species)	◉ **D** ○ **S**	Bull trout
Incidental habitat (list species)	○ **D** ◉ **S**	gray wolf, canada lynx
No usable habitat	◉ **S**	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.5L	.3L	0L

Sources for documented use MFWP records

14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species)	○ **D** ◉ **S**	west-slope cutthroat trout
Secondary habitat (list Species)	◉ **D** ○ **S**	bald eagle
Incidental habitat (list species)	○ **D** ◉ **S**	wolverine, flammulated owl
No usable habitat	◉ **S**	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MFWP records and MDT observation of bald eagles

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Moderate

Substantial (based on any of the following [check]):

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

Minimal (based on any of the following [check]):

- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ☑ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☑ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☑ adequate adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

ii. Wildlife habitat features (Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating)

Evidence of wildlife use (i)	*Wildlife habitat features rating (ii)*			
	Exceptional	High	Moderate	Low
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

Comments

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., click ☐ **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments Reconstructed channel supports native fish populations. Enhancement of habitat: pools, riffles, and overhanging banks.

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, check ☐ **NA** here and proceed to the next function.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function.

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** ◉ **N** ◯

Comments: USFS offices and residents downstream, adjacent parcel with MDT boundary.

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, check ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, check ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: Minor sedimentation due to logging and recent forest fires.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Increased density of willows and wetland grasses/grss-like plants along streambanks.

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or absent [see instructions for further definitions of these terms].)

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☐ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☑ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

- ☑ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

iii. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. Site (•) Y ( ) **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

i. **Check categories that apply to the AA:** ☑ Educational/;scientific study; ☑ Consumptive rec.; ☑ Non-consumptive rec.; ☐ Other

ii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** (•) Y ( ) **N** (If yes, i to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Comments: Site used for fishing and bird watching.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) AA-1, MDT Property

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	H	.8	1	26.232
B. MT Natural Heritage Program Species Habitat	H	.8	1	26.232
C. General Wildlife Habitat	M	.7	1	22.953
D. General Fish Habitat	H	.9	1	29.511
E. Flood Attenuation	M	.6	1	19.674
F. Short and Long Term Surface Water Storage	H	1	1	32.79
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	29.511
H. Sediment/Shoreline Stabilization	H	1	1	32.79
I. Production Export/Food Chain Support	H	.9	1	29.511
J. Groundwater Discharge/Recharge	H	1	1	32.79
K. Uniqueness	M	.4	1	13.116
L. Recreation/Education Potential	H	1	1	32.79
Totals:		10	12	327.9
Percent of Possible Score		**83.33** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☑ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☐ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Camp Creek **2. MDT project#** NH 41(24) **Control#**

3. Evaluation Date 8/18/2010 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** AA-2, Grasser Property

6. Wetland Location(s): T 1N **R** 19W **Sec1** 22, 27 & 3 **T** **R** **Sec2**

Approx Stationing or Mileposts 0

Watershed 3-Lower Clark Fork **County** Ravalli

7. Evaluating Agency Confluence for MDT **8. Wetland size acres** 8.25

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 8.25

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Palustrine	none	Emergent Wetland		seasonally flooded	55
Riverine	Riverine	upper perennial	Rock Bottom		Permanently flooded	20
Riverine	Palustrine	none	Scrub-Shrub Wetland		seasonally flooded	15
Riverine	Palustrine	none	Forested Wetland		seasonally flooded	10

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is ?15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is ?30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is ?15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is ?30%.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

Area utilized for horse and cattle grazing

ii. Prominent noxious, aquatic nuisance, other exotic species:

Spotted knapweed, Canada thistle, yellow toadflax

iii. Brief descriptive summary of surrounding land use/habitat

Camp Creek and adjacent wetland within the Sula Basin, Land uses include pasture, logging, private, and USFS.

13. Structural Diversity: (Based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 above)

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments:

SECTION PERTAINING TO FUNCTION _VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species)	○ **D** ○ **S**	
Secondary habitat (list Species)	◉ **D** ○ **S**	Bull trout
Incidental habitat (list species)	○ **D** ○ **S**	
No usable habitat	○ **S**	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.5L	.3L	0L

Sources for documented use FWP observations and records

14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species)	○ **D** ◉ **S**	West-slope cutthroat trout
Secondary habitat (list Species)	◉ **D** ○ **S**	Bald Eagle
Incidental habitat (list species)	○ **D** ○ **S**	
No usable habitat	○ **S**	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use FWP records, MDT observations

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Moderate

Substantial (based on any of the following [check]):

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

Minimal (based on any of the following [check]):

- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ☑ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☑ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☑ adequate adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

ii. Wildlife habitat features (Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating)

Evidence of wildlife use (i)	*Wildlife habitat features rating (ii)*			
	Exceptional	High	Moderate	Low
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

Comments

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., click ☐ **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments Reconstructed channel supports native fish populations. Enhancement of habitat: pools, riffles, and overhanging banks.

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, check ☐ **NA** here and proceed to the next function.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function.

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** ◯ **N** ◉

Comments: USFS offices and residents downstream and several other homes located nearby.

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, check ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, check ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: Minor sediment from nearby burned forest. Potential nutrient input due to heavy livestock grazing in Sula Basin.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Some areas of localized bank erosion observed, <10% of bank

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or absent [see instructions for further definitions of these terms].)

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☐ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☑ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☐ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

- ☑ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

iii. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. Site (•) Y ( ) **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

i. **Check categories that apply to the AA:** ☐ Educational/;scientific study; ☑ Consumptive rec.; ☑ Non-consumptive rec.; ☐ Other

ii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** (•) Y ( ) **N** (If yes, i to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Comments: Good potential for recreation/education.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) AA-2, Grasser Property

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	H	.8	1	6.6
B. MT Natural Heritage Program Species Habitat	H	.8	1	6.6
C. General Wildlife Habitat	M	.7	1	5.775
D. General Fish Habitat	H	.9	1	7.425
E. Flood Attenuation	M	.6	1	4.95
F. Short and Long Term Surface Water Storage	M	.6	1	4.95
G. Sediment/Nutrient/Toxicant Removal	M	.6	1	4.95
H. Sediment/Shoreline Stabilization	H	1	1	8.25
I. Production Export/Food Chain Support	H	1	1	8.25
J. Groundwater Discharge/Recharge	H	1	1	8.25
K. Uniqueness	M	.5	1	4.125
L. Recreation/Education Potential	L	.3	1	2.475
Totals:		8.8	12	72.6
Percent of Possible Score		**73.33** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☐ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☑ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☑ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana



Photo Point 1 – *Photo 1*
Bearing: Northeast
Location: T-1, end
Taken in 2009

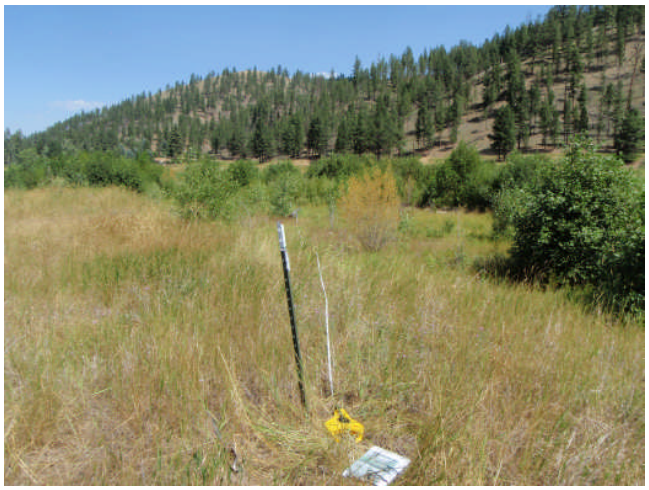


Photo Point 1 – *Photo 2*
Bearing: Northeast
Location: T-1, end
Taken in 2010



Photo Point 2 – *Photo 1*
Bearing: Southwest
Location: T-1, start
Taken in 2009



Photo Point 2 – *Photo 2*
Bearing: Southwest
Location: T-1, start
Taken in 2010



Photo Point 3 – *Photo 1*
Bearing: Northeast
Location: Camp Creek riparian
Taken in 2009



Photo Point 3 – *Photo 2*
Bearing: Northeast
Location: Camp Creek riparian
Taken in 2010



Photo Point 4 – *Photo 1*
Bearing: North
Location: Veg Com 3
Taken in 2009



Photo Point 4 – *Photo 2*
Bearing: North
Location: Veg Com 3
Taken in 2010



Photo Point 5 – *Photo 1*
Bearing: West
Location: Camp Creek riparian corridor and upland community 1
Taken in 2009



Photo Point 5 – *Photo 2*
Bearing: West
Location: Camp Creek riparian corridor and upland community 1
Taken in 2010



Photo Point 6 – *Photo 1*
Bearing: North

Location: Camp Creek channel
Taken in 2009



Photo Point 6 – *Photo 2*
Bearing: North

Location: Camp Creek channel
Taken in 2010



Photo Point 7 – *Photo 1*
Bearing: South

Location: North end of site
Taken in 2009



Photo Point 7 – *Photo 2*
Bearing: South

Location: North end of site
Taken in 2010



Photo Point 8 – *Photo 1*
Bearing: West

Location: North end of site
Taken in 2009



Photo Point 8 – *Photo 2*
Bearing: West

Location: North end of site
Taken in 2010



Photo Point 9 – *Photo 1*
Bearing: North

Location: Downstream of culvert on Grasser parcel
Taken in 2009



Photo Point 9 – *Photo 2*
Bearing: Northeast
Location: Downstream of culvert on Grasser parcel
Taken in 2010



Photo Point 10 – *Photo 1*
Bearing: West
Location: East side of Camp Creek riparian corridor on Grasser parcel
Taken in 2009



Photo Point 10 – *Photo 2*
Bearing: West
Location: East side of Camp Creek riparian corridor on Grasser parcel
Taken in 2010



Photo Point 11 – *Photo 1*
Bearing: North
Location: Downstream of culvert on Grasser parcel
Taken in 2009



Photo Point 11 – *Photo 2*
Bearing: North

Location: Downstream of culvert on Grasser parcel
Taken in 2010



Photo Point 12 – *Photo 1*
Bearing: South

Location: Upstream of culvert
Taken in 2009



Photo Point 12 – *Photo 2*
Bearing: South

Location: Upstream of culvert
Taken in 2010



Photo Point 13 – *Photo 1*
Bearing: South

Location: Camp Creek
Taken in 2009



Photo Point 13 – *Photo 2*
Bearing: South

Location: Camp Creek
Taken in 2010



Photo – *XS-3 downstream*
Bearing: West

Location: Camp Creek
Taken in 2010



Photo– *XS-3 upstream*
Bearing: East

Location: Camp Creek
Taken in 2010



Photo– *XS-4 downstream*
Bearing: North

Location: Camp Creek
Taken in 2010



Photo– *XS-4 upstream*
Bearing: South

Location: Camp Creek
Taken in 2010



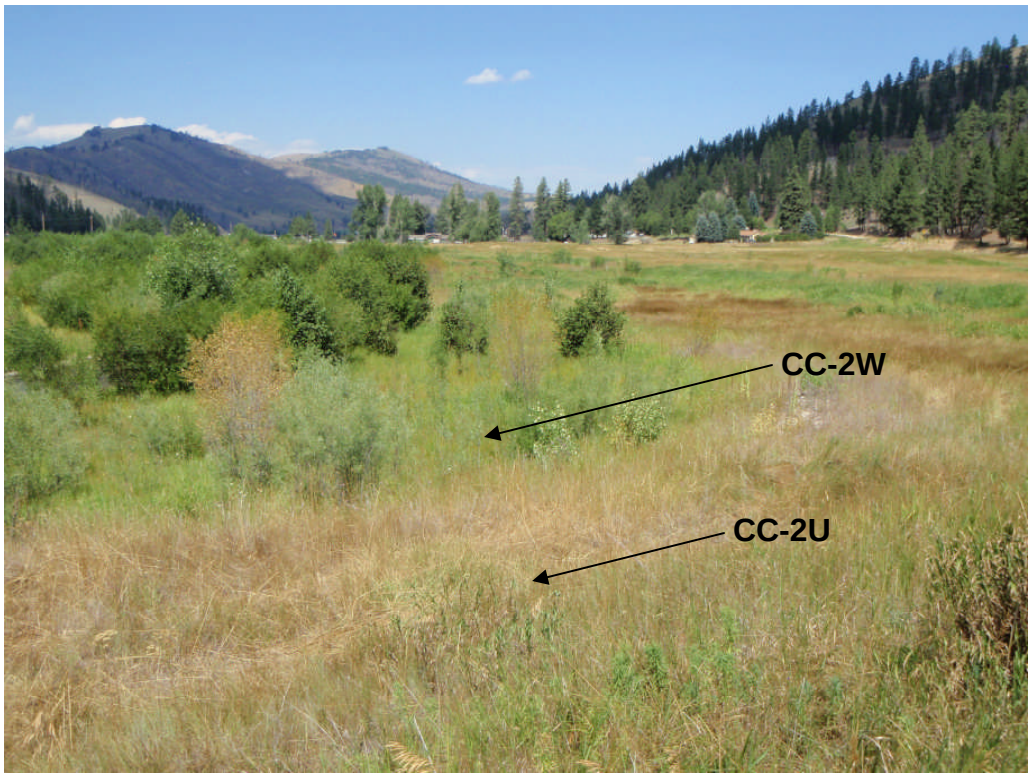
Photo– Localized bank erosion
Bearing: West

Location: Grasser parcel
Taken in 2010



Data Point 1
Bearing: Southwest

Location: CC-1
Taken in 2010



Data Point 2
Bearing: North
Location: CC-2u and CC-2w
Taken in 2010



Data Point 3
Bearing: West
Location: CC-3
Taken in 2010



Data Point 4
Bearing: Southeast
Location: CC-4
Taken in 2010

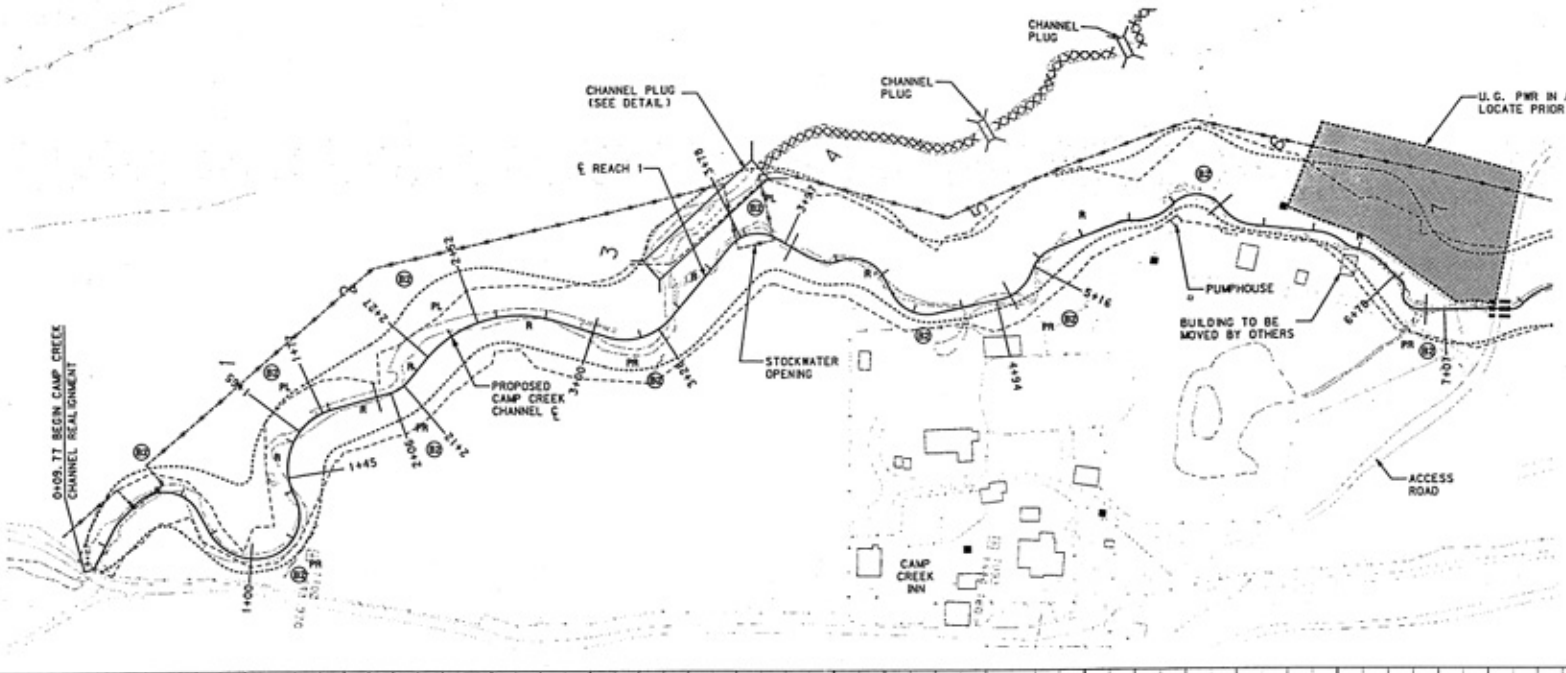
Appendix D

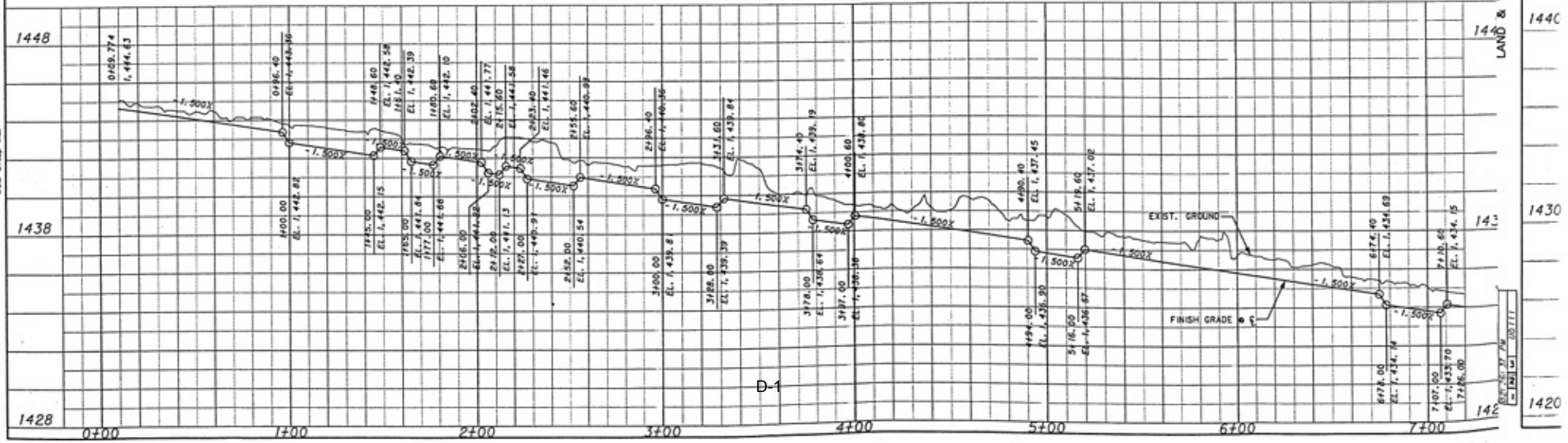
Project Site Plan

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana

STATE	PROJECT NUMBER	SHEET
MONTANA	NH 41 (24)	29

CAMP CREEK RESTORATION

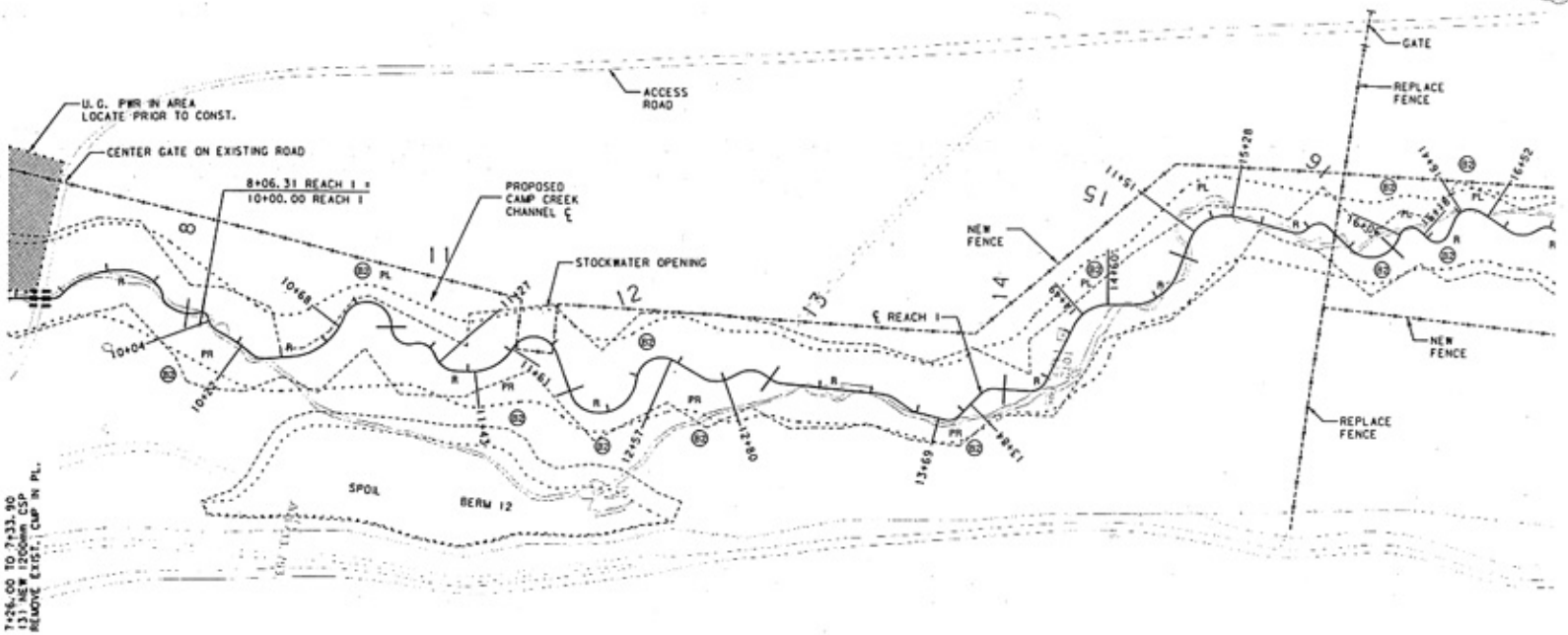




STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 41(24)	30

CAMP CREEK RESTORATION

LAND & WATER D-2



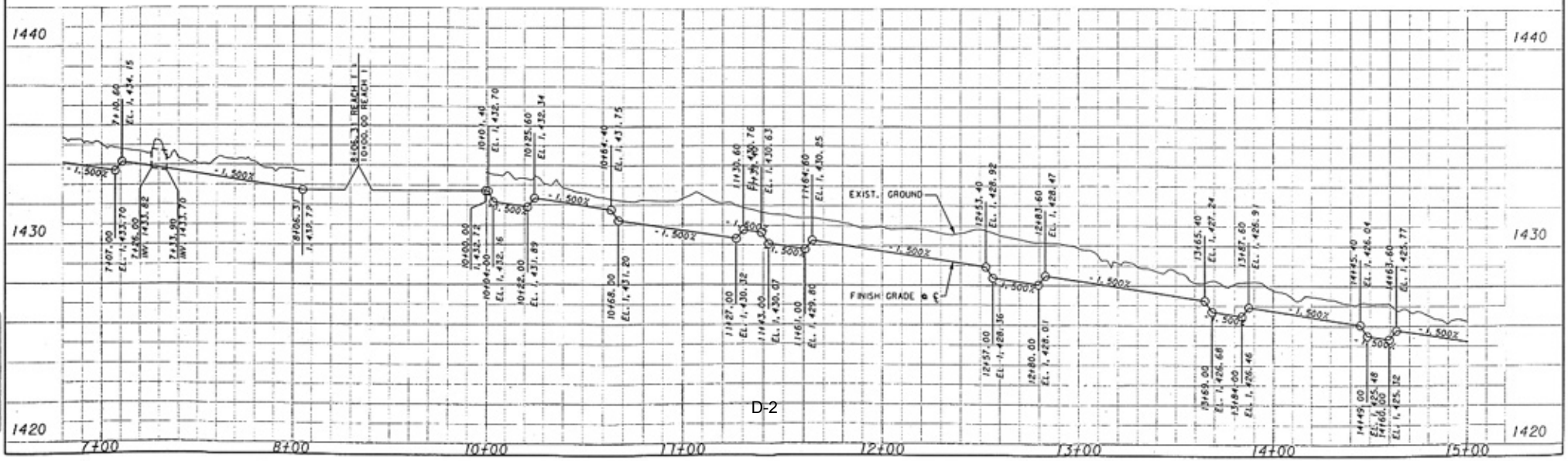
LEGEND

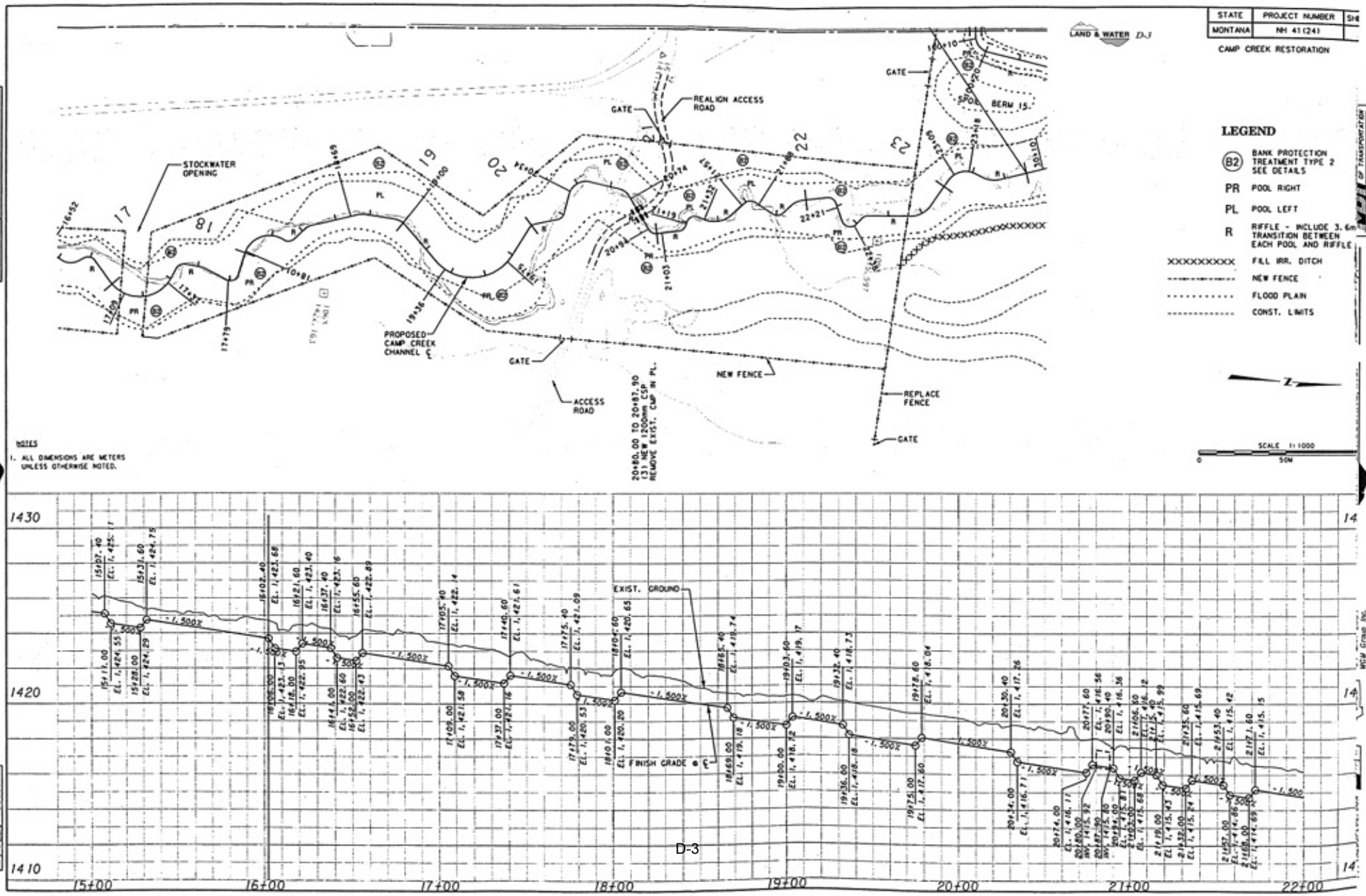
- (B2) BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
- PR POOL RIGHT
- PL POOL LEFT
- R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
- XXXXXXXXX F&L WR. DITCH
- NEW FENCE
- FLOOD PLAIN
- CONST. LIMITS

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.

SCALE 1:1000

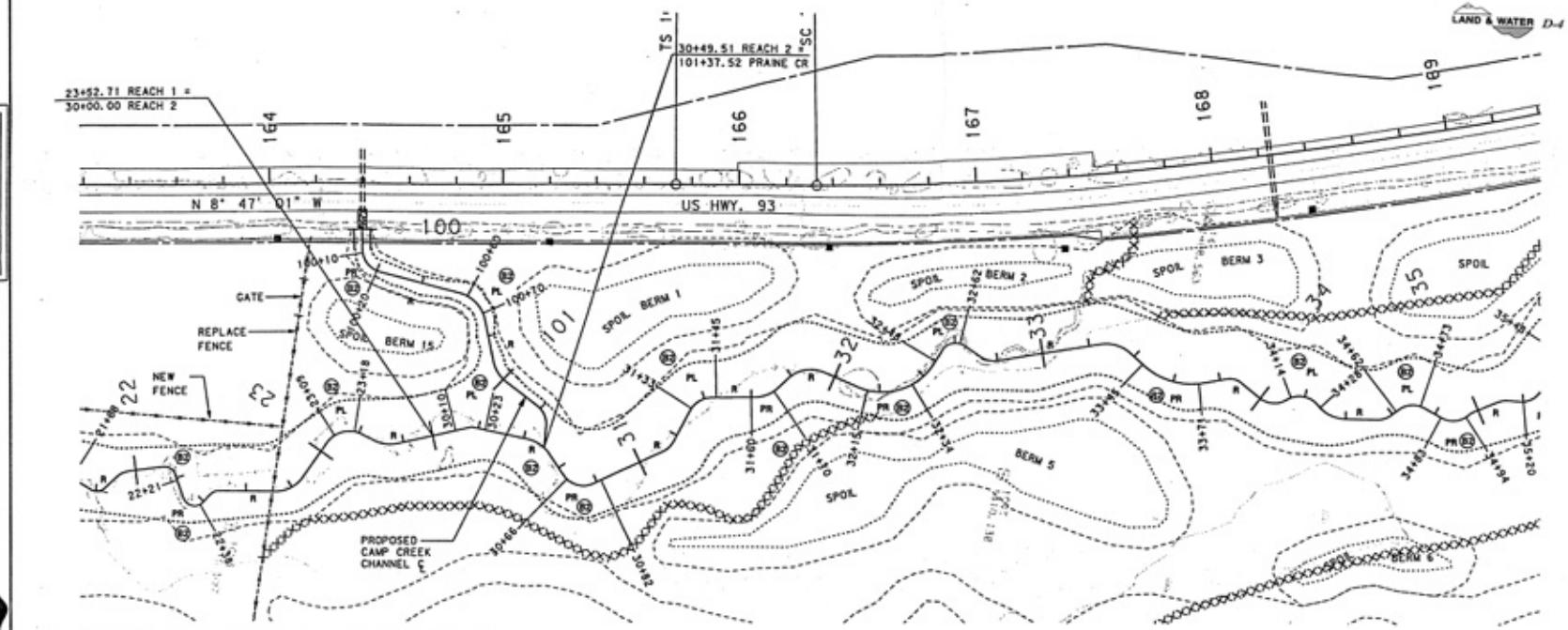



LAND & WATER D-3
STATE
MONTANA
PROJECT NUMBER
NH 41 (24)
CAMP CREEK RESTORATION
LEGEND
B2 BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
PR POOL RIGHT
PL POOL LEFT
R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
XXXXXXXXX FILL IRR. DITCH
NEW FENCE
FLOOD PLAIN
CONST. LIMITS
STOCKWATER OPENING
REALIGN ACCESS ROAD
GATE
SPOIL BERM 15.
PROPOSED CAMP CREEK CHANNEL ℄
ACCESS ROAD
NEW FENCE
REPLACE FENCE
20+80.00 TO 20+87.90 (3) NEW 1200mm CSP REMOVE EXIST. CMP IN PL.
NOTES
1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.
SCALE 1:1000
EXIST. GROUND
FINISH GRADE ℄
1430
1420
1410
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 41 (24)	32

CAMP CREEK RESTORATION

LAND & WATER D-4



LEGEND

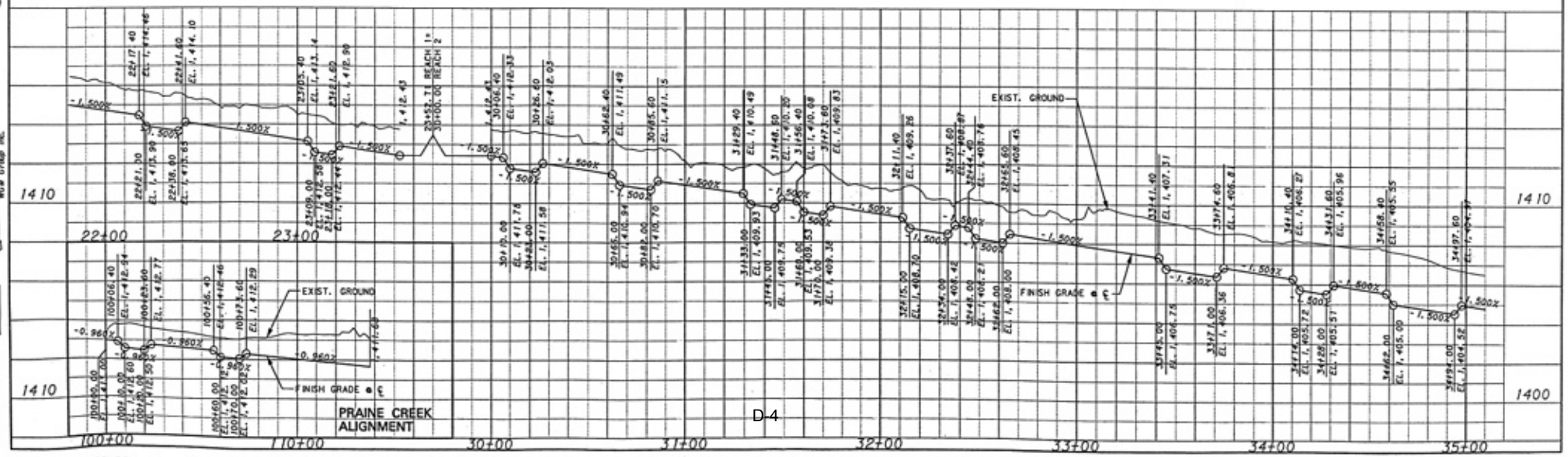
- (B2) BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
- PR POOL RIGHT
- PL POOL LEFT
- R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
- XXXXXXXXX FILL IRR. DITCH
- NEW FENCE
- FLOOD PLAIN
- CONST. LIMITS

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.

SCALE 1:1000

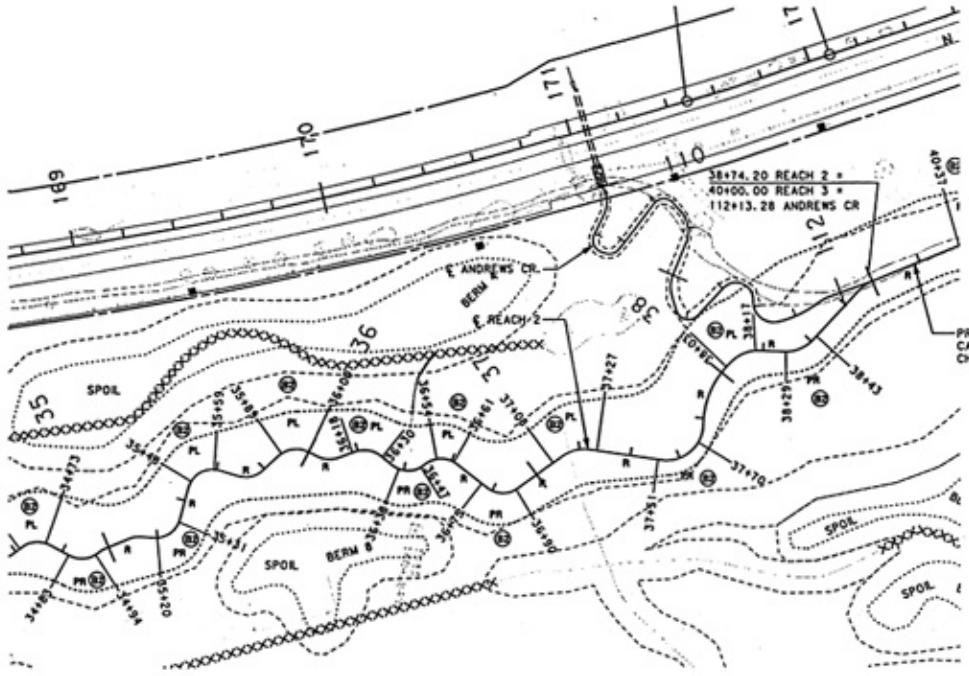
0 50M 100M



01/sh/RD/A285PL02.DGN Mar. 01, 2001 16:14:02

STATE	PROJECT NUMBER	SHEET NO
MONTANA	NH 41 (24)	33

CAMP CREEK RESTORATION



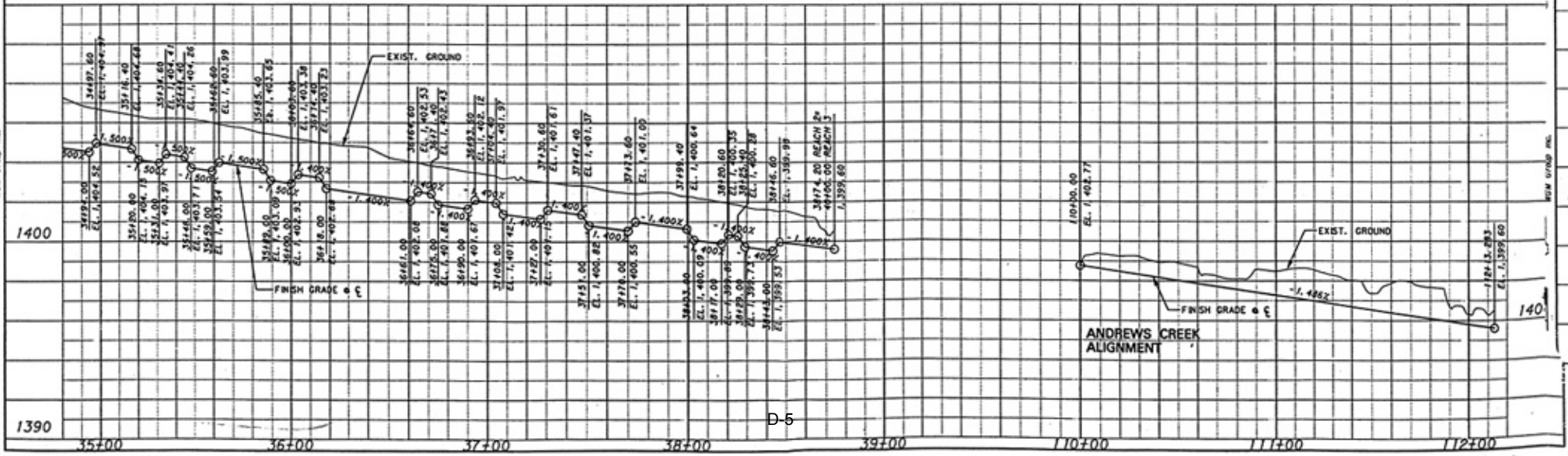
LEGEND

- (B2) BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
- PR POOL RIGHT
- PL POOL LEFT
- R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
- XXXXXXXXX FILL IRR. DITCH
- NEW FENCE
- FLOOD PLAIN
- CONST. LIMITS

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.

SCALE 1:1000

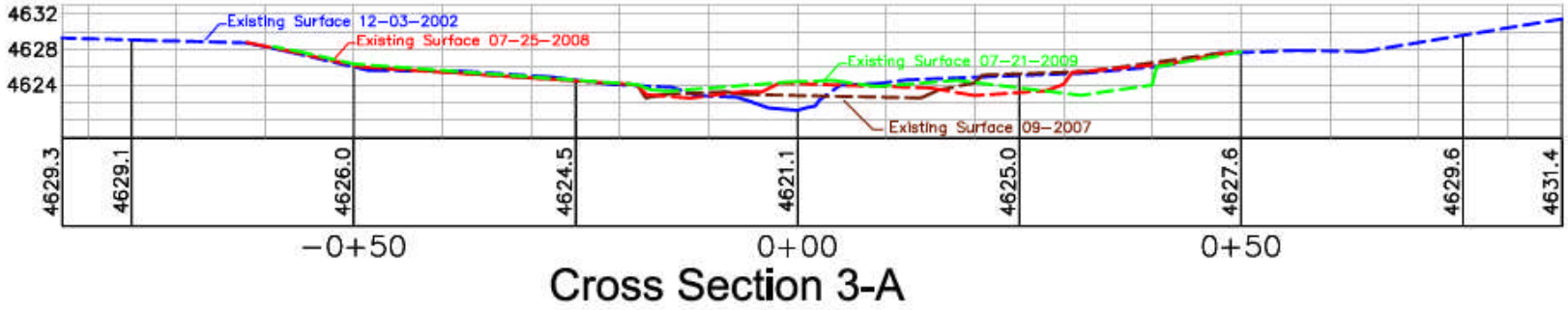


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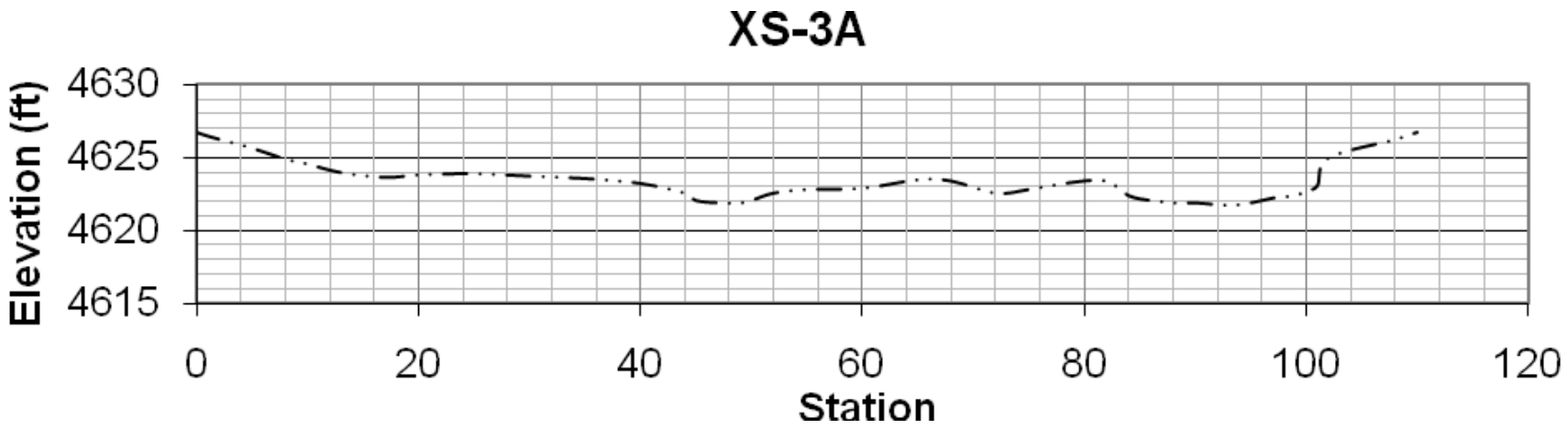
Appendix E

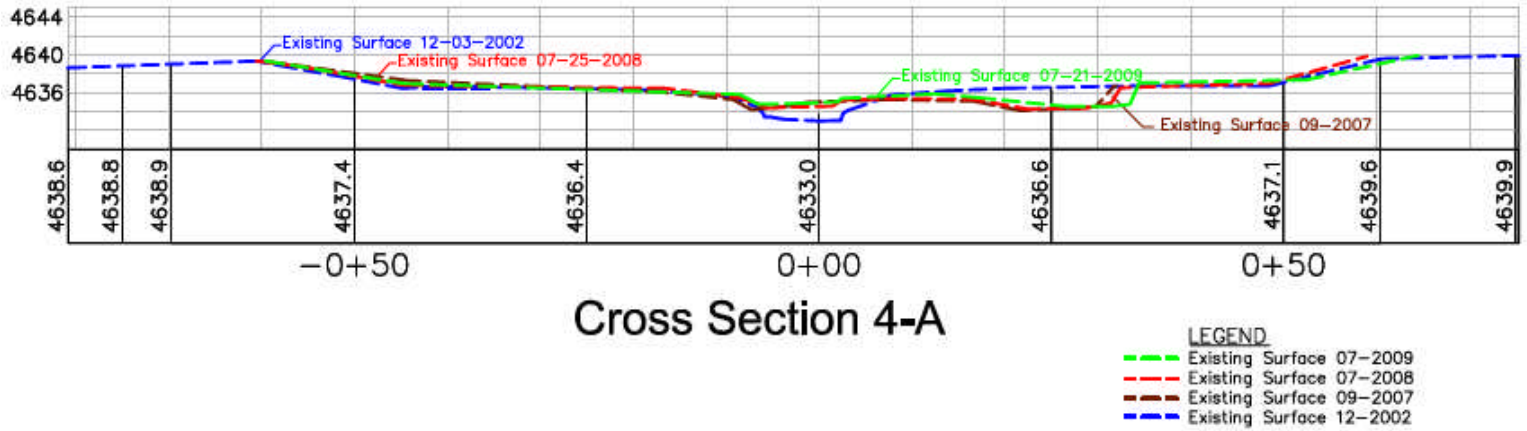
Channel Cross-sections and Aerial photograph showing plant locations.

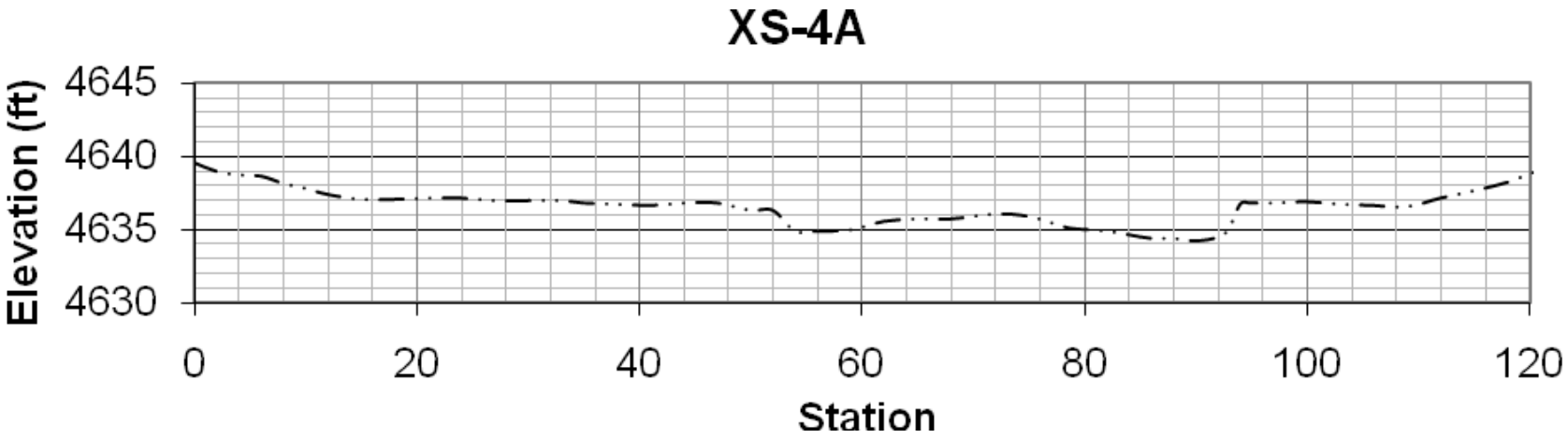
MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana



Cross Section 3-A




4644
4640
4636
Existing Surface 12-03-2002
Existing Surface 07-25-2008
Existing Surface 07-21-2009
Existing Surface 09-2007
4638.6
4638.8
4638.9
4637.4
4636.4
4633.0
4636.6
4637.1
4639.6
4639.9
-0+50
0+00
0+50
Cross Section 4-A
LEGEND
Existing Surface 07-2009
Existing Surface 07-2008
Existing Surface 09-2007
Existing Surface 12-2002


XS-4A
Elevation (ft)
4645
4640
4635
4630
0
20
40
60
80
100
120
Station