ZONING COMPLIANCE VERIFICATION
SOUTH PARK LOOP PATHWAY CONNECTOR
TETON COUNTY, WYOMING

Prepared For

Nelson Engineering

PO Box 1599, Jackson, WY 83001

Prepared By

P. O. Box 8578, 140 E. Broadway Suite 23, Jackson, Wyoming 83002

March 17, 2016

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SOUTH PARK LOOP PATHWAY CONNECTOR
TETON COUNTY, WYOMING

INTRODUCTION AND BACKGROUND

The purpose of this Zoning Compliance Verification (ZCV) is to present natural resource information relevant to a submittal to Teton County Planning and Development for authorization of the South Park Loop Pathway Connector project in Teton County, Wyoming. The South Park Loop Pathway Connector is a proposed segment of pedestrian pathway along South Park Loop between the south end of 3 Creek Ranch and the west end of Melody Ranch (Appendix 1-Exhibit 1). The proposed project is not located within the Natural Resources Overlay (NRO) and demonstrates compliance with all setback and buffer standards because public pathways are exempt from buffer requirements per Section 5.1.1.D.2.f. of the Teton County Land Development Regulations (LDRs). As such, the project is exempt from the requirement for an Environmental Analysis (Section 8.2.2.B.1.h.i. of the LDRs). Per guidance provided by county planning staff, the scope of this ZCV is primarily focused on waterbodies, wetlands, bald eagles, and upland covertypes.

PROPOSED PROJECT

The proposed pathway will have a 10-foot wide running surface and will be approximately 1.9 miles long. It is the final remaining pathway segment to be completed in the South Park Loop pathway network and will connect the existing pathway near the south end of 3 Creek Ranch to the existing pathway near the west end of Melody Ranch (Appendix 1-Exhibit 2). The proposed alignment is located entirely within the South Park Loop Road right-of-way. The pathway segment will be tied in to the existing pathway on the south side of South Park Loop at Cortland Drive and head west. It will remain on the south side of the road for approximately 0.5 miles before crossing to the north side of South Park Loop. From this point, the pathway heads west and north to just north of Grand Teton Circle, where it crosses to the west side of South Park Loop and connects with the pathway on the south end of 3 Creek Ranch.

WATERBODIES AND WETLANDS

Section 5.1.1. of the LDRs establishes protection standards for waterbodies and wetlands in the county and prohibits physical development within a certain distance of these resources.

WATERBODIES

Section 5.1.1.D.2 of the LDRs identifies required development setbacks from rivers, streams, and natural lakes and ponds. None of these water features exist within or adjacent to the proposed project area, and no development will occur within the respective setbacks for these resources. There are, however, numerous irrigation ditches in proximity to the project area, and several of these ditches cross through the project area (Appendix 1-Exhibit 3). Correspondence from Bodean Barney to Brian Schilling addressing irrigation ditches potentially impacted by the proposed project is presented in

Appendix 2. According to Mr. Barney and the irrigation ditch mapping he provided, the proposed pathway will be crossing portions of the Wilson Ditch and Susannah Slough.

Wilson Ditch

The Wilson Ditch originates at a diversion point on Flat Creek about 1.4 miles north of the project area. Several channels of the Wilson Ditch network flow south through the project area and provide irrigation water to properties downstream of the project area. The proposed pathway will cross the Wilson Ditch via installation of extensions on the existing culverts under South Park Loop.

Susannah Slough

Susannah Slough is an irrigation ditch that originates at a collection point on the Adams Ditch about 0.5 miles north of the project area. The ditch flows south through the Seherr-Thoss Property, under South Park Loop via a culvert, and through the project area. Susannah Slough primarily conveys water from the Adams Ditch network, but flows in the ditch are bolstered by irrigation return from flood irrigation activities on the Seherr-Thoss Property. The proposed pathway will cross Susannah Slough via installation of an extension on the existing culvert under South Park Loop.

WETLANDS

A wetland delineation was performed by Asset Environmental within the eastern portion of the project area in September 2013, and a wetland delineation within the remainder of the project area was completed by Alder Environmental in November 2015. Several areas within the project area met the definitional criteria for wetlands per the 1987 US Army Corps of Engineers (USACE) Manual and the 2010 USACE Regional Supplement for the Western Mountains, Valleys and Coast Region. The Asset Environmental wetland delineation report is presented in Appendix 3, and wetland exhibits produced by Alder Environmental are in presented in Appendix 4.

The pathway has been designed to minimize impacts to wetlands while also maximizing separation from the paved roadway. The design calls for 6 feet or more of separation between the road and pathway; however, to minimize lateral encroachment into the wetland areas, the pathway alignment at the wetland crossings has been designed per the AASHTO's Design Guideline (i.e., a minimum distance of five feet from the edge of the paved road). The design also specifies 3-foot wide shoulders and 3:1 side slopes for the majority of the proposed pathway. To further minimize wetland disturbance, the shoulder has been narrowed to 2 feet with 2:1 side slopes at the wetland crossings. These design modifications will minimize lateral encroachment into the wetland areas and reduce wetland impacts; however, the project will result in 0.06 acres of impact to wetlands associated with Wilson Ditch and Susannah Slough (Appendix 1-Exhibit 3).

The impacted wetlands are clearly supported by irrigation activities and would revert to uplands in the absence of this hydrologic support. Per Section 5.1.1.C.1.e. of the LDRs, irrigation-induced wetlands are not subject to Teton County regulations. Although there has been some question in the past regarding the classification of Susannah Slough as an irrigation ditch, it is clear from analysis of available aerial photography and Biota's past experience in the area that the wetlands in the project area associated with Susannah Slough are in fact irrigation induced. This conclusion is further supported after reviewing an EA Review memorandum (Appendix 5) for Teton Meadows Ranch dated January 29, 2008 written by Amy Kuszak (Teton County Planning Department), in which it is concluded that wetlands associated with Susannah Slough were irrigation-induced and not regulated by Teton County.

Although the impacted wetlands are not regulated by Teton County, they will likely be regulated by the USACE due to a downstream nexus with the Snake River. A pre-construction notification will be submitted to the USACE to obtain authorization for proposed wetland impacts. Because wetland impacts are less than 0.1 acres, no compensatory mitigation will be required.

Per Section 5.1.1.D.2.d of the LDRs, a 30-foot setback from all regulated (non-irrigation induced) wetlands is required. All wetland impacts resulting from the proposed pathway project will occur to irrigation-induced wetlands; therefore, no setback is required.

TRUMPETER SWAN

Trumpeter swans are classified as a Priority 2 SSC by the Wyoming Game and Fish Department and are also a species of interest to the US Fish and Wildlife Service. The LDRs protect nesting trumpeter swans and crucial winter habitat (Section 5.2.1.G.4.a. & b.) and prohibit development within a radius of 300 feet of a trumpeter swan nest. In addition, the regulations prohibit physical development or uses within trumpeter swan winter habitat.

There are no trumpeter swan nests in the vicinity of the proposed project. A query of the Wyoming Game and Fish Department database of wildlife observations (WOS) showed no trumpeter swan observations recorded in the project area. The surface water within the project area does not provide swan foraging habitat, and adverse impacts to trumpeter swans or their habitat is not expected to result from the proposed project.

BALD EAGLE

Teton County LDRs protect nesting bald eagles by prohibiting development within 660 feet of standing/occupied, active, or inactive nests, and also protect known perch and roost trees regarded as crucial winter habitat (Section 5.2.1.G.6.a. & b.). No bald eagle nests are located within 660 feet of the project area. The project area is located about 0.6 miles from the nearest active bald eagle nest, the Ford North nest, which is found due west of the project area within the Snake River floodplain. Proposed project activities comply with the LDRs pertaining to nesting bald eagles. In addition, no repeatedly used bald eagle perch or roost trees have been identified on or near the project property. The proposed project will have no adverse impacts to nesting bald eagles or crucial winter habitat for eagles.

VEGETATIVE COVERTYPES

Section 5.2.1.E.1. of the LDRs requires minimization of impacts to wildlife habitat. For the purposes of this standard, “minimize” is defined as locating development to avoid higher quality habitats or vegetative covertypes. Vegetative covertypes have been determined through a process that integrates site investigations, wetland delineations, and assessment of aerial imagery and Teton County vegetation mapping. The proposed pathway will be constructed in the South Park Loop right-of-way, and the principle upland covertypes impacted by the proposed pathway include: mesic cottonwood forest, mesic tall shrub, agricultural meadow, and disturbed/landscaped. The pathway has been designed and located to minimize impacts to trees and shrubs to the greatest extent feasible. However, some tree and shrub impacts are necessary to accomplish project objectives. The project area is not located within the NRO, and therefore mitigation for tree and shrub impacts is not required. Although no mitigation is required, Jackson Hole Community Pathways has voluntarily committed to planting native trees and shrubs in

strategic locations along the proposed pathway. The proposed pathway project is compliant with Section 5.2.1.E.1. of the LDRs.

APPENDIX 1 - EXHIBITS

1) Location and topography of the South Park Loop Pathway Connector project area, Teton County, Wyoming.

2) Aerial photograph depicting the South Park Loop Pathway Connector project area, Teton County, Wyoming.

3) Wetland impact areas and irrigation ditches in the vicinity of the South Park Loop Pathway Connector project area, Teton County, Wyoming.

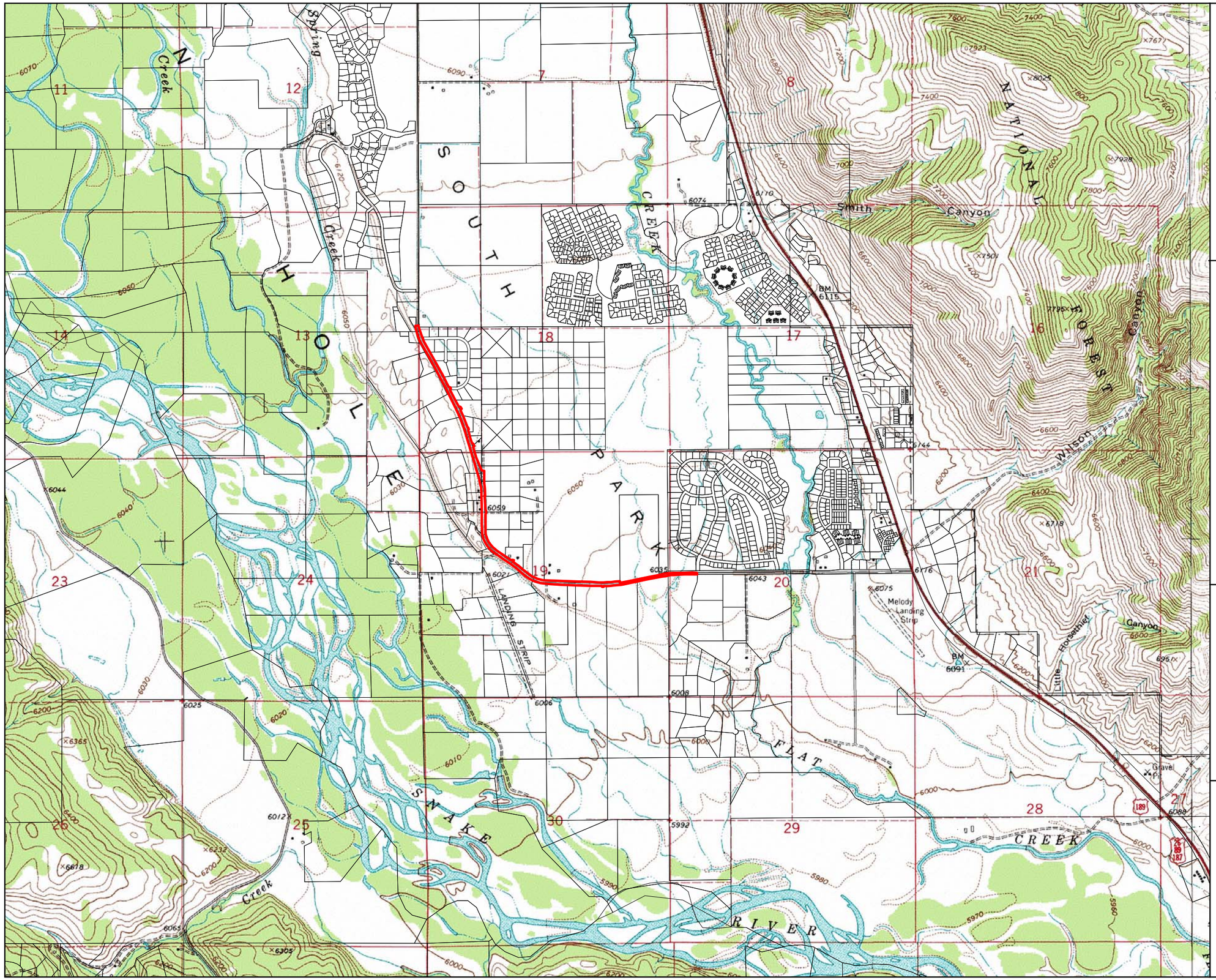


Exhibit 1
Location and topography of the
South Park Loop Pathway Connector project area,
Teton County, Wyoming.

March 17, 2016

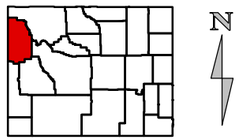
Approximate Scale: 1 inch = 2,000 feet

Legend

Project Area

Platted Parcels

Teton County



Wyoming

N

research & consulting inc.

Biota

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Exhibit 2
Aerial photograph depicting the South Park Loop Pathway Connector project area, Teton County, Wyoming.

March 17, 2016

Approximate Scale: 1 inch = 700 feet

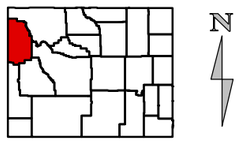
Legend

Project Area

Platted Parcels

Proposed Limits of Disturbance

Teton County



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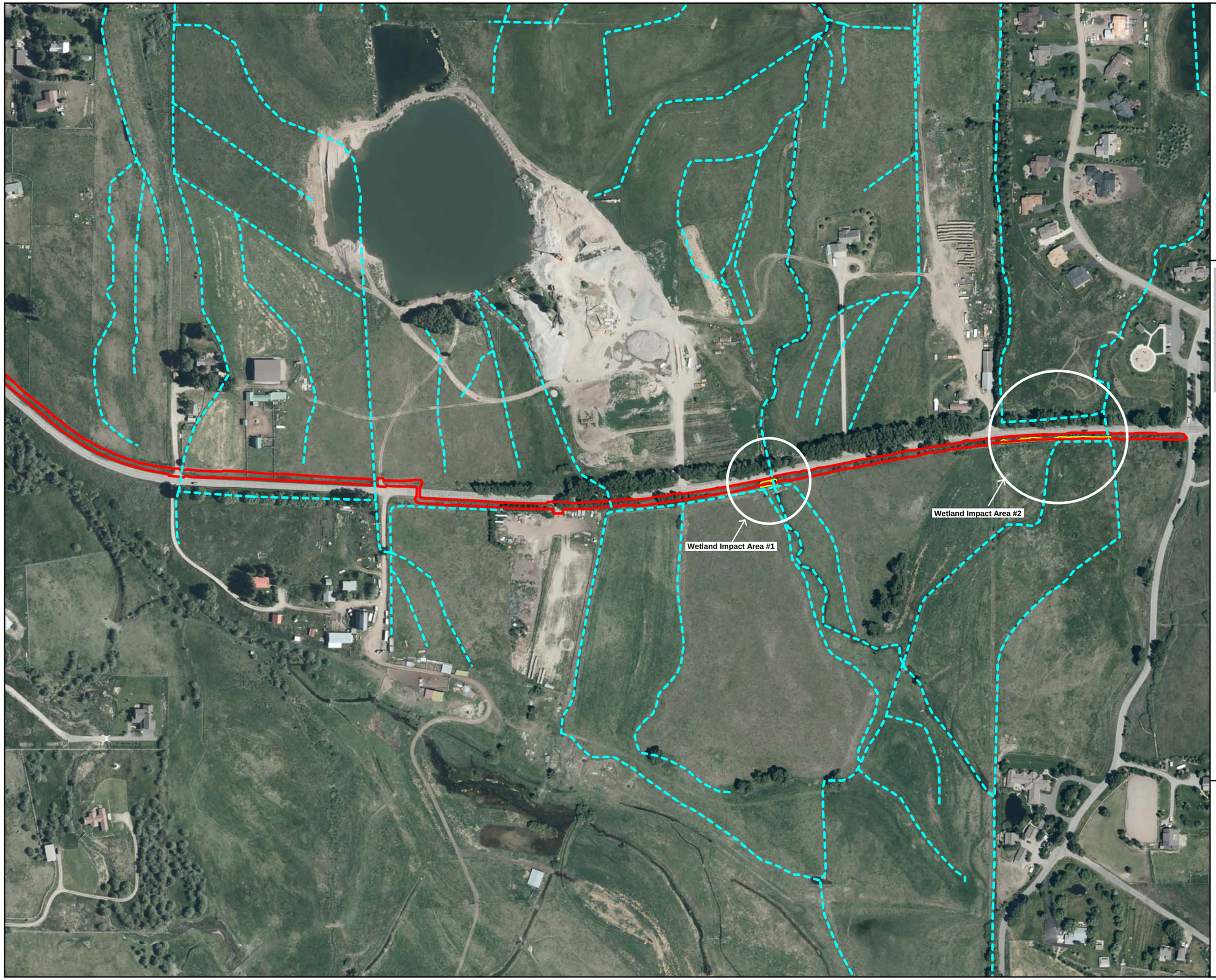

Exhibit 3
Wetland impact areas and irrigation ditches in the vicinity of the South Park Loop Pathway Connector project area, Teton County, Wyoming.

March 17, 2016

Approximate Scale: 1 inch = 300 feet

Legend

- Project Limits of Disturbance
- Delineated Wetland (Asset Env. 2013)
- Irrigation Ditch

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APPENDIX 2

IRRIGATION DITCH BACKGROUND INFORMATION

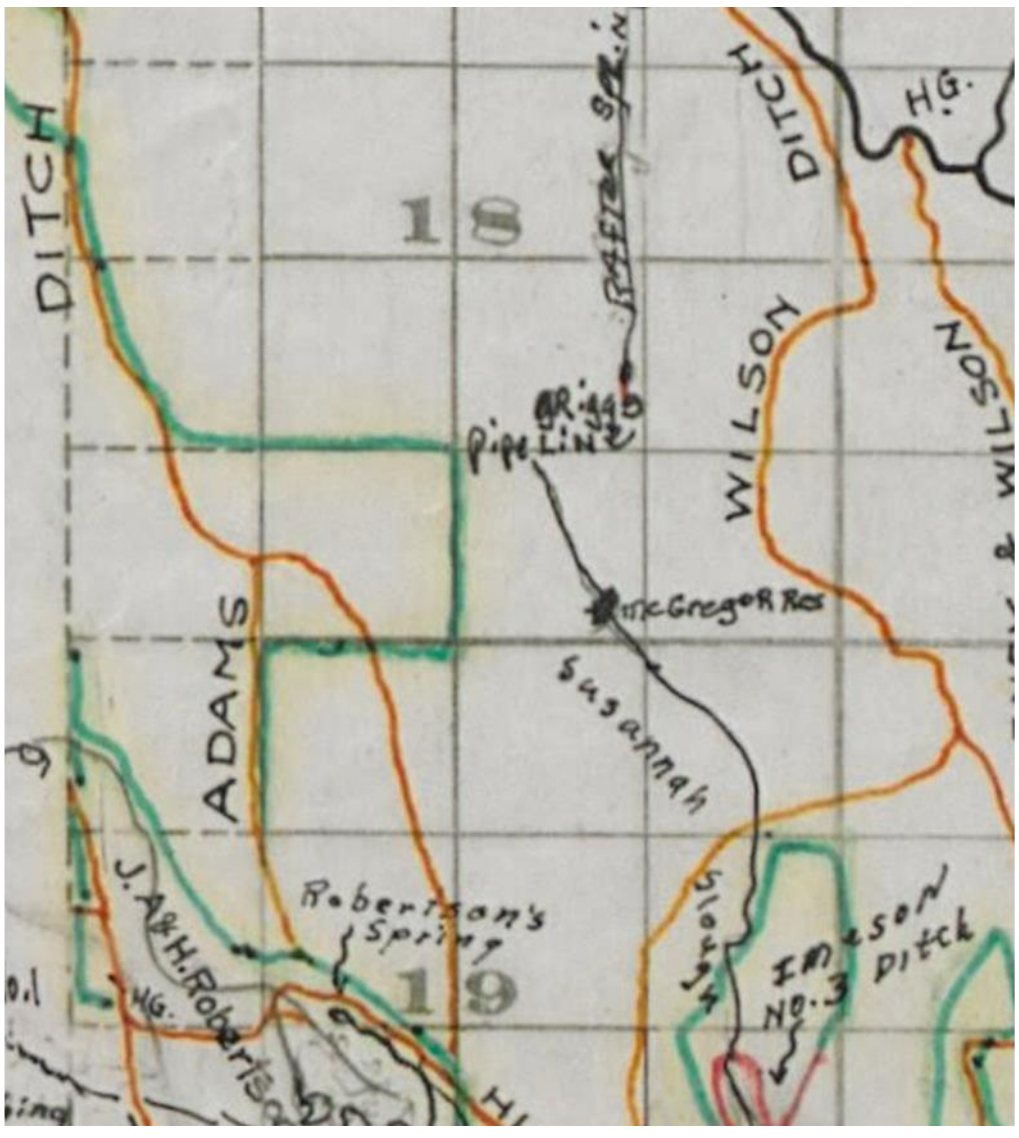
From: bodean barney [mailto:bodean.barney@wyo.gov]
Sent: Wednesday, October 21, 2015 3:46 PM
To: Brian Schilling <bschilling@tetonwyo.org>
Subject: Bike Path

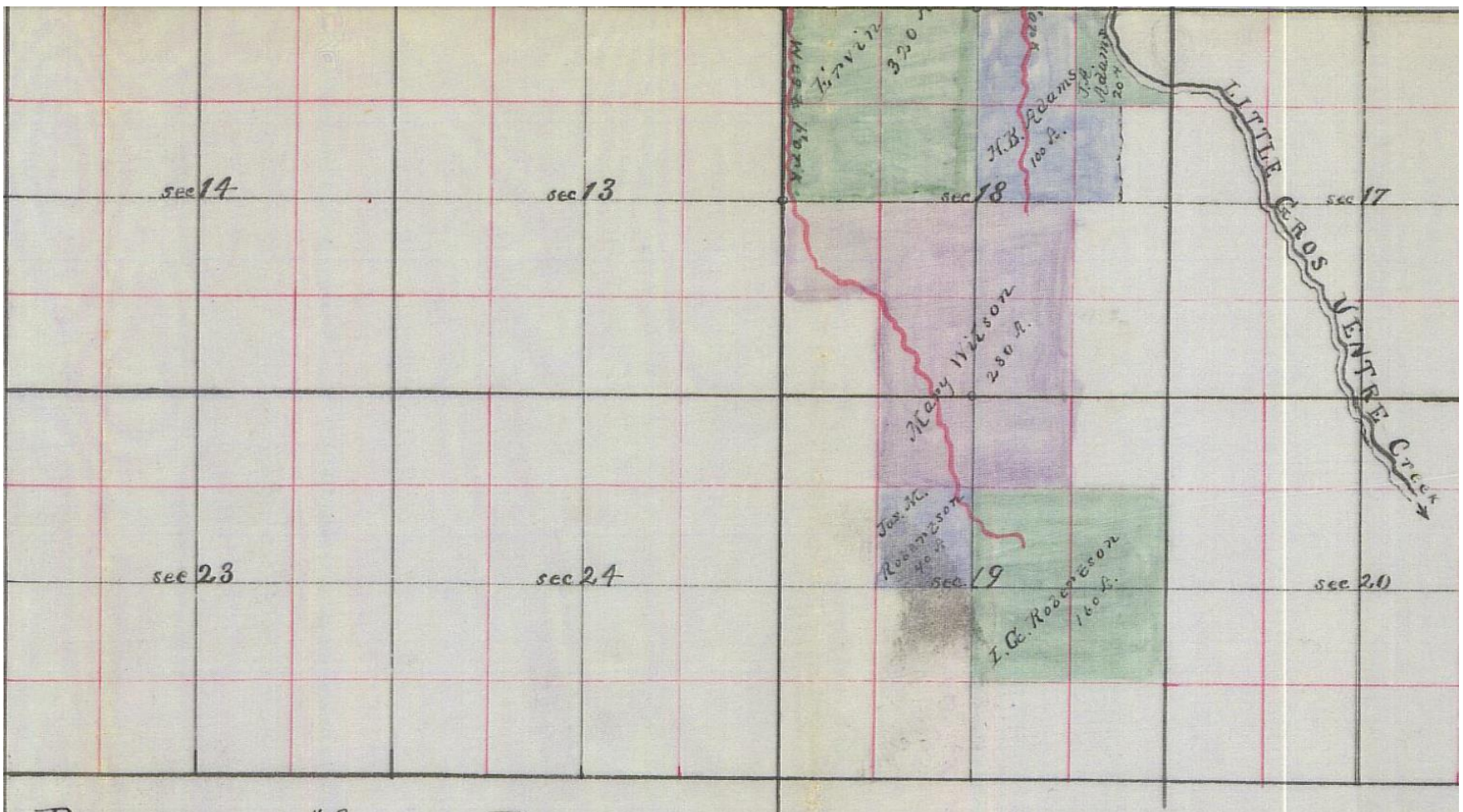
Hi Brain,
I looked for any irrigation plan plats for those subdivisions along South Park Loop Road. Most of them are too old and they don't show the ditches (the Buttercup Subd. showed the Adams Ditches and easements, but that's too far to the east). Most of those lots still have water rights out of the Adams Ditch or the Wilson Ditch, but I haven't been down there to see if the ditch still exists all along the county road. If it does and there isn't room for the bike path, then you might consider moving the ditch over. Keep in mind that the ditch may have a prescriptive easement where it is (see attachment, which is what I send to anyone asking me if they can move a ditch). Hopefully, you won't have to deal with that. There's a few places where it might be kind of tight or there's a fence in the ROW, but you're probably mostly going to be dealing with crossings for the Wilson Ditch and Susannah Slough. I'm also attaching some maps that I was looking at/ working on today. Not sure why people along the county road don't use their WRs (unless the ditch is gone), but since most of them still have them, you just want to play the CYA game. Let me know if you have any questions.
Bodie

--

Bodean Barney
Hydrographer-Commissioner, Div.IV Dist.16
State Engineer's Office
C/O Teton County Road and Levee Department
PO Box 9575
Jackson, WY 83002
Phone: 307-732-8545
FAX: 307-739-0770
Cell: 307-749-6426
email: bodean.barney@wyo.gov

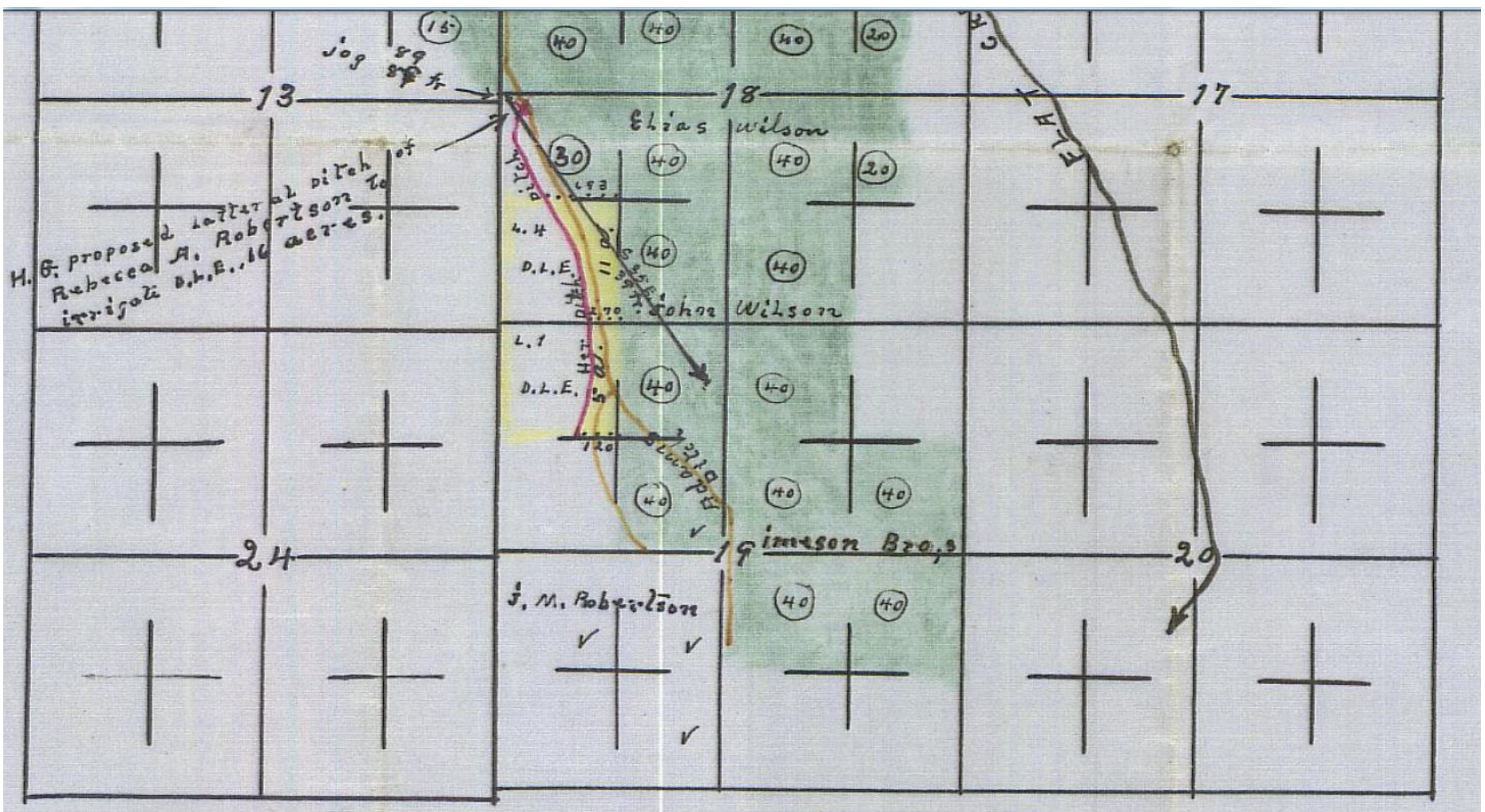
Cody Creek Dr
L2
Adams Ditch
This area could be tricky
L3
North Meadow Rd
Grand Teton Cir
Bedstraw Ln
W Homestead Dr
Pinto Dr
Rafter J
Big Trail Dr
Quarterhorse Dr
Clydesdale Dr
18
L4
Not sure how much of the ditch still exists along here, but if it does, then maybe it could be moved over closer to the ROW line
Susannah Slough
L1
Glory View Ln
W Wilson Rd
Wilson Ditch
Most of the Adams Ditch WRs along South Park Loop Rd. are still on the books. There's even some WRs on this west side of the road (though I doubt that a ditch makes it under the road any more).
Adams Ditch WRs end at this quarter-quarter. Lands to the east were changed from the Adams Ditch to the Wilson Ditch
Kestrel Ln
Balsam Ln
South Park Loop
19
Fence in ROW?
Susannah Slough
L5
L3
Head Gate(s)





PLAT of the "ADAMS DITCH"

Surveyed and mapped, June 20-23rd 1896



CERTIFICATE OF SURVEYOR.

STATE OF WYOMING,
County of Lincoln } ss.

I, Otho E. Williams of Jackson, Wyoming hereby certify that this map was made from notes taken during an actual survey made by me on June 9 1814, and that it correctly represents the irrigation works

APPENDIX 3

WETLAND DELINEATION REPORT (ASSET ENVIRONMENTAL)

ASSET ENVIRONMENTAL SERVICES II, LLC

P.O. BOX 1371
WILSON, WY 83014

(307) 734-1176
FAX (307) 734-8795

WETLAND DELINEATION REPORT
SOUTH PARK LOOP PATHWAY PROJECT
JACKSON, TETON COUNTY WYOMING

Submitted To:

Town of Jackson / Teton County
P.O. Box 1687
Jackson, Wyoming 83001

Attention: Mr. Brian Schilling

Project No. AWY-1330

3 October 2013

PROFESSIONAL GEOLOGIST
ELIZABETH ANN PATTON
PG-2618
WYOMING

By: Kathryn A Lane
Katie Lane
Senior Biologist

Reviewed By:
Elizabeth Ann Patton, P.G.
Manager, Investigative Services

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Figure 6 2006 Color Aerial Photograph

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Appendix A Glossary of Wetland Terminology
Appendix B Wetland Delineation Field Data Forms
Appendix C Selected Reference Data

1.0 PURPOSE AND ORGANIZATION OF REPORT

This report is prepared for the Town of Jackson and Teton County (TOJ/TC) to identify/delineate boundaries of wetlands in an area along the south side of South Park Loop Drive south of Jackson, Wyoming. This delineation report provides the required documentation for routine small area wetland boundary determinations in conformance with Section 404 of the Clean Water Act. This report presents the results of sampling activities at the referenced area. Please refer to Appendix A for definitions of commonly used wetland terminologies.

2.0 SITE INFORMATION AND LEGAL DESCRIPTION

The subject project area (according to TOJ/TC) measures approximately 3300 linear feet along the south side of South Park Loop Drive between the edge of the road and the right-of-way (ROW) line (as approximated by the existing fence line south of the road). The linear extent project area boundary is from the end of the existing bike pathway at Cortland Drive, west to the point where South Park Loop Drive begins to curve north approximately at the driveway accesses to the Lucas and Seherr-Thoss properties.

The project area is located west of Highway 26/89/191 and approximately 5 miles south of the town of Jackson, Wyoming, within Teton County. The project area setting is comprised of: a busy rural, paved, two-lane roadway which slopes outward and downward to private fences lined with cottonwood trees, willow trees and shrubs, sagebrush, and a variety of grasses. Irrigation ditches cross South Park Loop Drive in several places in the project area which support adjacent private pastureland and landscape businesses. Flat Creek flows north to south approximately 0.40 mile east of the project area and eventually discharges into the Snake River southeast of the project area. The Snake River flows north to south approximately 0.58 mile west of the project area. The project area is located in the 6th Principal Meridian as follows:

- North half of the southeast quarter of Section 19, Township 40 North, Range 116 West, and
- Northwest quarter of the southwest quarter of Section 20, Township 40 North, Range 116 West.

Figure 1 shows a topographic map of the project vicinity.

2.1 Project Description

A bike/pedestrian pathway was previously constructed along the south side of South Park Loop Drive and is intended to be extended with this project. The TOJ/TC plans to construct the remaining 3300 linear feet of pathway in 2014. This delineation and report are for aiding in determining if wetlands may exist in the project area which would be subject to mitigation under Teton County land development regulations or U.S. Army Corps of Engineers (USACE) permitting for federally funded linear transportation projects, as per wetland definitions in the appropriate Regional Supplement to 1987 USACE Wetlands Delineation Manual (Environmental Laboratory 1987) and in compliance with Section 404 of the Federal Clean Water Act.

Due to the seasonally ponding nature of, and adjacent irrigation practices near the project area, Asset Environmental Services II, LLC (Asset) was consulted to delineate wetland boundaries within the project footprint.

2.2 Habitat Description

The project area is a linear transportation ROW south of a busy rural roadway and is relatively flat terrain with drainage depressions typical of roadway toeslope construction. There are several irrigation ditch/culvert crossings, some of which contained water at the time of field survey and were vegetated with predominantly facultative wetland species. The average elevation, based on local topographic maps, is approximately 6,036 feet above mean sea level (amsl). The primary vegetative habitat in the area is homogenous throughout and consists of mostly facultative willow/shrub and grassland habitat with some fringe upland vegetation such as sagebrush varieties. Willows (*Salix exigua*) and Cottonwood (*Populus augustifolia*) are the dominant shrub/tree species in the area. The understory is comprised predominantly of grasses, including species of bromes, wheatgrasses, canarygrass, and others.

3.0 WETLAND INVESTIGATION METHODS

3.1 Preliminary Investigation

Wetlands – Prior to fieldwork, potential wetlands were identified within the project area using National Wetlands Inventory (NWI) maps (Figure 2), aerial photography (Figures 5 and 6), and USGS 7.5 minute topographic maps.

*NRCS Soil Survey and Aerial Photography – A*erial photographs (dated 1994 and 2006) were also examined to evaluate the area for potential wetlands (Figure 5 and 6, respectively).

Hydrology – Site-specific hydrologic data was collected during the field survey.

Vegetation – Site-specific vegetation data (e.g., dominant species) was recorded during the field survey.

3.2 On-site Wetland Determinations

Using standard delineation procedures described in the Regional Supplement to the 1987 Army Corps of Engineers Wetland Delineation Manual (USACE 1987): Western Mountains, Valleys and Coast Region (USACE 2010), Asset conducted a routine small area wetland delineation of the project area with an on-site inspection on 17 and 19 September 2013 (between rain storms typical for the time of year). See Figures 3 and 4 for a reference of sample point locations.

General site conditions were first observed and evaluated by walking the project area to identify plant communities and dominant plant species, and to identify wetland classification types. Then, a total of four (4) sample points were chosen and analyzed for wetland delineation/determination. These points were sampled using a hand soil auger and spade shovel to analyze soil profile samples down to 22 inches below ground surface (bgs) or depth of refusal, whichever was reached first. A wetland delineation data form was completed for each sample point (Appendix B).

The sample points were evaluated by examining and documenting three technical criteria. A combination of hydrophytic vegetation, hydrology, and hydric soil criteria defines

wetlands as described in the National Food Security Act Manual (Soil Conservation Service, 1994) and the USACE's Wetlands Delineation Manual Regional Supplement. Therefore, for an area to be considered a wetland, it must display each of the following: (a) dominant vegetation that is considered hydrophytic by accepted classification indicators, (b) indications of wetland hydrology (e.g. drainage patterns, saturation or inundation in the upper 12 inches of soil, etc.), and (c) soils that are considered hydric. A hydric soil is defined as a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the uppermost soil horizon that favor the growth and regeneration of hydrophytic vegetation. Hydrophytic vegetation includes plant species specially adapted for saturated and/or anaerobic conditions and have the ability to grow, compete, reproduce and thrive in anaerobic soil. The USACE and the U.S. Fish and Wildlife Service (USFWS) have assigned a wetland indicator status to many plant species based on the estimated probability of the species existing under wetland conditions. Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), and Upland (UPL). Species with an indicator status of OBL, FACW, or FAC are considered to be adaptive to saturated and/or anaerobic (i.e. wetland) conditions and are referred to as hydrophytic vegetation (refer to Table 1 in Appendix C for full indicator status definitions).

Plant communities and dominant plant species within each community were identified, via ocular estimation of percent cover, at each sample point and within representative sampling "plots", to determine the presence/absence of hydrophytic vegetation. Refer to the field data forms in Appendix B for sample plot size for each vegetation strata (e.g., tree, shrub, herb, etc). Plants were then classified by their wetland indicator status, utilizing the US Department of Agriculture, Natural Resources Conservation Service Plants Database regional indicator designation (USDA, NRCS 2009) and a prevalence cover percentage by indicator status was calculated for additional verification of dominance.

Sample points were then evaluated for wetland hydrology and hydric soil characteristics (e.g., mottling, gleying, and saturation). Wetland hydrology was evaluated by investigating geomorphic and hydrologic characteristics. The major soil horizons for the soils within this project area were evaluated for texture, variables of color (hue, value, and chroma according to the Munsell Soil Color Book, 2000), and other wetland soil indicators (such as oxidized root channels, organic streaking, etc.).

4.0 RESULTS

The following analysis is provided for further contact with USACE personnel but does not constitute the final assessment of the wetland delineation. Only the USACE can provide the final determination. Wetland delineation boundaries which were flagged by Asset, will be surveyed by a professional engineering firm and, as such, mapped by that firm. Please refer to engineering drawings for delineated wetland boundaries.

4.1 Preliminary Data Analysis

NWI – The NWI map (Figure 2) indicates that there is predominantly one wetland type within the project area. This wetland is classified as a freshwater emergent wetland type (Palustrine Emergent Seasonally Flooded [PEMC]). The wetland habitat classification system is included in Appendix C.

Aerial Photography – Aerial photography (dated 1994 and 2006) obtained from Google Earth, indicates that the project area is comprised mostly of range and pastureland habitat with increasing anthropomorphic disturbances and influences. See Figures 5 and 6.

4.2 Waters of the U.S.

Although there is not any named creek which flows through the project area, Flat Creek (a tributary to the Snake River) flows north to south just east of the project area. The Snake River, and its oxbow meanders, flow north to south just west of the project area. Several irrigation ditches connected to this river system are located within the project area. Both Flat Creek and the Snake River, as well as the irrigation ditches, were flowing at the time of the September 2013 survey.

4.3 Potential Wetlands

Four sample points were examined during the survey. A summary of each sample point is given below and the sites are identified in Figures 3 and 4. Photographs of each sample point are included in Section 6.0 and the wetland delineation forms for each sample point are included in Appendix B. All sample points were located south of South Park Loop Drive and north of the fence line (which designates the edge of the transportation ROW). Additionally, active irrigation ditch/culvert crossings with ponded and flowing water were thickly vegetated with predominantly facultative wetland species and, as such, their fringe edges appear to possibly qualify as wetland. See pictures P7 and P8 in Section 6.0 of this report.

Sample Point 1 (Plot ID #1)

This sample point was located on the east end of the project area approximately 252 feet west of Cortland Drive. This location was chosen to verify wetland status due to its proximity to adjacent road disturbance and pastureland. The dominant vegetation species at this sample point include: willow (*Salix exigua)* (FacW)*,* cottonwood *(Populus augustifolia)* (FacW), smooth brome (*Bromus inermis*) (Fac), and canarygrass (*Phalaris arundinacea*) (FacW). Other non-dominant vegetation growing in this sample point area included roadside wheatgrasses (which did not have an indicator status listed for the region). While this sample point appeared to be dominated by hydrophytic vegetation species, the soil lacked hydric characteristics and wetland hydrology indicators were also absent at the time of survey. Due to the lack of primary wetland indicators, the habitat at this sample point does not appear to qualify as a wetland.

Sample Point 2 (Plot ID #2)

This sample point was located on the east end of the project area, approximately 133 feet west of Sample Point 1. This location was chosen to verify wetland status due to an increase in percent cover of potential hydrophytic vegetation. The dominant vegetation species at this sample point were similar to Sample Point 1 and include: willow (*Salix exigua)* (FacW)*,* smooth brome (*Bromus inermis*) (Fac), canarygrass (*Phalaris arundinacea*) (FacW), and slender wheatgrass (*Elymus trachycaulus*) (Fac). Other non-dominant vegetation growing in this sample point area included roadside wheatgrasses (which did not have an indicator status listed for the region). This sample point is dominated by hydrophytic vegetation species. In addition, the soil exhibited hydric characteristics, mottling, and contained oxidized root channels. Due to the presence of hydrophytic vegetation, wetland soil, and hydrology, the habitat at this sample point does appear to qualify as a wetland.

Sample Point 3 (Plot ID #3)

This sample point was located towards the west end of the project area, approximately 1443 feet east of Sample Point 4. This location was chosen to verify wetland status due to its proximity to an adjacent irrigation ditch. The dominant vegetation species at this sample point included: willow (*Salix exigua)* (FacW)*,* smooth brome (*Bromus inermis*) (Fac), canarygrass (*Phalaris arundinacea*) (FacW), and slender wheatgrass. Other non-dominant vegetation growing in this area included roadside wheatgrasses. This sample point is dominated by hydrophytic vegetation species. In addition, the soil contained aquatic invertebrates therefore aquic conditions can be assumed. Due to the presence of dominant hydrophytic vegetation, wetland soil, and hydrology, the habitat at this sample point does appear to qualify as a wetland.

Sample Point 4 (Plot ID #4)

This sample point was located on the west end of the project area near its terminus. This location was chosen to verify wetland status as it contained slightly dissimilar vegetation and coverage. The area between this sample point east toward Sample Point 3 had significant disturbance influences from the road and adjacent land practices. The dominant vegetation species at this sample point included: cottonwood *(Populus augustifolia)* (FacW), smooth brome (*Bromus inermis*) (Fac), intermediate wheatgrass (*Thinopyrum intermedium*) (NI). Other non-dominant vegetation growing in this sample point area included roadside wheatgrasses. While this sample point is somewhat dominated by vegetation species which may exist under wetland conditions, the soil lacked both hydric characteristics and wetland hydrology. Due to the lack of primary wetland indicators, the habitat at this sample point does not appear to qualify as a wetland.

5.0 CONCLUSIONS

Portions of the project area identified would fall under the USACE jurisdiction as it maintains a surface hydrological connection (via irrigation drainages and pasturelands) to extensions of Flat Creek and the Snake River. Portions of this project area do appear to qualify as wetland under standard delineation procedures described in the 1987 Army Corps of Engineers Wetland Delineation Manual (USACE 1987) for a small area routine delineation. If impacts, including discharge of dredge or fill material into jurisdictional waters are proposed, a permit should be obtained from the USACE. If proposed impacts are less than 0.5 acre, authorization under a Nationwide Permit (NWP) would likely apply. If impacts are greater than 0.5 acre, an individual 404 permit may be necessary. State 401 water quality certification and appropriate soil erosion and sediment controls may apply regardless of direct wetland impacts. The amount of impact can be determined once the delineated areas are surveyed and mapped by a professional engineering company.

6.0 AREA PHOTOGRAPHS

P1. View of Sample Pit #1 facing south toward private fenceline/edge of ROW.

P2. View of Sample Pit #2 facing south-southwest toward fenceline/edge of ROW.

P3. View of Sample Pit #3 facing south-southeast toward fenceline/edge of ROW. Active, flowing, irrigation ditch located just on opposite side of fence.

P4. View of soil from Sample Pit #3. Note presence of aquatic invertebrates throughout.

P5. View of Sample Pit #4 facing south.

P6. Another view of Sample Pit #4 facing west.

P7. View of western-most irrigation ditch/culvert crossing, facing south. Private drive off to the left hand side of the picture.

P8. View of another irrigation ditch/culvert crossing east of the crossing in picture #7.

7.0 LIMITATIONS

This report was prepared for the use of Town of Jackson and Teton County and their assigns exclusively. Our services were performed consistent with our agreement with our client. The conclusions provided by Asset are based solely on the information presented in this report. Opinions and recommendations contained in this report apply to conditions existing when our services were performed and are intended only for the use of our clients, unless a written release is obtained from Asset. Furthermore, we are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to the performance of our services. Asset also does not warrant the accuracy of information supplied by others nor the use of segregated portions of this report. The nature and extent of subsurface variations across the site may not be evident based on the information collected and presented herein. Environmental conditions may exist at the site that cannot be identified by visual observation.

8.0 REFERENCES

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--- Farm Service Agency, 2006. Color aerial imagery via Google Earth.

--- National Water and Climate Center, WETS Station Data for Teton County, Wyoming.

USGS, 1994. Black and white aerial imagery via Google Earth.

FIGURES

ASSET
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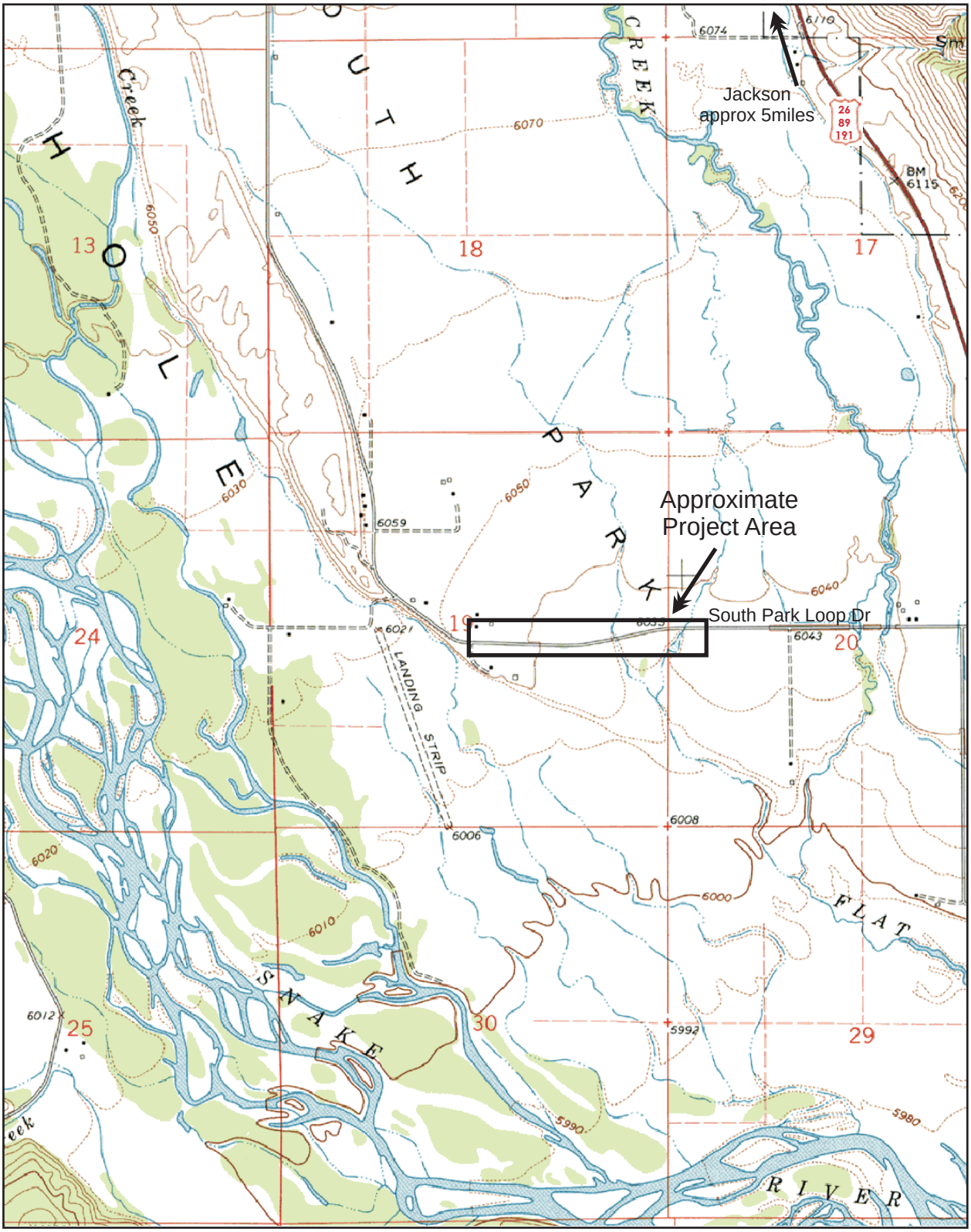

COPIED FROM USGS MAP:
JACKSON, WYOMING
DATED 1963

APPROXIMATE SCALE
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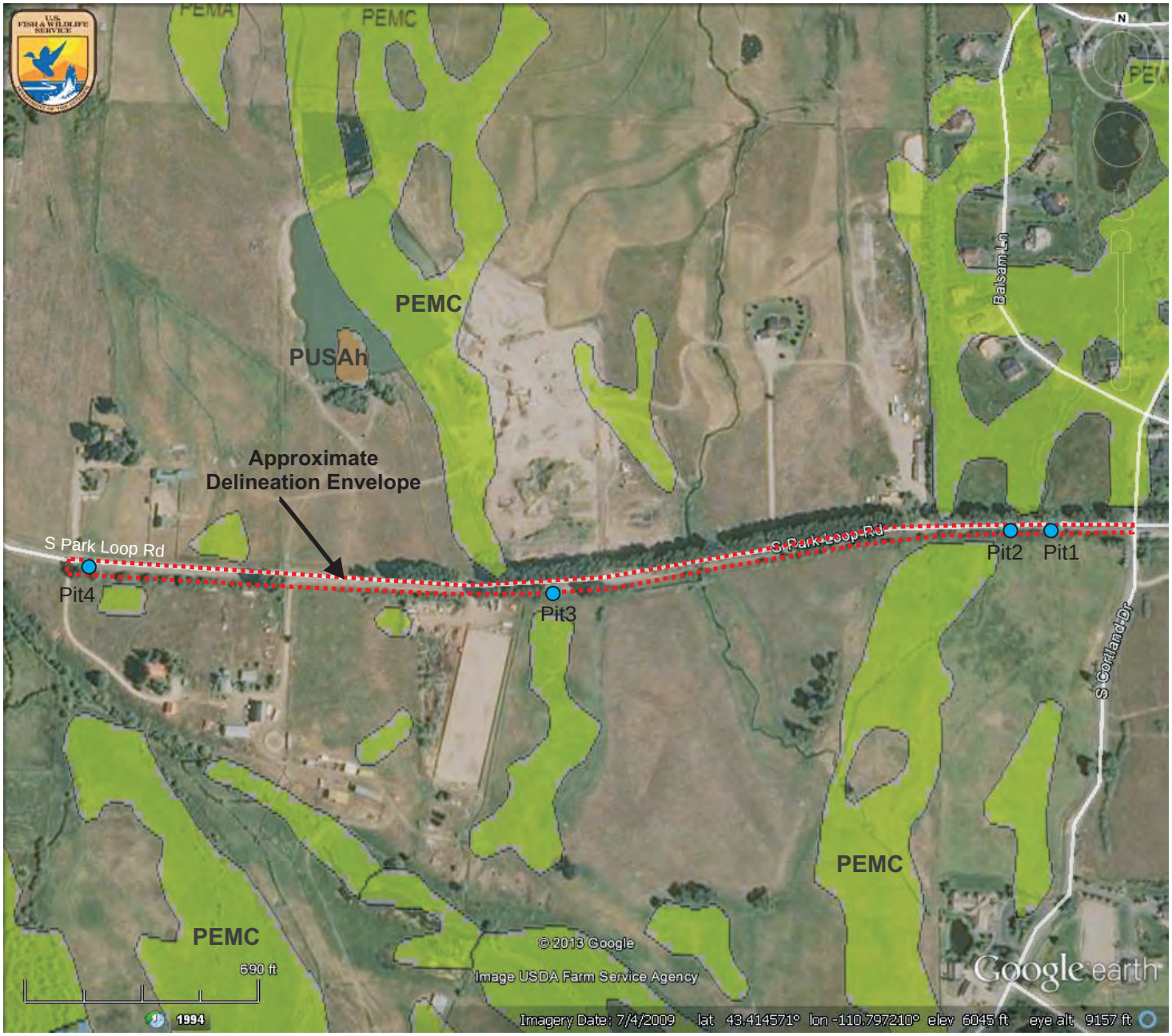
Figure 1. Site Vicinity Map
South Park Loop Pathway Project
Wetland Delineation
Teton County, WY

Project No. AWY-1330



See Wetland Classification Codes in Appendix C of the Wetland Delineation Report for Wetland Types shown here.

COPIED FROM GOOGLE EARTH WITH THE FOLLOWING LAYERS:
1. USFWS NATIONAL WETLAND INVENTORY DATA
2. AERIAL IMAGERY (4 JULY 2009), USDA FARM SERVICE AGENCY

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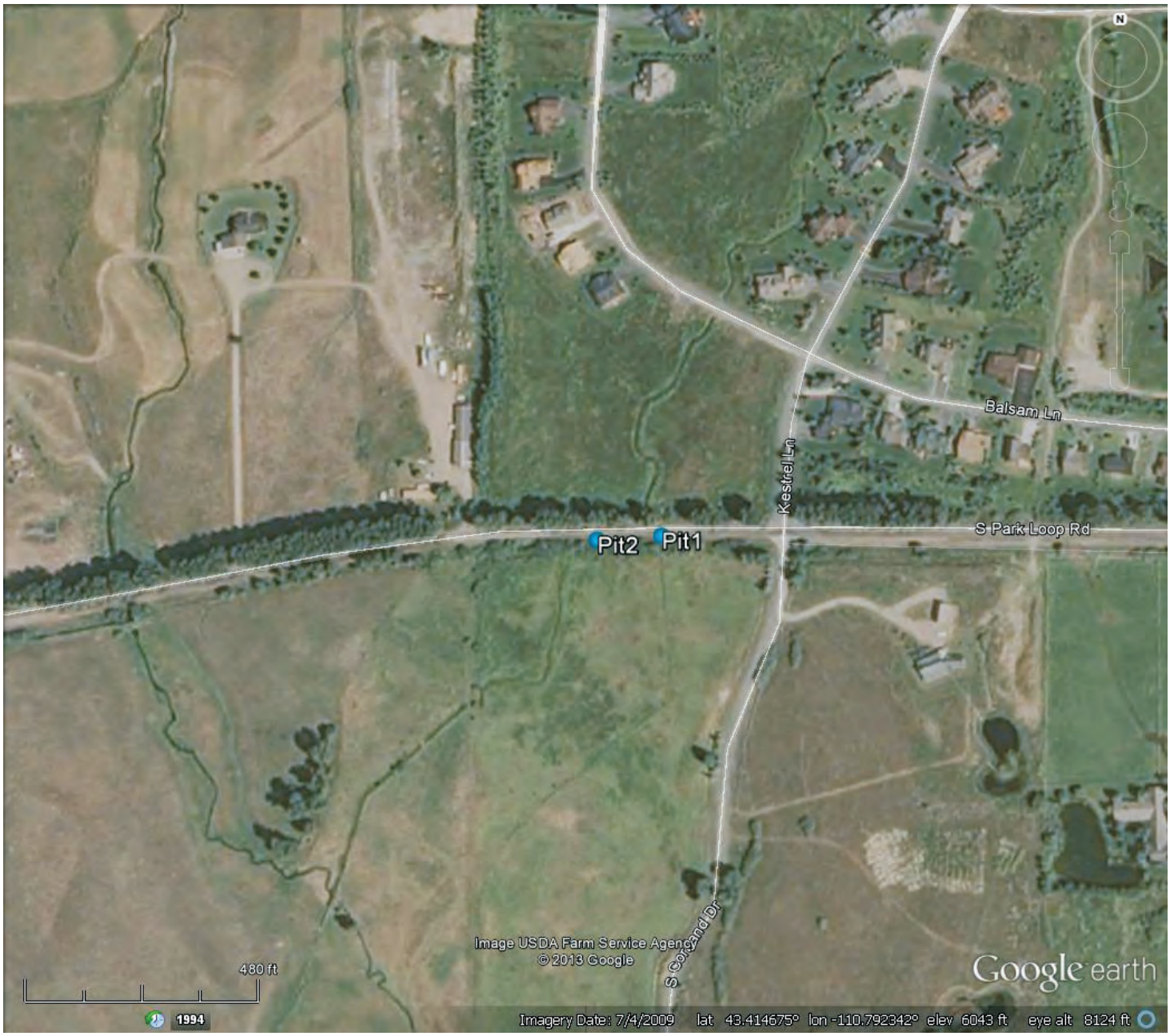
Figure 2. National Wetlands Inventory
South Park Loop Pathway Project
Wetland Delineation
Teton County, WY

Project No. AWY-1330



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AERIAL IMAGERY TAKEN 4 JULY 2009

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Figure 3. Site Layout, Sample Pits 1 & 2
South Park Loop Pathway Project
Wetland Delineation
Teton County, WY

Project No. AWY-1330

COPIED FROM GOOGLE EARTH USDA FARM SERVICE AGENCY
AERIAL IMAGERY TAKEN 4 JULY 2009

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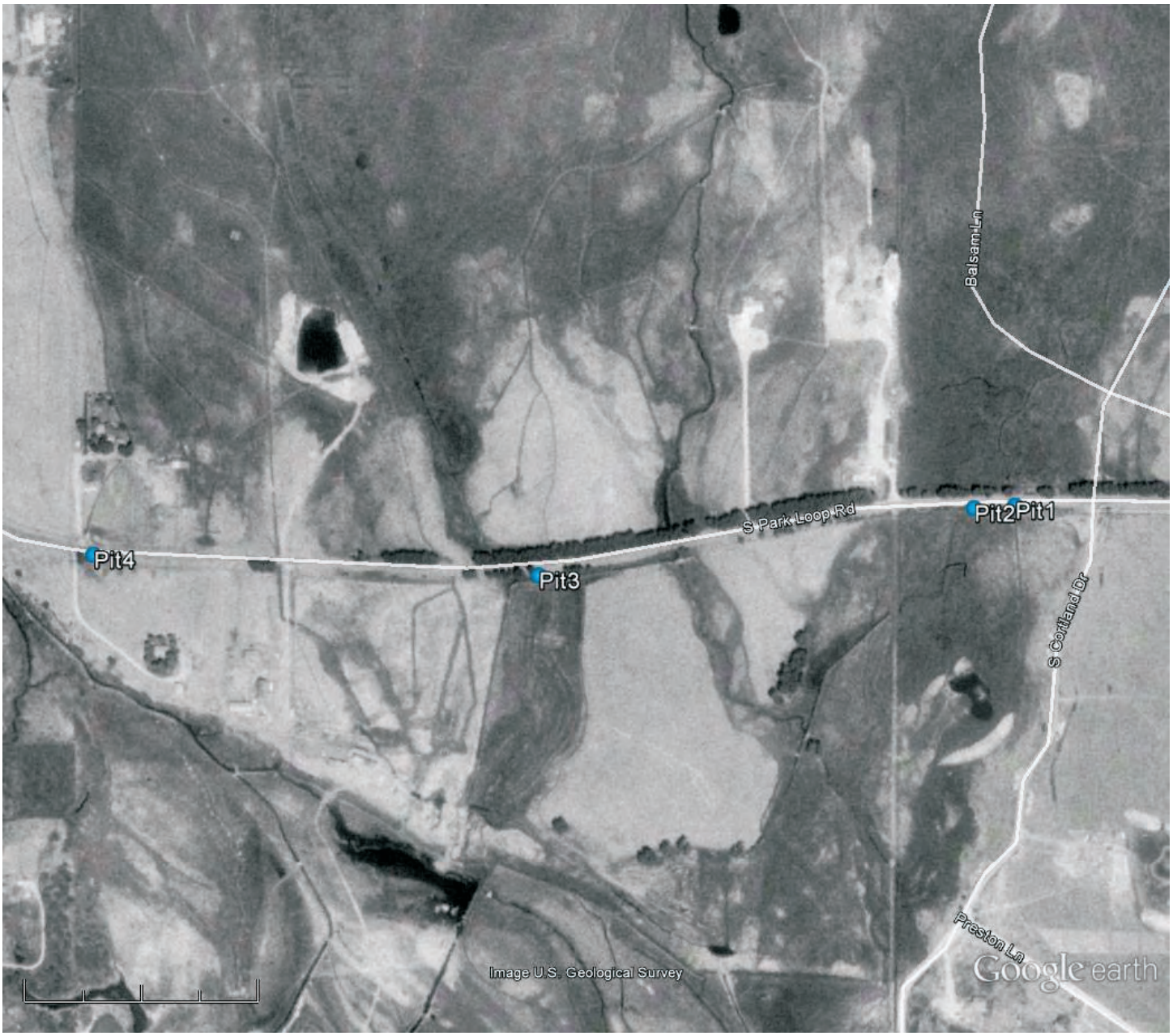
Figure 4. Site Layout, Sample Pits 3 & 4
South Park Loop Pathway Project
Wetland Delineation
Teton County, WY

Project No. AWY-1330



COPIED FROM GOOGLE EARTH US GEOLOGICAL SURVEY
AERIAL IMAGERY TAKEN 26 JUNE 1994

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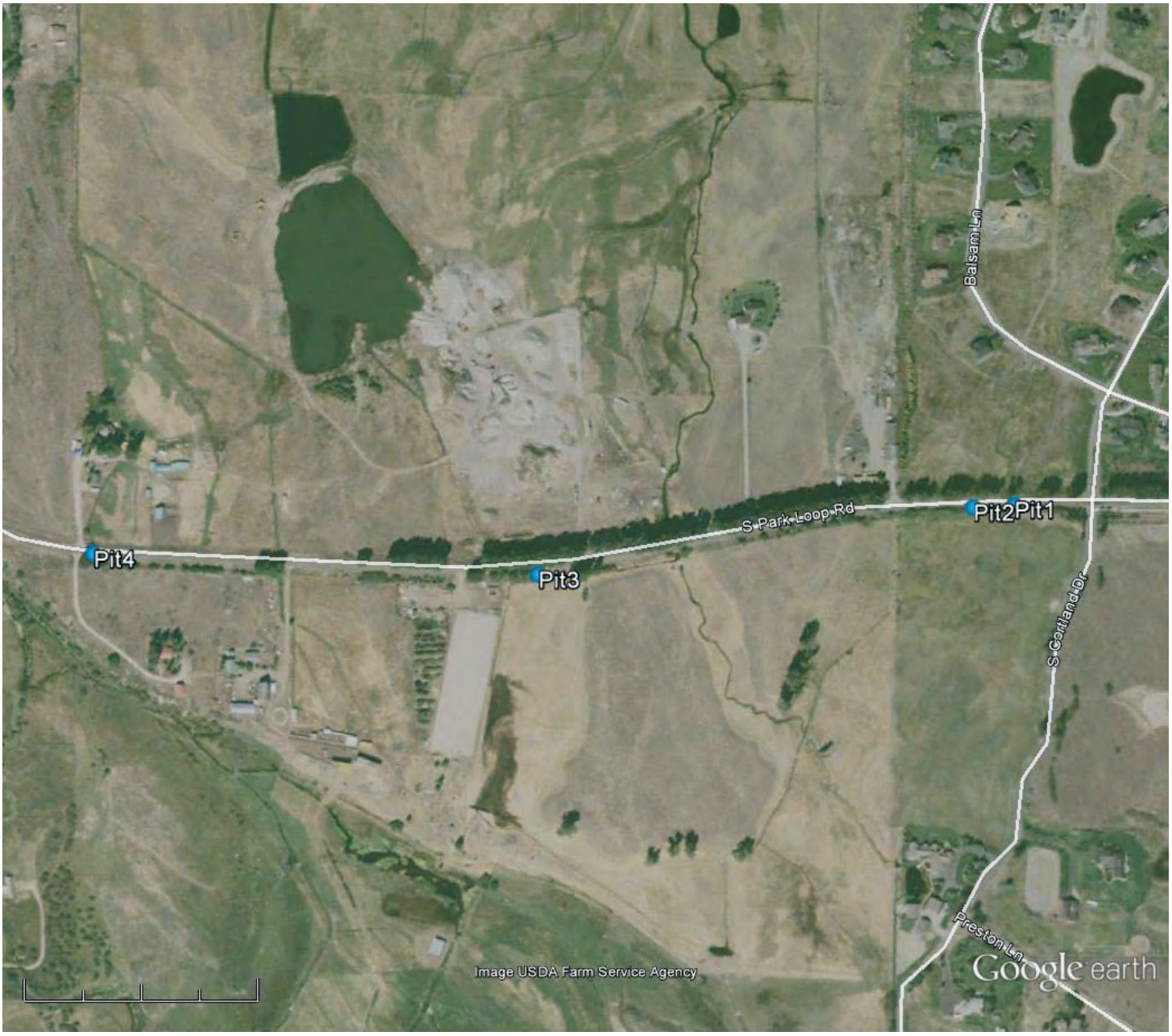
Figure 5. 1994 Aerial Imagery
South Park Loop Pathway Project
Wetland Delineation
Teton County, WY

Project No. AWY-1330



COPIED FROM GOOGLE EARTH USDA FARM SERVICE AGENCY
AERIAL IMAGERY TAKEN 10 JULY 2006

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Figure 6. 2006 Aerial Imagery
South Park Loop Pathway Project
Wetland Delineation
Teton County, WY

Project No. AWY-1330

APPENDIX A

GLOSSARY OF WETLAND TERMINOLOGY

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GLOSSARY

Active water table: A condition in which the zone of soil saturation fluctuates, resulting in periodic anaerobic soil conditions. Soils with an active water table often contain bright mottles and matrix chromas of 2 or less.

Atypical situation: Areas in which one or more parameters (soil, hydrology, vegetation) have been sufficiently altered by recent human activities or natural to preclude the presence of wetland indicators.

Capillary fringe: A zone immediately above the water table (zero gauge pressure) in which water is drawn upward from the water table by capillary action.

Chroma: The relative saturation of a color; intensity if distinct hue as related to grayness; one of the three variables of color. Ranges from /0 (very grey) to /8 (true color).

Duration (inundation/soil saturation): The length of time during which water stands at or above the soil surface (inundation), or during which the soil is saturated; duration refers to a period during the growing season.

Flooded: A condition in which the soil surface is temporarily covered with flowing water from any source.

Gleyed: A soil condition resulting from prolonged soil saturation, which is manifested by the presence of bluish or greenish colors through the soil mass or in mottles among other colors. Gleying occurs under reducing soil conditions resulting from soil saturation, by which iron is reduced predominantly to the ferrous state.

Histic epipedon: An 8- to 16-inch-thick soil layer at or near the surface that is saturated for 30 or more consecutive days during the growing season in most years and contains a minimum of 20 percent organic matter when no clay is present or a minimum of 30 percent organic matter when 60 percent or more clay is present.

Hue: The primary or secondary color of the soil. A characteristic of color that denotes a color in relation to red, yellow, blue, and so forth; one of the three variables of color. Each color chart in the Munsell Color Book (1998) consists of a specific hue.

Hydric soil: A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation. The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the definition of hydric soils. Also, soils in which the hydrology has been artificially modified are considered to be hydric if the soil, in an unaltered state, was hydric (USDA, NRCS).

Hydrology: The science dealing with the properties, distribution, and circulation of water.

Hydrophytic Vegetation: Plant species that grow in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats. Hydrophytic species, due to morphological, physiological, and reproductive adaptations, have the ability to grow, effectively compete, reproduce, and thrive in anaerobic

soil. The ACOE and the USFWS have assigned indicator status to many plant species based on the estimated probability of the species existing under wetland conditions. Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), and Upland (UPL). Species with an indicator status of OBL, FACW, or FAC are considered to be adaptive to saturated and/or anaerobic (i.e. wetland) conditions and are referred to as hydrophytic vegetation.

Inundation: A condition in which water from any source temporarily or permanently covers the surface of the land.

Mottles: Spots or blotches of different color or shades of color interspersed within the dominant color in a soil layer, usually resulting from the presence of periodic reducing soil conditions.

Poorly drained: Soils that are commonly wet at or near the surface during a sufficient part of the year such that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these conditions.

Reducing environment: An environment conducive to the removal of oxygen and chemical reduction of ions in the soil.

Routine wetland determination: A type of wetland determination in which office data or relatively simple, rapidly applied onsite methods are employed to determine whether or not an area is a wetland. Most wetland determinations are this type, which does not require the collection of quantitative data.

Soil: Unconsolidated mineral and organic material that supports, or is capable of supporting, plants, and which has recognizable properties due to the integrated effect of climate and living matter acting upon parent material, as conditioned by relief and time.

Soil horizon: A layer of soil or soil material approximately parallel to the land surface and differing from adjacent layers in physical, chemical, and biological properties or characteristics, such as color, texture, or structure.

Soil profile: A vertical section of a soil through all of its horizons and extending into the parent material.

Soil structure: The combination or arrangement of primary soil particles into secondary particles, units, or peds.

Soil texture: The relative proportion of the various sizes of particles in a soil.

Upland: Areas that do not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, or hydrologic characteristics associated with wetlands.

Value: A measure of darkness of the soil. The relative lightness or intensity of color approximately a function of the square root of the total amount of light reflected from a surface; one of the three variables of color. Ranges from 10/0 (pure white) to 5/0 (grey) to 0/0 (pure black).

Water table: The upper surface of groundwater or that level below which the soil is saturated with water.

Wetlands: Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support (and that under normal circumstances do support) a prevalence of vegetation typically adapted to life in saturated soil conditions.

Wetland boundary: The point on the ground at which a shift from wetlands to uplands or aquatic habits occurs.

Wetland soil: A soil that has characteristics developed in a reducing atmosphere, which exists when periods of prolonged soil saturation result in anaerobic conditions.

APPENDIX B

WETLAND DELINEATION DATA FORMS

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WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: South Park Loop Pathway Project | City/County: Jackson/Teton | Sampling Date: 9/17/13

Applicant/Owner: Teton County / Town of Jackson | State: WY | Sampling Point: #1

Investigator(s): KGL, EAP | Section, Township, Range: 20, T40N, R116W

Landform (hillslope, terrace, etc.): toe slope | Local relief (concave, convex, none): concave | Slope (%): 3-5

Subregion (LRR): LRR E | Lat: 43.414583 | Long: -110.79175 | Datum: NAD83

Soil Map Unit Name: Newfork fine sandy loam | NWI classification: Near PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☒, or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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: **Sample site is located at the toe slope of existing roadway disturbance adjacent to irrigated pasture. Road bed slopes to, or close to, fence. Nearby weather data suggest that this area had slightly higher than normal rainfall for the month of September.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus augustifolia*	5	yes	FACW
2. *Salix exigua*	20	yes	FACW
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = 12.5, 20% = 5	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 foot radius)			
1. *Salix exigua*	10	yes	FACW
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
50% = 5, 20% = 2	10	= Total Cover	
Herb Stratum (Plot size: 5 foot radius)			
1. *Phalaris arundinacea*	30	yes	FACW
2. *Bromus inermis*	20	yes	FAC
3. *Elymus trachycaulus*	5	no	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = 27.5, 20% = 11	55	= Total Cover	
Woody Vine Stratum (Plot size: 30 foot radius)			
1. *none*	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	

% Bare Ground in Herb Stratum <5

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	65	x2 =	130
FAC species	25	x3 =	75
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	90 (A)		205 (B)

Prevalence Index = B/A = 2.28

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: South Park Loop Pathway Project

SOIL

Sampling Point: #1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	100					SiL	silty loam; gravelly

[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: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Large gravel/cobble

Depth (inches): 12

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Soil did not show any hydric soil indicators. Problematic sampling due to compaction and influence of road material from adjacent road disturbance. Even though dominance of hydrophytic vegetation is present, aquic conditions cannot be assumed due to lack of wetland hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

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** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Toe slope/road drainageway at edge of busy rural road disturbance. Adjacent land is irrigated pasture with active grazing.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: South Park Loop Pathway Project City/County: Jackson/Teton Sampling Date: 9/19/13
Applicant/Owner: Teton County / Town of Jackson State: WY Sampling Point: #2
Investigator(s): KGL Section, Township, Range: 20, T40N, R116W
Landform (hillslope, terrace, etc.): toe slope Local relief (concave, convex, none): concave Slope (%): 0-3
Subregion (LRR): LRR E Lat: 43.414556 Long: -110.79225 Datum: NAD83
Soil Map Unit Name: Newfork fine sandy loam NWI classification: Just N of PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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: **Sample site is located at the toe slope of existing roadway disturbance adjacent to irrigated pasture. Road bed slopes to, or close to, fence. Nearby weather data suggest that this area had slightly higher than normal rainfall for the month of September.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 foot radius)			
1. *Salix exigua*	40	yes	FACW
2.			
3.			
4.			
5.			
50% = 20, 20% = 8	40	= Total Cover	
Herb Stratum (Plot size: 5 foot radius)			
1. *Phalaris arundinacea*	35	yes	FACW
2. *Bromus inermis*	20	yes	FAC
3. *Elymus trachycaulus*	5	no	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 30, 20% = 12	60	= Total Cover	
Woody Vine Stratum (Plot size: 30 foot radius)			
1. *none*			
2.			
50% = _____, 20% = _____		= Total Cover	

% Bare Ground in Herb Stratum <5

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)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species	75	x2 =	150
FAC species	25	x3 =	75
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	100 (A)		225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: South Park Loop Pathway Project

SOIL

Sampling Point: #2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/2	100					Loam	organic, abundant roots
7-11							Rock	cobble, rocks, gravel
11-22	10YR 4/2	95	10YR 5/6	5	C	PL	Clay	slight mottling

[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: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Aquic conditions assumed due to presence of hydrophytic vegetation and wetland hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

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** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Oxidation only in minor amounts. Toe slope/road drainageway at edge of busy rural road disturbance. Adjacent land is irrigated pasture with active grazing. This sample point appears to be within a drainage/channel which has formed along a portion of the road - potentially influenced by nearby irrigation ditches and road culvert crossings.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: South Park Loop Pathway Project City/County: Jackson/Teton Sampling Date: 9/19/13
Applicant/Owner: Teton County / Town of Jackson State: WY Sampling Point: #3
Investigator(s): KGL Section, Township, Range: S19, T40N, R116W
Landform (hillslope, terrace, etc.): toe slope Local relief (concave, convex, none): concave Slope (%): 0-3
Subregion (LRR): LRR E Lat: 43.413917 Long: -110.797556 Datum: NAD83
Soil Map Unit Name: Tineman gravelly loam, wet NWI classification: Just N of PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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: **Sample site is located at the toe slope of existing roadway disturbance adjacent to irrigated pasture. Road bed slopes to, or close to, fenceline. This sample point is located adjacent to an active irrigation channel and is approximately 0.86 miles east of Snake River meander channels. Nearby weather data suggest that this area had slightly higher than normal rainfall for the month of September.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 foot radius)			
1. *Salix exigua*	40	yes	FACW
2.			
3.			
4.			
5.			
50% = 20, 20% = 8	40	= Total Cover	
Herb Stratum (Plot size: 5 foot radius)			
1. *Phalaris arundinacea*	35	yes	FACW
2. *Bromus inermis*	20	yes	FAC
3. *Elymus trachycaulus*	5	no	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 30, 20% = 12	60	= Total Cover	
Woody Vine Stratum (Plot size: 30 foot radius)			
1. *none*			
2.			
50% = _____, 20% = _____		= Total Cover	

% Bare Ground in Herb Stratum <5

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)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species	75	x2 =	150
FAC species	25	x3 =	75
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	100 (A)		225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: Vegetation species similar to those present at sample point #2.

Project Site: South Park Loop Pathway Project

SOIL

Sampling Point: #3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[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: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Aquic conditions assumed due to dominance of hydrophytic vegetation and presence of wetland hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☒ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

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** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This sample site is across the fence from an active irrigation channel at the toe slope/road drainageway edge of a busy rural road. Adjacent land is irrigated pasture with active grazing. Oxidation is present but minor.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: South Park Loop Pathway Project City/County: Jackson/Teton Sampling Date: 9/19/13
Applicant/Owner: Teton County / Town of Jackson State: WY Sampling Point: #4
Investigator(s): KGL Section, Township, Range: S19, T40N, R116W
Landform (hillslope, terrace, etc.): toe slope Local relief (concave, convex, none): concave Slope (%): 3-5
Subregion (LRR): LRR E Lat: 43.414056 Long: -110.802972 Datum: NAD83
Soil Map Unit Name: Tineman gravelly loam, wet NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☒, Soil ☒, or Hydrology ☒, naturally problematic? (If needed, explain any answers in Remarks.)

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: **Sample site is located near the western end of proposed project area at the toe slope of existing roadway disturbance adjacent to irrigated pasture. Road bed slopes to, or close to, fenceline. This sample point is located approximately 0.59 miles east of Snake River meander channels. Nearby weather data suggest that this area had slightly higher than normal rainfall for the month of September.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus augustifolia*	50	yes	FACW
2.			
3.			
4.			
50% = 25, 20% = 10	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 foot radius)			
1.			
2.			
3.			
4.			
5.			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size: 5 foot radius)			
1. *Bromus inermis*	45	yes	FAC
2. *Thinopyrum intermedium*	15	yes	NL (UPL)
3. *Elymus trachycaulus*	<5	no	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 30, 20% = 12	60	= Total Cover	
Woody Vine Stratum (Plot size: 30 foot radius)			
1. *none*			
2.			
50% = _____, 20% = _____		= Total Cover	

% Bare Ground in Herb Stratum <5

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	67	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species	50	x2 =	100
FAC species	45	x3 =	135
FACU species		x4 =	
UPL species	15	x5 =	75
Column Totals:	110 (A)		310 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: South Park Loop Pathway Project

SOIL

Sampling Point: #4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-17	7.5YR 3/3	100					Loamy	cobble/gravel abundant throughout

[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: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Large cobble/gravel

Depth (inches): 17

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Soil did not show any hydric soil indicators. Problematic sampling due to compaction and influence of road material from adjacent road disturbance. Even though some hydrophytic vegetation may be present, aquic conditions cannot be assumed due to lack of wetland hydrology indicators at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

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** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This sample site is at the toe slope/road drainageway edge of a busy rural road. Adjacent land is irrigated pasture with active grazing.

APPENDIX C

SELECTED REFERENCE DATA

- Table of Plant Indicator Status Categories ……... C-1
- Wetland and Deepwater Habitats Classification System …… C-2
- WETS Station Climate Report ……... C-4

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ENVIRONMENTAL SERVICES II, LLC

Table 1. Plant Indicator Status Categories	
Obligate Wetland Plants (**OBL**)	Plants that occur in wetlands, under natural conditions, approximately 99 percent of the time.
Facultative Wetland Plants (**FACW**)	Plants that occur in wetlands approximately 67-99 percent of the time.
Facultative (**FAC**)	Plants that are as likely to be found in wetlands as in non-wetlands; approximately 34 to 66 percent of the time in either.
Facultative Upland Plants (**FACU**)	Plants that occur in non-wetlands approximately 1 to 33 percent of the time.
Obligate Upland Plants (**UPL**)	Plants that occur in non-wetlands, under natural conditions, approximately 99 percent of the time.
No Indicator (**NI**)	Plant species that have not been given an indicator status, and assumed to be upland.

Source: National List of Plants that Occur in Wetlands: Northwest (Region 9), U.S. Fish and Wildlife Service Biological Report 88(26.9), (Revised 1993) 89 p.

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

System	M - Marine							
Subsystem	1 - Subtidal				2 - Intertidal			
Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	RF – Reef	AB – Aquatic Bed	RF – Reef	RS – Rocky Shore	US – Unconsolidated Shore
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud	1 Algal 3 Rooted Vascular	1 Coral 3 Worm	1 Algal 3 Rooted Vascular	1 Coral 3 Worm	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic

System	E - Estuarine											
Subsystem	1 - Subtidal				2 - Intertidal							
Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	RF – Reef	AB – Aquatic Bed	RF – Reef	SB – Streambed	RS – Rocky Shore	US – Unconsolidated Shore	EM – Emergent	SS – Scrub-Shrub	FO – Forested
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 3 Rooted Vascular 4 Floating Vascular	2 Mollusk 3 Worm	1 Algal 3 Rooted Vascular 4 Floating Vascular	2 Mollusk 3 Worm	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Persistent 2 Non-persistent 5 *Phragmites australis*	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen

System	R - Riverine				
Subsystem	1 - Tidal	2 – Lower Perennial	3 – Upper Perennial	4* - Intermittent	5** – Unknown Perennial

Class	RB – Rock Bottom	UB – Unconsolidated Bottom	SB*** – Streambed	AB – Aquatic Bed	RS – Rocky Shore	US – Unconsolidated Shore	EM – Emergent
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic 7 Vegetated	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent

* **Intermittent** is limited to the **Streambed** Class
** **Unknown Perennial** is limited to **Unconsolidated Bottom**
*** **Streambed** is limited to **Tidal** and **Intermittent** Subsystems

Classification of Wetlands and Deepwater Habitats of the United States, Cowardin *et al*. 1979

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

System	L - Lacustrine										
Subsystem	1 - Limnetic			2 - Littoral							
Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	RS – Rocky Shore	US – Unconsolidated Shore	EM – Emergent		
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent		

System	P - Palustrine							
Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	US – Unconsolidated Shore	ML – Moss-Lichen	EM – Emergent	SS – Scrub-Shrub	FO – Forested
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	1 Moss 2 Lichen	1 Persistent 2 Nonpersistent 5 *Phragmites australis*	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen

MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	I Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

WETS Station : JACKSON, WY4910 Creation Date: 09/10/2002
Latitude: 4329 Longitude: 11046 Elevation: 06230
State FIPS/County(FIPS): 56039 County Name: Teton
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.) avg daily max	avg daily min	avg	Precipitation (Inches) avg	30% chance will have less than	more than	avg # of days w/.1 or more	avg total snow fall
January	28.3	5.0	16.7	1.36	0.79	1.66	4	20.3
February	33.2	8.1	20.7	0.95	0.53	1.16	4	13.4
March	42.8	17.5	30.2	1.21	0.64	1.47	4	7.8
April	53.1	24.4	38.8	1.16	0.61	1.42	4	2.4
May	63.0	30.8	46.9	2.26	1.56	2.69	7	0.8
June	73.4	37.0	55.2	1.63	1.02	1.97	5	0.2
July	81.9	40.9	61.4	1.31	0.75	1.62	4	0.0
August	80.8	39.2	60.0	1.33	0.85	1.60	4	0.0
September	71.1	31.3	51.2	1.33	0.56	1.61	4	0.1
October	58.4	23.4	40.9	1.25	0.71	1.55	4	1.0
November	39.5	15.6	27.5	1.65	0.85	2.02	5	11.0
December	28.3	5.9	17.1	1.56	0.83	1.91	6	17.4
Annual	-----	-----	-----	------	12.13	18.24	--	----
Average	54.5	23.3	38.9	------	------	------	--	----
Total	-----	-----	-----	17.00	------	------	55	74.5

GROWING SEASON DATES

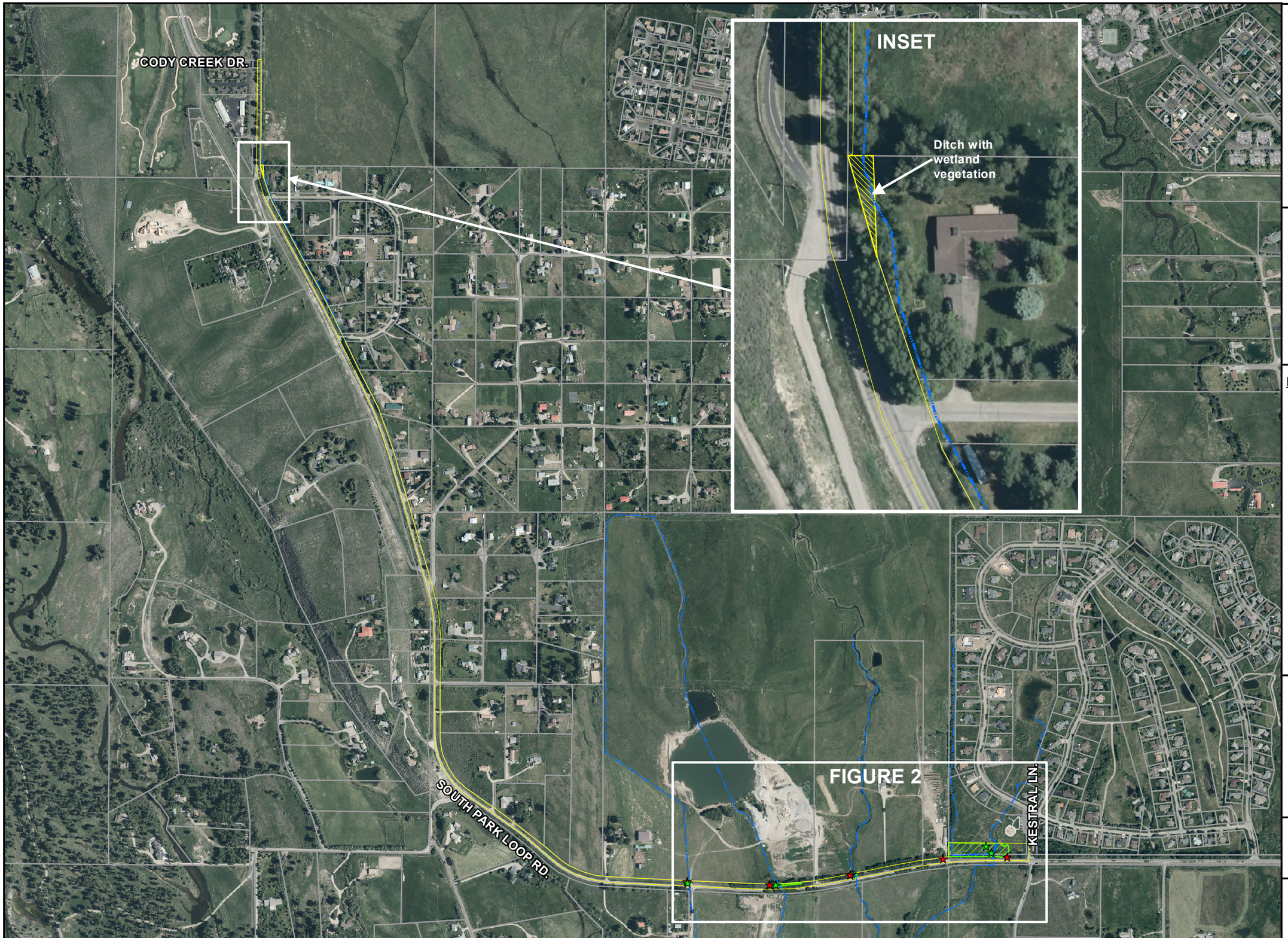
Probability	Temperature 24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		

50 percent *	5/25 to 9/12 110 days	6/19 to 8/29 71 days	7/10 to 8/15 36 days
70 percent *	5/20 to 9/18 120 days	6/13 to 9/ 4 83 days	7/ 5 to 8/20 46 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

APPENDIX 4

SUPPLEMENTAL WETLAND DELINEATION EXHIBITS (ALDER ENVIRONMENTAL)



Jackson Hole Community Pathways

SOUTH PARK PATHWAY NORTH SIDE

South Park Loop Road
Teton County, WY

FIGURE 1 OF 2:

Wetlands & Surface Waters OVERVIEW

November 11, 2015

Legend:

Property Boundary

Study Area

Physical Study Area

Visual Study Area

Sample Points

Upland

Wetland

Aquatic Resources

Ditch Flow Line

Ordinary High Water Mark

Delineated Wetlands

2015 Teton County Image

Wetland Delineation conducted by Alder Environmental, LLC on October 30, 2015

Wetland Boundary Collected with Resource Grade GPS (Estimated Under Tree Canopy)

1 inch = 700 feet

0 — 700 Feet

NORTH

ALDER ENVIRONMENTAL, LLC
Water • Wetlands • Ecological Consulting
P.O. Box 6519, Jackson, Wyoming 83002
(307) 733-5031 www.alderenvironmental.com

Jackson Hole Community Pathways

SOUTH PARK PATHWAY NORTH SIDE

South Park Loop Road
Teton County, WY

FIGURE 2 OF 2:

Wetlands & Surface Waters SOUTH DETAIL

November 11, 2015

Legend:

- Property Boundary
- Easement Boundary

Study Area

- Physical Study Area
- Visual Study Area

Sample Points

- Upland
- Wetland

Aquatic Resources

- Ditch Flow Line
- Ordinary High Water Mark
- Delineated Wetlands

2015 Teton County Image

Wetland Delineation conducted by Alder Environmental, LLC on October 30, 2015

Wetland Boundary Collected with Resource Grade GPS (Estimated Under Tree Canopy)

1 inch = 200 feet

0 — 200 Feet

NORTH

ALDER ENVIRONMENTAL, LLC
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(307) 733-5031 www.alderenvironmental.com

APPENDIX 5

2008 MEMORANDUM FROM TETON COUNTY RE: SUSANNAH SLOUGH

PLANNING & DEVELOPMENT

TETON COUNTY WYOMING

MEMO

Planning Division
ph 307.733.3959
fax 307.733.4451

Building Division
ph 307.733.7030
fax 307.739.9208

To: Blair Leist, Principal Planner

Cc: via email:

Tom Campbell, BRCI

Nancy Arkin, VLA

From: Amy Kuszak, Environmental Planner

Date: January 29, 2008

Subject: Teton Meadows Ranch Environmental Analysis and Wetland Delineation Review (EVA 07-0016, NRR 07-0015) PIDN 22-40-16-17-3-00-007 and 22-40-16-19-1-00-041

I have reviewed the Environmental Analysis (EA) and the Wetland Delineation for the proposed Teton Meadows Subdivision submitted to the Planning Department on November 16, 2007 and August 22, 2007, respectively.

EA Requirement
Although this development proposal is exempt from the EA requirement pursuant to Section 3130.H, the applicant did submit an EA for the Planning Department's review. Section 3130.H permits the Planning Director to exempt the EA requirement if: 1) the parcel is outside the NRO, 2) the application for development demonstrates compliance with all setback standards specified in Division 3200, and 3) the application for development clearly preserves natural resources in accordance with the ordinal ranking included in Section 3211. The application as presented meets all three criteria outlined in Section 3130.H.

Wetlands/Waterbodies
The proposed development does result in significant impacts to irrigation induced wetlands. Section 3220.B.3 specifically exempts irrigation induced wetlands from LDR wetland protection standards. The only Teton County protected wetlands on the property are located in the northeast corner of the development, along Flat Creek. The application does not propose impacts to the protected wetlands or their setbacks.

The property contains numerous irrigation ditches one of which, Susannah Slough, was closely examined to determine whether or not it is a naturally occurring stream and therefore protected under the Section 3220 of the LDRs. The following evidence was provided demonstrating that Susannah Slough is not a natural channel and that it is manmade and was dug predominately in uplands.

- Aerial photography and site verification proved that there is no evidence of natural spring or other water source feeding Susannah Slough.

- Natural springs in the area are unlikely due to the depth of natural groundwater and permeable soils.
- Some stretches of Susannah Slough contain spring creek-like characteristics (wide shallow, meandering). However, most of Susannah Slough has characteristics typically found in manmade irrigation ditches (narrow, linear, spoil piles along banks). The natural appearing characteristics are likely due to the use of historic swales left behind by ancestral streams.

It is important to note, that although Teton County does not protect Susannah Slough or the wetlands adjacent to it, the US Army Corps of Engineers does take jurisdiction over those waters.

Wildlife
The property contains spring, summer, fall and winter/yearlong range for big game. However, the property is not mapped nor does it contain crucial winter habitat for big game, which along with migration corridors are the only big game habitats protected by the NRO. In addition, as stated in the WGF's December 17, 2007 letter, existing development surrounding the subject property has resulted in minimal use by elk and deer.

The Wyoming Game and Fish (WGF) digital mapping includes a mapped elk migration corridor in the northern portion of the property. Planning Staff discussed this mapped corridor with WGF staff on September 4, 2007. They stated that the Teton Meadows property is no longer a crucial migration corridor and the historic corridor was eliminated by residential subdivisions along South Park Loop Road. However, WGF also stated that big game will likely continue to move through the area on occasion.

Recommendations
The development, as proposed, complies with Article III of the LDRs with the following conditions and recommendations (recommendations are *italicized*).

Noxious Weeds

1. The Final Development Plan application shall include a noxious weed management plan to address noxious weed control prior to initial ground disturbance, during construction, re-vegetation and build out. *It is recommended that the applicant consult with Teton County Weed and Pest and implement any recommendation they may have*.

Wildlife

2. To avoid human/bear conflict, all trash, including human trash generated during construction shall be stored indoors or within a bear resistant container certified by the Interagency Grizzly Bear Committee (IGBC).

Habitat Mitigation

3. The proposal includes a conceptual habitat enhancement plan to be located in areas designated as open space. While conceptually the plan is a positive environmental component of the development, the Final Development Plan shall include the habitat enhancement plan in adequate detail to determine the general location, extent, type of habitats and the types of wildlife that will benefit from the enhancement.

Fencing

4. At Final Development Plan the applicant shall provide fencing standards for the development which will specifically address the locations where fences can be located and locations where they are prohibited, the materials permitted and specific design

criteria. Unnecessary fencing shall be prohibited. At minimum all proposed fences shall comply with Section 49220, *Wildlife Friendly Fencing* of the Land Development Regulations.

5. Prior to Final Development Plan approval, all existing barbed wire and non-wildlife fencing shall be removed.

Landscaping

6. *It is recommended that native vegetation that is less palatable to big game and bears be planted around buildings and in areas of human occupation to help reduce the potential for human-wildlife encounters.*

Pets

7. All pets shall be restrained at all times and not permitted to roam free.

Digital Data

8. Please provide the Planning Department with a digital copy of all environmental information including:
    - .pdf files of the EA and Wetland Delineation
    - spatial data for waterbodies (including irrigation ditches), Teton County protected wetlands and resource setbacks, vegetation, enhancement areas, etc.

No County development permits will be issued prior to receiving the required digital data.