ENVIRONMENTAL ANALYSIS
Wilson Boat Ramp

10.93-acre property located in
NE ¼ of the SE ¼ of Section 23, Township 41N, Range 117W
Teton County, Wyoming

Prepared for:
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PROJECT OVERVIEW

Teton County, WY (TC) seeks to improve the Wilson boat ramp area along the Snake River. The Wilson boat ramp has little development and experiences high use by the public and commercial operations. The lack of improvements at the boat ramp limits the functionality and safe operation of the site. The property is currently owned by the Bureau of Land Management (BLM). TC is applying for a Conditional Use Permit (CUP) to construct improvements to remedy this situation. TC applied for and was issued a BLM Right-of-Way permit (WYW-181638) to construct said improvements on January 10, 2014. The proposed development will include a parking area, a new levee access road, a new bathroom, group meeting areas, and a network of pedestrian pathways to allow for handicap access.

HABITAT INVENTORY

SITE CONDITIONS

The project area is located entirely within the Natural Resource Overlay (NRO), adjacent to the Snake River, Highway 22, and the Moose-Wilson Road. The property is currently developed and used as a very popular boat ramp to access the Snake River. The current development consists of a gravel access road, a recreational pathway, a gravel two track road, gravel boat ramp, small gravel parking area, two vault toilets, a small kiosk, and a portion of the Snake River levee, as shown in Figure 1. The property is relatively level except for moderate slopes along the gravel access road shoulders and the levee. Wetlands are present throughout the property and are associated with areas around a pond, subtle swales, and areas of seasonal high ground water.

VEGETATIVE COVER TYPES

The vegetative communities found on the parcel are associated with landscape and hydrologic features. These communities are shown in Figure 2 and are characterized as follows:

Scrub-Shrub Wetland (WSS)

There are six scrub-shrub wetlands located within the property. These are located across the entire parcel, but are concentrated in the western half. They are dominated by willow, dogwood, and cottonwood in the over story and equisetum, sedges and grasses in the understory. These wetlands are located in areas with seasonal high groundwater and areas that receive surface flows through a culvert at the northwest corner of the property.

Mesic Tall Shrub (MTS)

Tall shrub habitat is located adjacent to wetlands. The tall shrub habitat is dominated by willow, dogwood, silver berry, alder, buffalo berry and wild rose. This covertype exists as understory in much of the mature narrowleaf cottonwood forest.

Narrowleaf Cottonwood - Mature (MCM)

A mature narrowleaf cottonwood forest is located throughout the property. This covertype was likely established during historic Snake River floods prior to construction of the levees. The understory is comprised of scrub-shrub wetland, mesic tall shrub, and mesic grassland depending on site topography. Cottonwood regeneration is occurring within this covertype.

Disturbed (Dist)

There are four disturbed areas within the property. A recreational pathway (Path22) located on the western edge, a narrow gravel road and turnaround area on the eastern half, a gravel access road along the northern edge, and the Snake River levee on the eastern edge. The levee area contains restrooms and an informational kiosk. The levee area also currently serves as an unimproved boat ramp and vehicle parking. Additional areas within the proposed development footprint show signs of past disturbance in the form of small gravel piles and

FIGURE 1. SITE CONDITIONS & PHOTO POINT LOCATIONS

FIGURE 2. VEGETATIVE COVER TYPES

excavation (see photopoints #7 and #9 in Appendix A). The historic impacts have experienced revegetation and are not being considered disturbed for the purposes of this analysis.

PROTECTED HYDROLOGIC RESOURCES

Protected hydrologic resources found on the Boat Ramp Property include the Snake River, a pond, and scrub shrub wetlands (Figure 3). The wetlands on the eastern half of the property are ground-water fed, while the wetlands on the western half of the property receive periodic surface flow from the R-Park property to the north and the pond. Only the portion of the property that encompasses the Snake River and the levee is located in the 10-year floodplain. The presence of the levee shields the majority of the property from the floodplain.

The eastern most portion of the parcel is mapped as being in the AE Floodway. This designation corresponds to this area being within the 100-year floodplain. The FEMA map shows this mapped unit extending beyond the Snake River levee, therefore a minor portion of the proposed development is located within the AE Floodway. The proposed development overlapping this floodway is likely attributed to the resolution of the FEMA map.

HABITAT RANKING

The dominant vegetative covertypes found on the Wilson Boat Ramp property, their acreage and ordinal ranking are depicted in Table 1.

TABLE 1. HABITAT RANKING

Covertype	Acreage	Ordinal Ranking
Waterbodies	0.6	10
Scrub-Shrub Wetland	2.96	10
Mesic Tall Shrub (understory)	2.96	8
Mesic Mature Cottonwood Forest	2.09	6
Disturbed	2.39	N/A

*Note: Covertype acreages include underlying development.

FIGURE 3. PROTECTED HYDROLOGIC RESOURCES

PROTECTED WILDLIFE HABITATS

The Teton County EA process protects 11 habitat types associated with 6 wildlife species in the valley including elk, mule deer, moose, trumpeter swans, bald eagles and cutthroat trout. These habitat types are protected by setbacks or other requirements. Disturbance may be permitted if avoidance cannot be achieved and appropriate mitigation plans are submitted. The wildlife resources protected by the EA process and their presence or absence on the Boat Ramp Property and in the vicinity are described below and depicted in Figure 4.

Crucial Elk Migration Routes

Crucial elk migration routes are used by elk 8 out of every 10 years to migrate from summer to winter ranges (Teton County 2016). Elk are known to migrate throughout the Snake River corridor, but only select areas have been mapped as "crucial" migration routes. No Wyoming Game & Fish mapped crucial migration routes are found on the property.

Crucial Elk Winter Range

Crucial elk winter range consists primarily of xeric and mesic sagebrush grasslands, mixed shrub, mesic and xeric open grassland and agricultural meadows that are used by elk 8 out of every 10 years (Teton County 2016). These covertypes are not present on the property.

Crucial Mule Deer Migration Routes

Mule deer migration corridors are used by mule deer to migrate from summer to winter ranges, and several important routes have been identified in the county (Teton County 2016). No mule deer migration routes are near the property.

Crucial Mule Deer Winter Range

Crucial mule deer winter range consists of xeric and mesic sagebrush-grasslands and mixed shrub types which are used by mule deer 8 out of every 10 years (Teton County 2016). South facing slopes are also known to provide crucial mule deer winter range. Crucial mule deer winter range is not located on the property.

Crucial Moose Winter Habitat

Crucial moose winter habitat includes primarily palustrine-shrub willow and cottonwood, palustrine-forested cottonwood, highly mesic forest-cottonwood, and cottonwood/spruce, upland forest-subalpine fir habitat types, and secondarily xeric and mesic sagebrush-grasslands and mixed shrub types that are used by moose 8 out of every 10 years (Teton County 2016). The WGFD GIS data layer identifies the eastern half of the property as crucial moose winter/year long habitat (Wyoming Game and Fish Department. Geospatial Database. 2016). Moose browse throughout the property year-round and currently co-exist with existing development on the property. In order to maintain the most valuable moose winter habitat on the property, any development that occurs in the tall shrub or scrub-shrub covertypes on the property will be mitigated for. See "Mitigation" on page 22 of this report.

Trumpeter Swan Nesting Habitat
Trumpeter swan nesting habitat is found on wetland and aquatic sites that have adequate open water and forage and protection from predators. These locations typically are islands located in ponds and wetlands in the Snake River. This habitat is not present on the parcel.

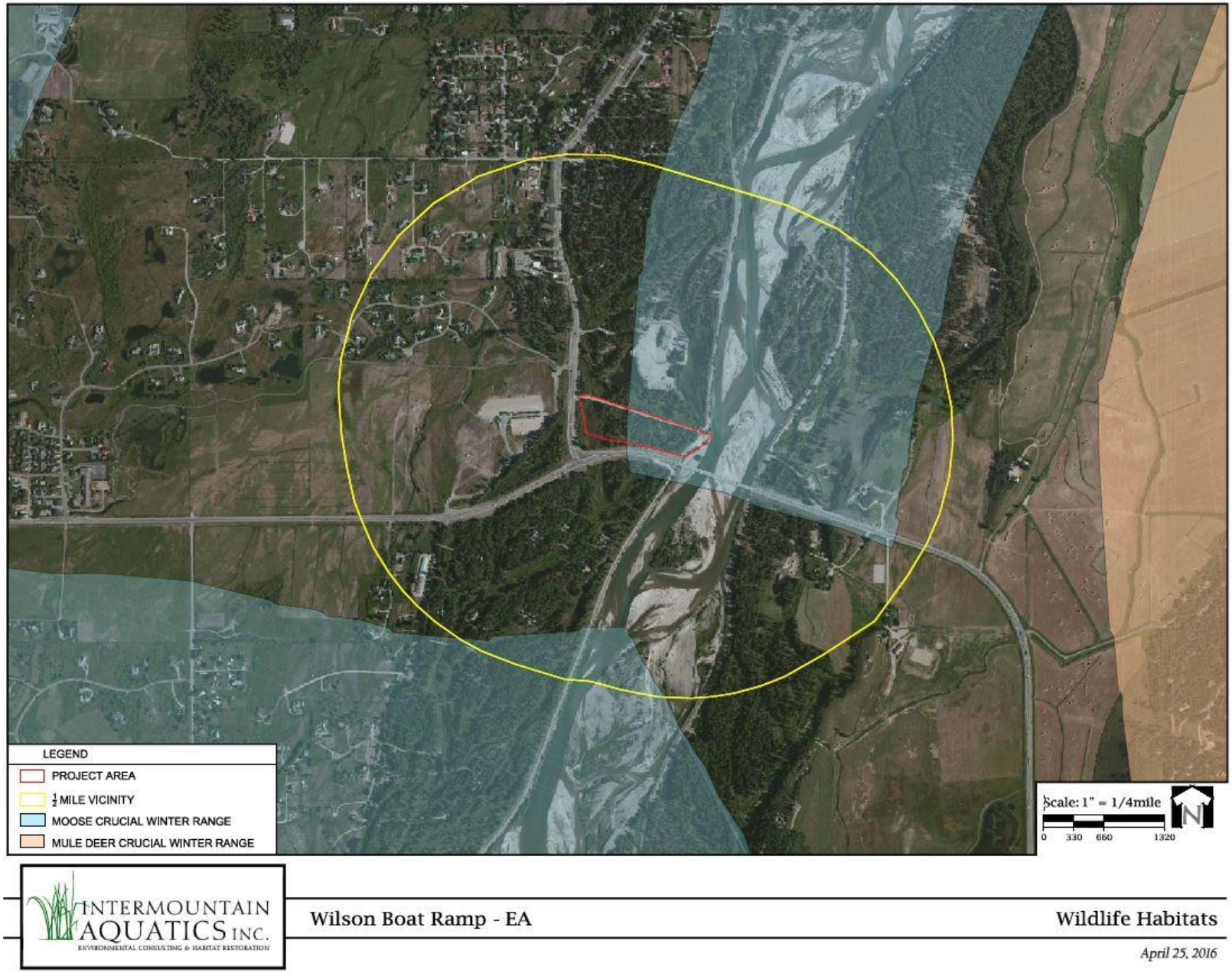
Trumpeter Swan Winter Habitat
Trumpeter swan winter habitat consists of aquatic sites with abundant vegetation that stay open throughout the winter months. Trumpeter swan winter habitat is not available on the parcel.

Cutthroat Trout Spawning Areas
Snake River cutthroat trout spawning habitat is found in riffles along the Snake River and its tributaries. Inland cutthroat trout species are native to western rivers and streams and have been recognized as a significant species in Teton County (Teton County 2016). Cutthroat trout spawning habitat is not found on the parcel.

Bald Eagle Nesting Area
Bald eagle nesting habitat is found along the riparian corridors of the Snake River and its larger tributaries. Prime habitat consists of multi-aged stands of riparian forest near watercourses or water bodies, which provide foraging opportunities (Teton County 2016). The cottonwood forest on the Boat Ramp Property may provide future bald eagle nesting sites, however currently there are no active nest sites located within 660 feet of the property according to WGFD nest locations received from Susan Patla in January 2016. Active nests are found approximately a mile to the south and over a mile to the north of the property.

Bald Eagle Crucial Winter Habitat
Crucial bald eagle winter habitat is typically found in conjunction with crucial ungulate winter range and may include riparian areas and nest sites. The property likely supports crucial bald eagle winter habitat in conjunction with the crucial moose winter habitat.

FIGURE 4. PROTECTED WILDLIFE HABITATS



PROTECTED WILDLIFE HABITAT SUMMARY

The property provides crucial moose and bald eagle winter habitat. A summary of the presence or absence of protected wildlife habitat types is listed in Table 2.

TABLE 2. WILDLIFE HABITATS PROTECTED BY THE NRO

HABITAT TYPE	PRESENCE ON THE PROPERTY
Elk Migration Corridors (non-crucial)	NO
Crucial Elk Winter Range	NO
Crucial Mule Deer Migration Corridors	NO
Crucial Mule Deer Winter Range	NO
Crucial Moose Winter Habitat	YES
Trumpeter Swan Nesting Habitat	NO
Trumpeter Swan Winter Habitat	NO
Snake River Cutthroat Trout Spawning Habitat	NO
Bald Eagle Nest Area	NO
Bald Eagle Crucial Winter Habitat	YES

DEVELOPMENT IMPACT ASSESSMENT

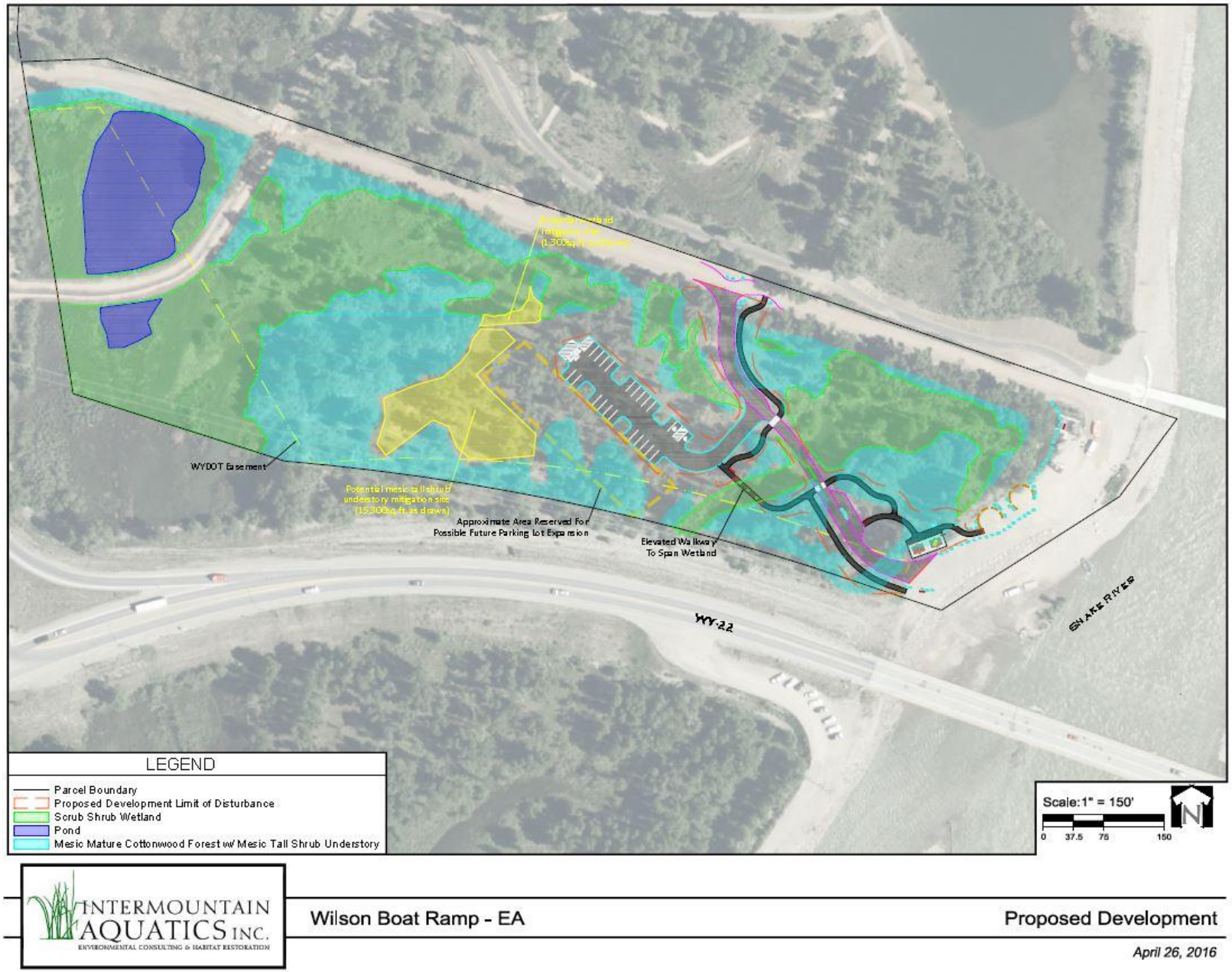
PROPOSED DEVELOPMENT

Teton County, WY (TC) is applying for a Conditional Use Permit (CUP) to construct improvements on the existing parcel owned by the Bureau of Land Management (BLM). TC applied for and was issued a BLM Right-of-Way permit (WYW-181638) to construct said improvements on January 10, 2014. This parcel has been historically used as a public access point (put in and take out) to the Snake River for decades and has seen a significant increase in commercial and private users over the past 10 years. The proposed development is meant to address this issue by improving functionality, safety and ease of access for all users while minimizing impacts on the overall site. The components are consistent with BLM approved Right-of Way application and the "Final River Management Plan" approved by the County Commissioner in March 2015. Key development components are summarized as follows:

- Construct a new "levee access" road from the existing east – west gravel access road from WY390 (Moose – Wilson Road) to provide a more efficient means of unloading and loading boats, guides, equipment, and users. This will increase safety and potential conflicts between commercial and private users by limiting "two way" travel and creating a "one way" loop for all vehicles and trailers at the Snake River staging area.

- Construct a new "off road" parking area (total 30 spaces) dedicated to public / non-commercial users. Commercial users will be required to use the Stilson Parking Lot for vehicular / trailer parking on the west side of WY 390.

FIGURE 5. PROPOSED DEVELOPMENT PLAN



- Construct a network of six foot wide pathways to allow for pedestrian / handicap access from the parking area to the new bathroom and levee.

- Remove the existing double sided vault toilet and replace with a new bathroom facility. Variance required.

- Construct two small "group meeting areas" in proximity of the new bathroom and existing levee.

- Remove the existing kiosk and replace with a new informational board at its current location. Variance required.

TABLE 3. PROPOSED DEVELOPMENT - SITE CALCULATIONS

Site Calculations	Area	Notes
Lot Size (acres)	10.95	
Impervious Surfaces Proposed (sq ft)	27,295	Access Roads and Pathways

HABITAT IMPACT ASSESSMENT

1. Areas rendered unusable by the proposed development for species protected under Division 3200 of the LDRs.

The proposed development plan strategically minimizes impacts to wetlands, mesic tall shrub, and narrowleaf cottonwood trees. Abundant wildlife currently utilize the property with the existing development and they are expected to continue to use the open space and non-developed areas on the property year-round. Habitat will be lost where impervious surfaces are proposed.

2. Areas impacted, degraded, or fragmented to the extent that they will no longer support long-term utilization by protected species.

The proposed development plan will impact crucial moose and bald eagle winter habitat through impacts to scrub shrub wetlands (616 sq ft), mesic tall shrub (12,539 sq ft), and narrow leaf cottonwood (160 trees) removed. Several options for mitigating these impacts are described in the Mitigation section of this report.

3. Areas will be unaffected by the development so that the current quality of the wildlife habitat is maintained.

Areas outside of the proposed development limits of disturbance will maintain quality wildlife habitat. Wildlife utilize the property despite the high amount of seasonal pedestrian and vehicular traffic. The proposed development will undoubtedly result in an increase of use within the core of the property, but the majority of this use will remain

during daylight hours between April and November, outside of the crucial winter habitat season.

4. Areas that will be enhanced as wildlife habitat relative to current conditions.

Several options for mitigating impacts are described in the Mitigation section of this report. The on-site, in-kind option, with a seasonal vehicle closure, would enhance the habitat available in the project vicinity in the form of added cover and ungulate forage.

5. Areas where the proposed development poses a threat to the water quality of any rivers, streams, water bodies, or wetlands protected by Teton County.

The proposed project is not expected to pose any threats to water quality.

6. Locations where protected species may be displaced to by the proposed development and the suitability of those areas for continued survival of the affected species.

Protected species are not likely to be displaced by the proposed development plan, if a seasonal vehicle closure is enforced.

SETBACKS/BUFFERS

Applicable development setbacks located on this property include: Snake River setback (150ft), natural pond setback (50ft), and wetland setbacks (30ft). These setbacks overlaid onto the proposed development limit of disturbance are shown in Figure 6. Given the nature of this project and it's purpose of providing river access, encroachment into the river setback is expected and unavoidable. While the proposed development aimed to minimize wetland impacts, avoiding all wetland setbacks was not possible given site conditions. As long as traditional best management practices, such as silt fencing and construction site perimeter fence are placed during construction to protect wetlands from storm water runoff and siltation, the development will not have a detrimental impact on adjacent wetlands.

PROJECT VICINITY IMPACT ASSESSMENT

Within a half-mile radius of the property, land uses include residential, commercial, and agricultural (Figure 7). Conservation easements exist on the property immediately to the north and east of the Boat Ramp, along with properties across the Moose-Wilson Road to the west. Protected resources within the project vicinity include the Snake River, spring creeks, ponds and wetlands. Protected habitats in the vicinity include crucial moose winter habitat, trumpeter swan winter habitat, and cutthroat trout spawning areas (Figure 4). The proposed development is consistent with development patterns in the area and should not negatively affect the area's wildlife movement. Vegetative covertypes found on the parcel are consistent with those found elsewhere in the Snake River corridor. A cottonwood forest parallels the Snake River by approximately 2000 feet on each side. Mapping at this scale does not depict scrub shrub wetlands in the vicinity, but they exist in good quantities along the Snake River corridor and provide crucial moose winter habitat. Much development and recreation currently exist in the project vicinity. The proposed development is not expected to significantly increase the amount of use

experienced on the property or in the vicinity. The proposed plans will increase the functionality and safety of the site. The proposed development is not expected to negatively impact the vicinity's overall environmental function.

ENDANGERED PLANT AND VERTEBRATE SPECIES

The following species are classified as threatened or endangered by the U.S. Fish and Wildlife Service and appear on the Wyoming state list (USFWS 2015). None of these species are known to occur on the Wilson Boat Ramp property.

Vertebrates

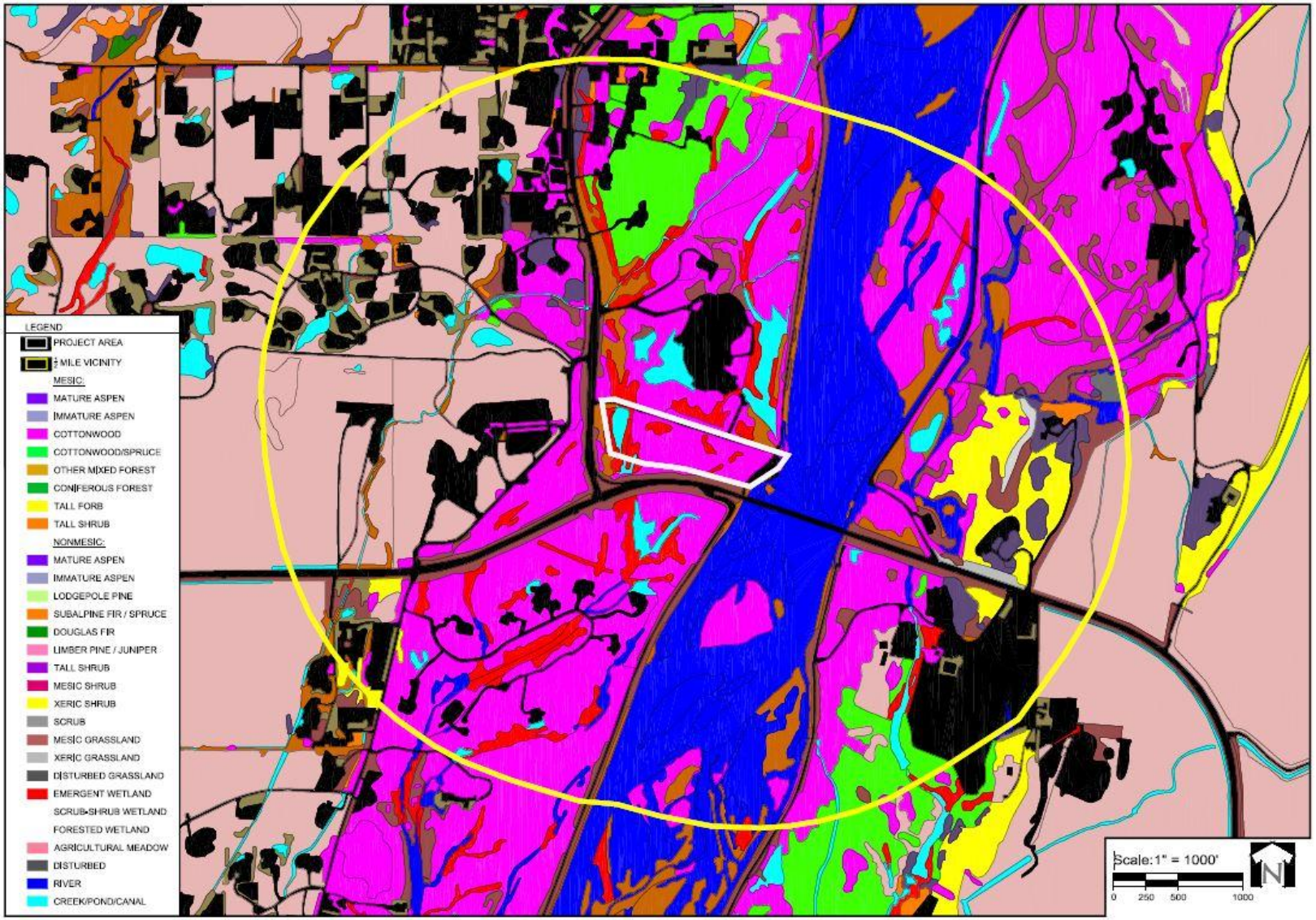
Status	Common Name	Latin Name
Endangered	Bonytail chub	*Gila elegans*
Endangered	Humpback chub	*Gila cypha*
Endangered	Whooping crane	*Grus americana*
Endangered	Kendall warm springs dace	*Rhinichthys osculus thermalis*
Endangered	Black-footed ferret	*Mustela nigripes*
Endangered	Colorado pikeminnow	*Ptychocheilus lucius*
Endangered	Pallid sturgeon	*Scaphirhynchus albus*
Endangered	Razorback sucker	*Xyrauchen texanus*
Endangered	Least interior tern	*Sterna antillarum*
Endangered	Wyoming toad	*Bufo hemiophrys baxteri*
Endangered	Gray wolf	*Canis lupus*
Threatened	Grizzly bear	*Ursus horribilus*
Threatened	Canada lynx	*Lynx canadensis*
Threatened	Preble's meadow jumping mouse	*Zapus hudsonius preblei*
Threatened	Piping Plover	*Charadrius melodus*

Plants

Status	Common Name	Latin Name
Endangered	Blowout penstemon	*Penstemon haydenii*
Threatened	Colorado butterfly plant	*Gaura neomexicana c.*
Threatened	Ute ladie's tresses	*Spiranthes diluvialis*
Threatened	Western prairie fringed orchid	*Platanthera praeclara*
Threatened	Desert yellowhead	*Yermo xanthocephalus*

FIGURE 6. SETBACKS & BUFFERS

FIGURE 7. PROJECT VICINITY IMPACTS



ALTERNATIVE SITE DESIGN ANALYSIS

The original concept design for the boat ramp improvements was developed in 2013. Harmony Design & Engineering and Intermountain Aquatics were then hired to look at potential impacts, site functionality and finalize the plan. The current proposed plan has fewer impacts to wetlands, and is a better design for public access. The original concept plan is presented here as the "Alternative" and is shown in Figure 8. Given the timeline for the project and this assessment, the proposed site plan considered an expired Aquatic Resource Inventory (conducted by Biota 2010), shown in Figure 9. This Aquatic Resource Inventory was updated by Intermountain Aquatics in April 2016 to create the wetland maps and impacts shown in this report.

TABLE 4. PROPOSED & ALTERNATIVE SITE DEVELOPMENT CALCULATIONS

Site Calculations	Proposed	Alternative
Lot Size (ac)	10.95	10.95
Area of Impervious Surface (sq ft)	27,295	23,777
Wetland Impacts (sq ft)	616	5,159
Tall Shrub Impacts (sq ft)	12,539	10,781
Cottonwood Trees (ea)	160	147
Engleman Spruce (ea)	1	1

TABLE 5. PROPOSED & ALTERNATIVE OPEN SPACE ANALYSIS

Open Space Standards	Proposed	Alternative	Notes
Protects Wildlife Habitat and Migration Corridors?	NO	NO	Development takes place in Crucial Moose Winter Range
Protects Scenic Vistas and Natural Skylines?	YES	YES	
Protects Natural Waterbodies, Floodplains and Wetlands?	YES	NO	Alternative plan had far greater impacts to wetlands
Protects Agricultural Activities?	N/A	N/A	No agricultural activities present or proposed on the property
Enhances Public Pathways?	YES	YES	The Proposed plan provides better designed pathways
Enhances Public Parks and Accesses to Public Lands?	YES	YES	The Proposed plan provides better usage and access to public land

After analyzing the impacts associated with the proposed and alternative development plans, we have determined that the proposed is the preferred development plan. The proposed plan has more square feet of impervious surface, slightly more impacts to tall shrub and cottonwood trees than the alternative, but has 12% of the impacts to wetlands compared to the alternative.

FIGURE 8. ALTERNATIVE PLAN

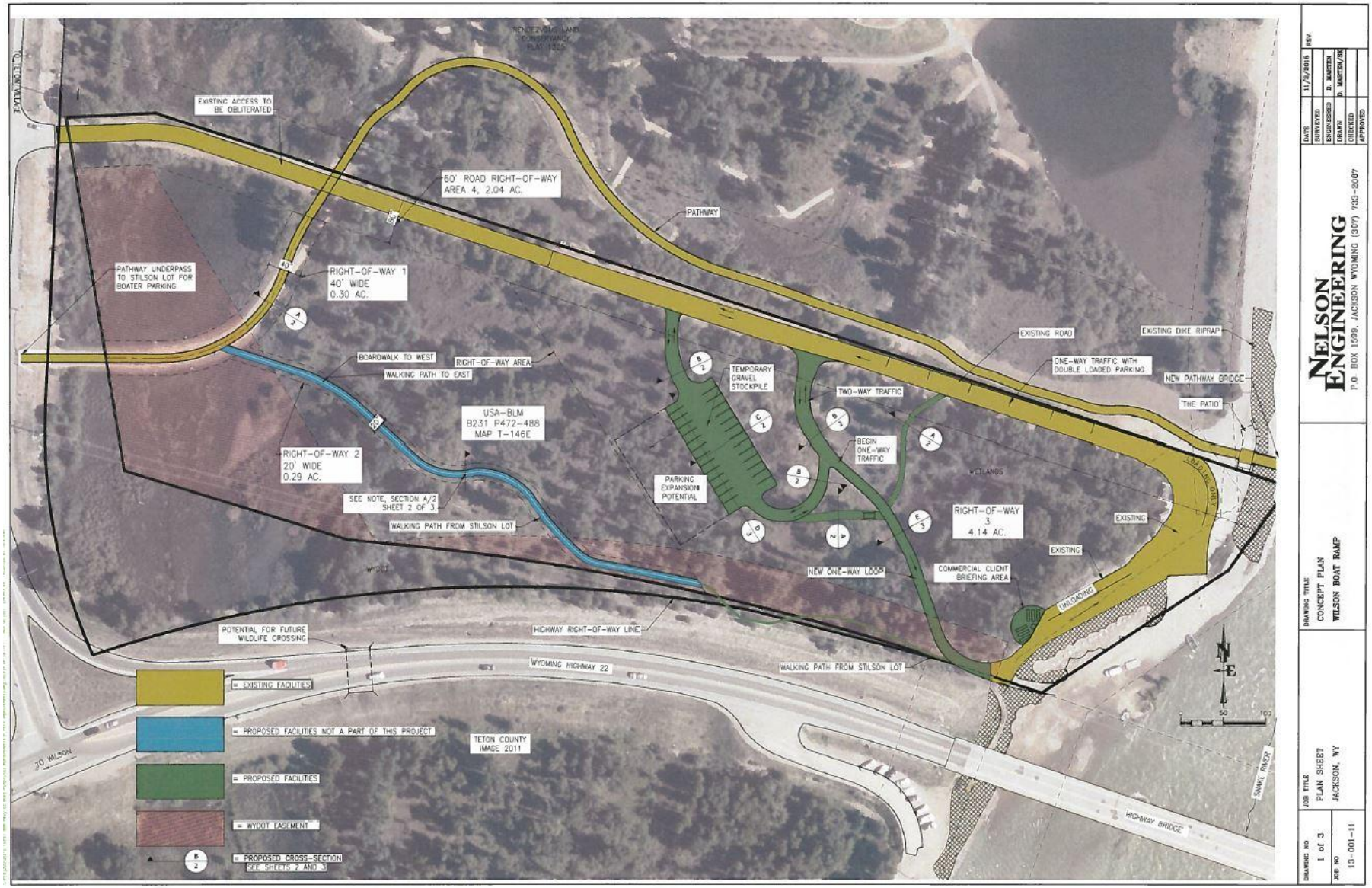
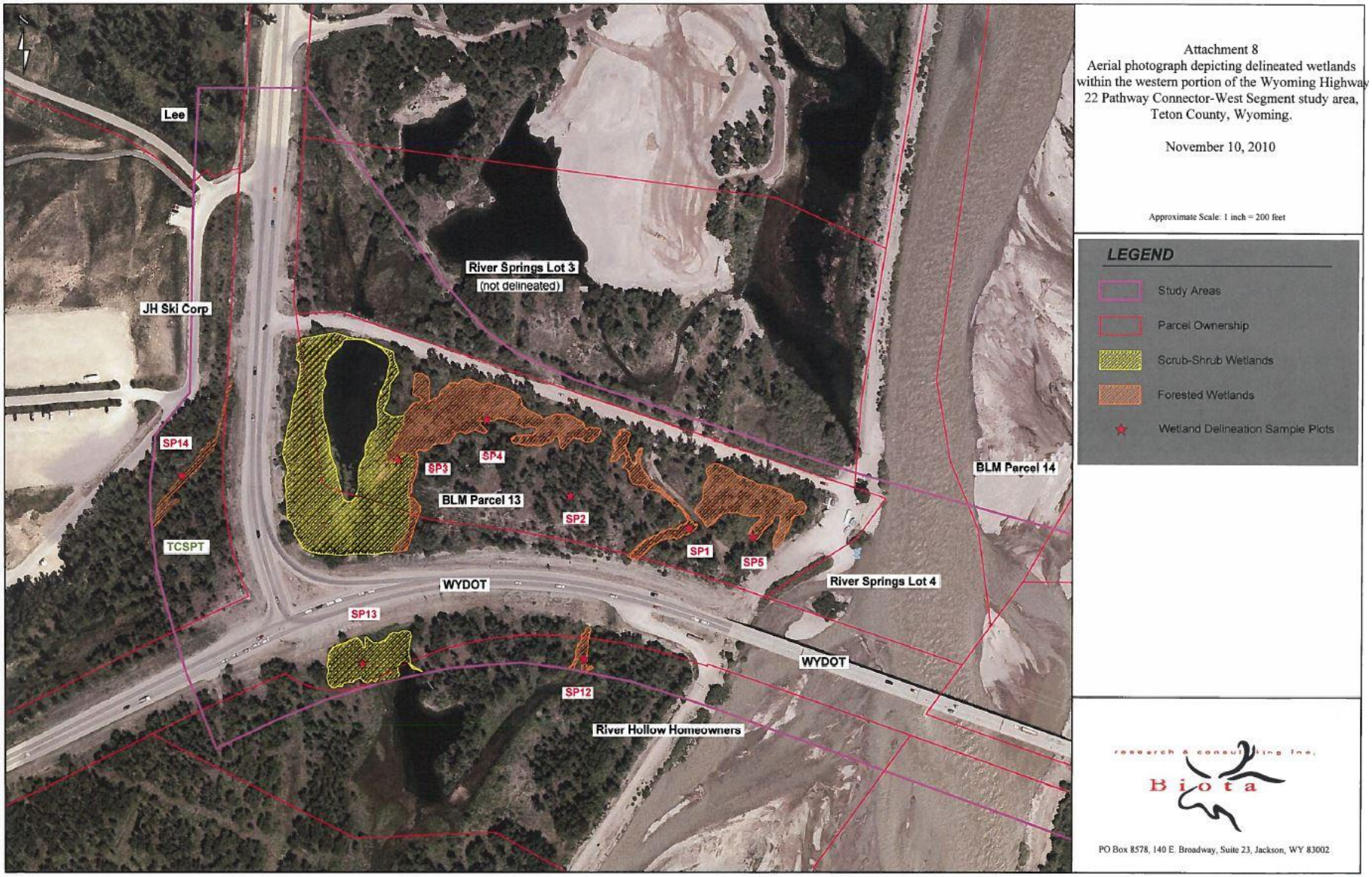


FIGURE 9. 2010 AQUATIC RESOURCE INVENTORY



MITIGATION

The proposed development will impact scrub shrub wetlands, mesic tall shrub understory, and trees within the mature narrowleaf cottonwood forest. These vegetative covertypes shall be mitigated for as mandated by the Teton County LDR's. Given site constraints and the widespread presence of high ranking vegetative covertypes, several options for mitigating the development impacts are presented below. IMA reached out to WGFD to review these mitigation options, but their wildlife staff was unable to respond at the time of the report submittal. WGFD wildlife should be consulted to inform the final mitigation strategy chosen for this site. IMA did discuss impacts to the fishery with the WGFD fish staff. The fishery from Wilson to South Park is open throughout the winter and WGFD fish staff felt that the existing fishing regulations were sufficient protection for aquatics resources in the Snake River.

Scrub Shrub Wetland

Scrub shrub wetland impacts by the proposed development total 616 square feet (0.014acre). A suitable mitigation area has been identified onsite and is depicted in Figure 5 and shown in photopoint #4 (left side of frame). This area will allow 2:1 mitigation based on area (1232 sq.ft.). The site will need to be graded to provide proper wetland hydrology and planted with hydrophytic woody species such as willow, alder, and dogwood.

Mesic Tall Shrub

Impacts to mesic tall shrub by the proposed development total 12,539 square feet. Mitigation for impacts to tall shrub are typically performed by establishing nursery grown plants at 2:1 based on area. A contiguous area measuring 25,078 square feet suitable for tall shrub mitigation does not exist on the parcel. Suitable mitigation areas are limited by the presence of wetlands, trees, and undisturbed tall shrub vegetation. Other considerations limiting on-site, in-kind mitigation are: 1. Locating mitigation within the WYDOT easement is not favorable and 2. Locating mitigation directly to the southwest of the proposed parking area will hinder future parking expansion. A planting density of 10-foot centers is appropriate based on conditions currently found on the property. At this planting density and 2:1 mitigation based on area, this equates to 251 plant units. Three options for mitigating these impacts are presented below.

<u>Tall Shrub Mitigation Alternative 1 - Off-site, in-kind mitigation</u>

Locate an appropriate off site location where 251 shrubs planted at an average density of 10-foot centers can be properly installed, irrigated, and protected during plant establishment.

<u>Tall Shrub Mitigation Alternative 2 - On-site, in-kind, increased plant density mitigation</u>

A suitable tall shrub mitigation site has been identified on the property and is depicted in Figure 5. This site is smaller in size than the area required for 2:1 mitigation based on area and measures approximately 15,300 square feet. Plant the quantity of plant units described above (251) at a greater density within this area. This option would result is an approximate plant spacing of 7.5-foot centers. In order for this option to function

throughout the crucial winter season, a vehicle closure should be enforced and the access road should remain gated and plowed during the crucial winter months.

Tall Shrub Mitigation Alternative 3 - Wildlife fencing

Given the proximity of the property to Highway 22 and Highway 390, and the high amount of both moose and vehicular traffic. Decreasing the potential for vehicle/wildlife collisions should be considered. Construct a wildlife fence that funnels moose and other game under the Wilson Bridge. This would decrease game road crossings from the property south over the highway. The fence design would have to consider northward travel which could include earthen ramps.

Narrowleaf Cottonwood Trees (and Engleman Spruce)

Impacts to trees by the proposed development are 160 Narrowleaf Cottonwood and 1 Engleman Spruce. Impacts to trees on this site are more appropriately quantified on a plant unit basis rather than area. At 2:1 mitigation per unit, a total of 322 trees will be required. The same site restrictions, as illustrated above, apply to locating a suitable on-site in-kind mitigation area for trees. Off site mitigation is the only practical in-kind mitigation option for trees.

METHODOLOGY

Intermountain Aquatics conducted multiple site visits to verify and map vegetation, wetlands, and wildlife habitats. The first visit occurred on January 14, 2016 to investigate vegetative covertypes and potential mitigation sites. The second visit occurred on February 11, 2016 to flag the extents of tall shrub vegetation. At this time Pierson Land Works conducted a survey to map the trees and tall shrub extents within the project area. Three more visits occurred in April 2016 to complete an Aquatic Resource Inventory, establish photo points, investigate potential upland and wetland mitigation areas, and collect additional survey data for mapping purposes.

The Aquatic Resource Inventory completed in April 2016 considered the 2010 Aquatic Resource Inventory completed by Biota. The 2010 delineation was flagged in the field for comparison of current site conditions. Wetland boundaries were then updated and re-mapped to reflect current conditions and available field data. All survey data collection that IMA performed was done with a survey grade GPS unit. Trees within the proposed site plan limit of disturbance were surveyed by Pierson Land Works.

RECOMMENDATIONS FOR HUMAN USES

The following recommendations for human use should be followed to minimize impacts and to allow wildlife to continue to use the property.

- SWPP BMPs should be used throughout construction to prevent sediment and construction debris from entering wetlands
- Trash should be stored in bear proof containers
- Pets should be kept under control and prevented from harassing wildlife especially during winter months.
- Seasonal closure to vehicles should be imposed from December 1 through March 15 to minimize impacts to moose crucial winter range.

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APPENDIX A – PHOTOS

Photopoint #1 Looking Southwest (4/2016)

Photopoint #2 Looking North (4/2016)

Photopoint #3 Looking Southwest (4/2016)

Photopoint #4 Looking West (4/2016)

Photopoint #5 Looking Northeast (4/2016)

Photopoint #6 Looking East (4/2016)

Photopoint #6 Looking North (4/2016)

Photopoint #6 Looking West (4/2016)

Photopoint #7 Looking Northeast (4/2016)

Photopoint #8 Looking North (4/2016)

Photopoint #9 Looking Northwest (4/2016)

Photopoint #10 Looking Southeast (4/2016)

Photopoint #11 Looking Northwest (4/2016)

Photopoint #12 Looking South (4/2016)