APRIL 28, 2023

FRAIZ RESIDENCE

COMPENSATORY MITIGATION PLAN

(Joint Application Block 18)

PREPARED BY:

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INTERMOUNTAIN AQUATICS INC.

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INTRODUCTION

The Fraiz parcel totals 40 acres and is located 4 miles northwest of Victor in Teton County, Idaho, in the NE ¼ NE ¼ of Section 29, Township 4N, Range 45E (Figure 1). The landowner plans to build a driveway, single-family residence, and associated improvements. Site development impacts will result in 0.5 acres of fill in wetlands in the northeast corner of the Property. The 0.5-acre impact area consists of low functioning PEM wetlands on higher ground that have been degraded by historic grazing and depend partly on irrigation return flow. The owner plans to mitigate impacts by converting 0.5 acres of uplands to PSS wetland. Impacts and mitigation do not directly involve streams.

Existing wetlands are documented in a separate Aquatic Resource Inventory report completed by Intermountain Aquatics, Inc. (IMA) in 2022 and submitted with this Plan and permit application. Other supporting documents include a conservation easement and easement baseline report.

1. MITIGATION OBJECTIVES

The objective of the proposed mitigation is to provide 1:1 area replacement for 0.5 acres of fill in low functioning PEM wetlands and provide net functional lift by converting uplands to palustrine scrub-shrub wetland. Establishing new wetlands on the same property will provide functional lift mainly through increased vegetative structure and habitat value (breeding, forage, and cover habitat) as well as small increases in flood storage capacity and other physical and biogeochemical functions.

At the watershed scale, the Property is on Fox Creek 0.5 miles above its confluence with the Teton River. A side channel called Foster Slough exits Fox Creek on the Property. The surrounding Foster Slough wetland complex is regionally significant for wildlife habitat and important for flood water storage in the Teton Basin. Area streams are important to cold-water fisheries including Yellowstone Cutthroat Trout. Mitigation objectives focus on wetland habitat. Effects on streams are small, indirect, and positive.

2. SITE SELECTION

The development site was selected for its relatively low existing and future functional condition and dryness. The proposed mitigation site was selected for (1) physical conditions favorable for creating self-sustaining, high functioning wetlands with reliable hydrology and (2) placing the new wetlands where they can provide the greatest benefit to wildlife given the surrounding landscape. Onsite mitigation makes sense here because a degraded, roadside PEM wetland can be replaced with a higher functioning PSS wetland with high value in the context of the Foster Slough landscape.

2.A. LANDSCAPE SETTING, HYDROLOGY AND AQUATIC RESOURCES

The Fraiz Property is within the Teton River Subbasin HUC-8 (17040204) at the lower end of the Fox Creek-Teton River HUC-12 (170402040107) (Figures 1 and 2). The Fox Creek watershed above the site is approximately 29 square miles. The Property is at the intersection of Fox Creek and Foster Slough at the east edge of the Teton River floodplain and is relatively flat (<1% overall slope).

The Property is zoned LA-35 Lowland Agriculture and includes areas in several Teton County natural resource overlays for wetland and bird habitat. Much of the Foster Slough wetland complex including the Fraiz Property is under conservation easements (Figure 3). Most of the landscape is pasture and wildlife habitat. There is some residential development to the west, south, and east. IDFG owns a neighboring parcel.

Figures 4 and 5 show site characteristics and project work areas. See Appendix B and the ARI for a more detailed site plan, additional aerial images, a 2022 draft FEMA floodplain map, and mapped aquatic resources. Most of the Property, including the mitigation site, is in a Riverine hydrogeomorphic setting in the draft 100-year floodplain. Lidar data shows that wetland-upland transitions on the floodplain occur at around 6002.1-6002.6 ft elevation (Figure 5). The NE corner of the Property, ≈3-4 acres, is on the toe of an alluvial fan and has some Slope HGM characteristics. Most of this corner is above the 100-year draft floodplain (> ≈6002.6 ft elevation here). Preliminary floodplain analysis by Nelson Engineering found that proposed fills are outside the floodplain (Braden Olson, personal communication 4/27/2023).

Existing aquatic resources mapped in the ARI include 21.8 acres of PEM1 wetlands north and east of Fox Creek, 8.7 acres of PSS wetlands south of Fox Creek, and 2.4 acres (2,438 linear ft) of perennial streams. The are no significant areas of open water outside stream channels. The remaining 7.1 acres are uplands in more than 20 scattered patches ranging from less than 0.1 acres to 1.1 acres in size.

Stream and floodplain hydrology are natural except for minor irrigation diversion. Floodplain hydrology features a shallow water table, seasonal to perennial inundation or saturation in swales and other low-lying areas from overbank flooding, and local runoff. Flooding in typical years is ankle to calf deep in swales and less in other areas. Higher elevation wetlands are saturated during and after snowmelt runoff. Foster Slough has limited through-flow during high water. Groundwater discharge on the Property is uncertain and likely minor, but some comparable sites in the Foster Slough area have substantial discharge. Wetlands in the NE corner of the Property are outside the floodplain and fed by local runoff to swales, flood irrigation return flow from the neighboring property (Figure 4), and shallow groundwater.

Human disturbance that affects wildlife is increasing in this neighborhood. Livestock grazing and habitat will remain the main land uses due to conservation easements and planning and zoning codes that limit residential development, but there are existing subdivisions to the south and west. Human disturbance is increasing due to the IDFG public access west of the Property, which results in heavy vehicle traffic on Road W 5000 S and growing recreational use of Fox Creek, the Teton River, and IDFG lands.

Based on these factors, in the absence of development the impact site's already poor condition would be expected to remain relatively poor or decline due to increased traffic or reductions in flood irrigation upgradient. The mitigation site is relatively buffered from human disturbance and hydrologic change and can be expected to be self-sustaining once established. Most importantly, the landscape position on low ground near the valley bottom, in the Teton River and Fox Creek floodplain, makes it likely that hydrology will remain reliable.

Figure 1. Fraiz Property location (red) in the southern Teton Basin. USGS National Map base with 12-digit HUCs (magenta). Stippled hatch includes the Foster Slough wetland complex.

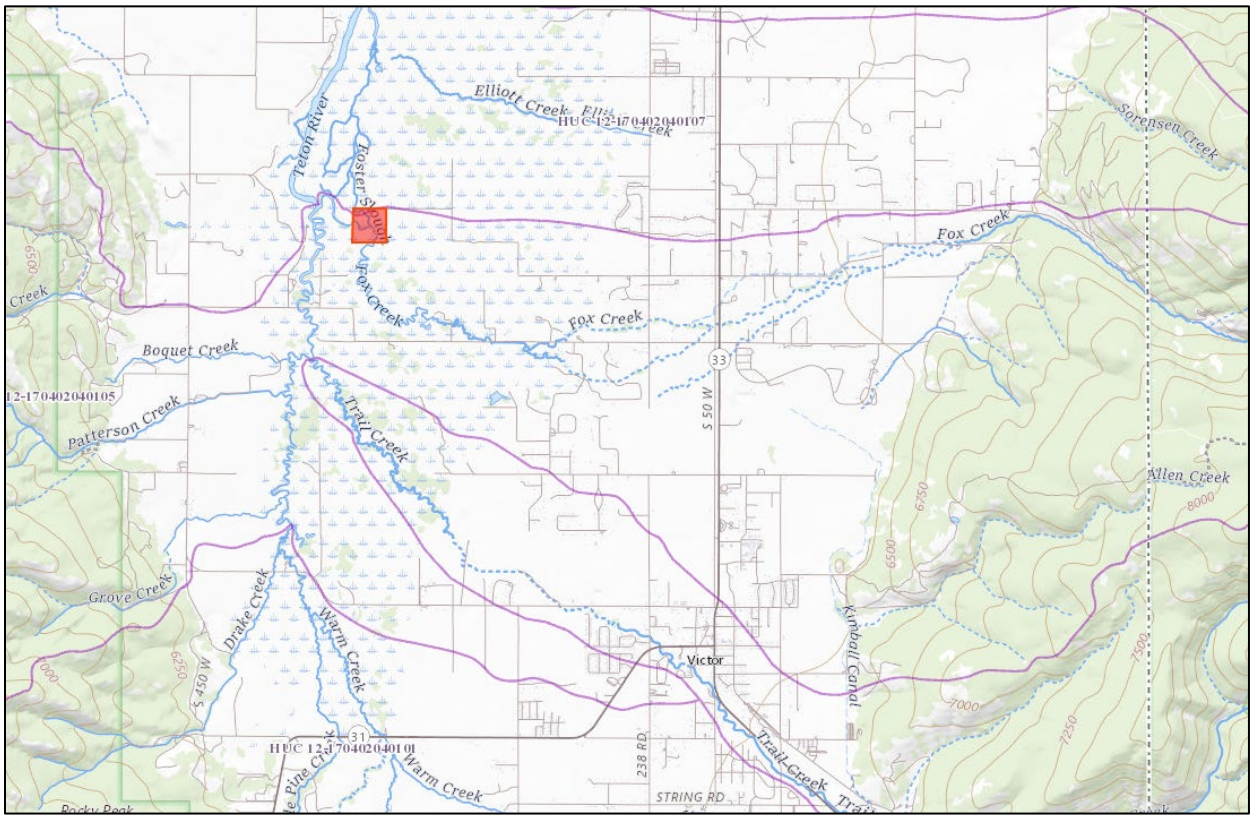


Figure 2. National Wetlands Inventory map for Project vicinity. Fraiz Property (red) is within the Foster Slough wetland complex. Coarse-scale NWI polygons contain unmapped upland inclusions.

Figure 3. Conservation easements held by the Teton Regional Land Trust (green) and others (orange) in the southern Teton Valley as of 2016 including the Project Property (outlined red). http://www.tetonlandtrust.org/images/stories/articles/maps/Public_Map1.jpg.

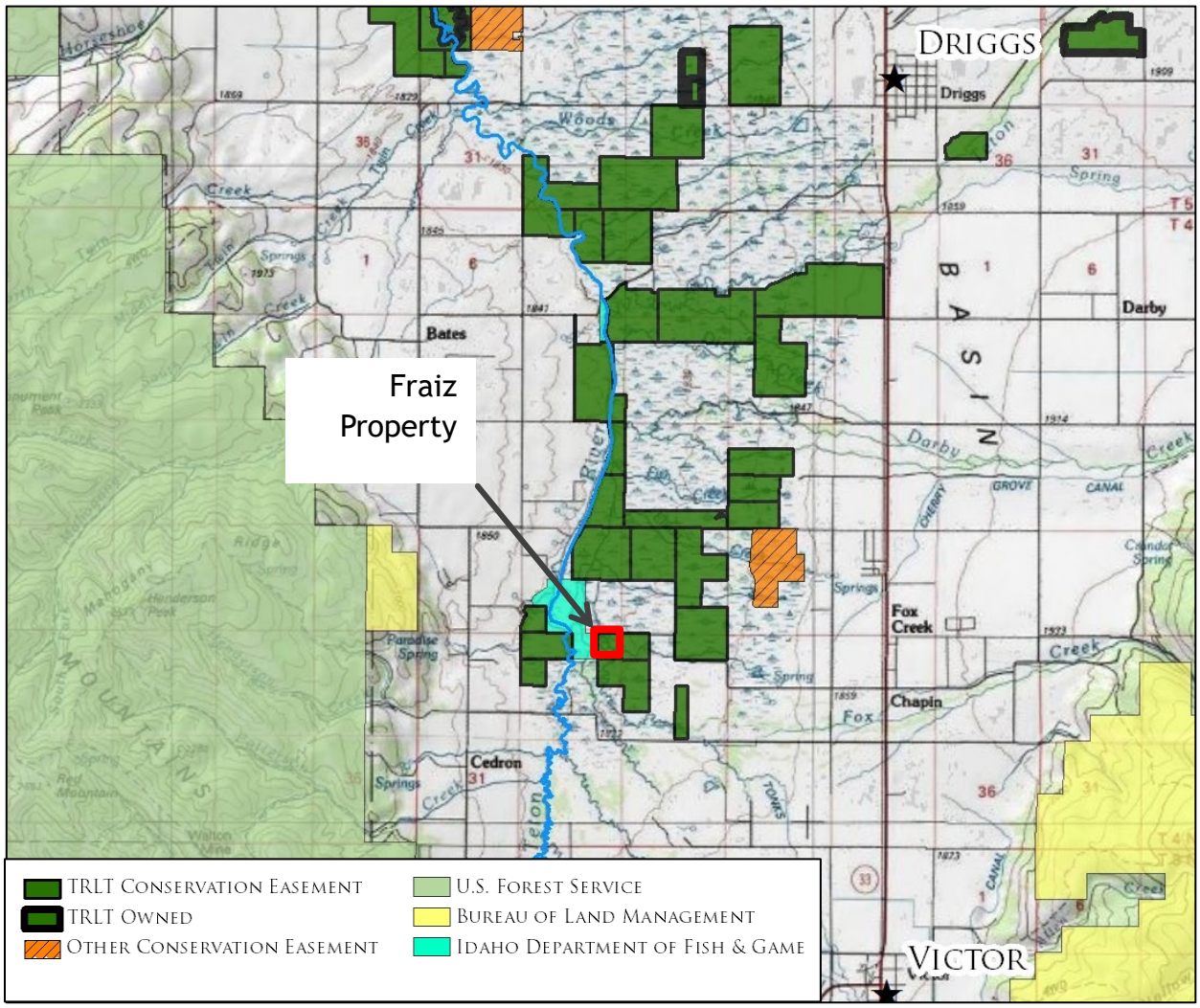


Figure 4. Impact and mitigation site locations within the 40-acre Fraiz Property. Yellow polygons enclose uplands mapped in the ARI. Green polygon is mitigation site. USGS NAIP Plus image base.

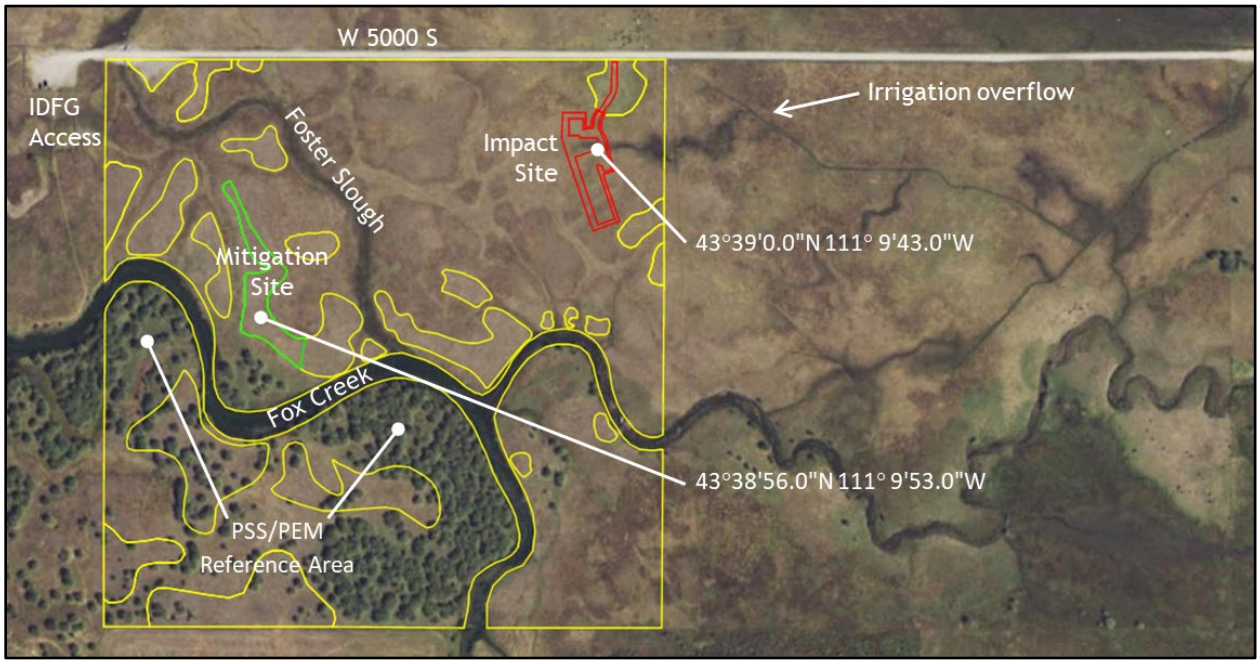
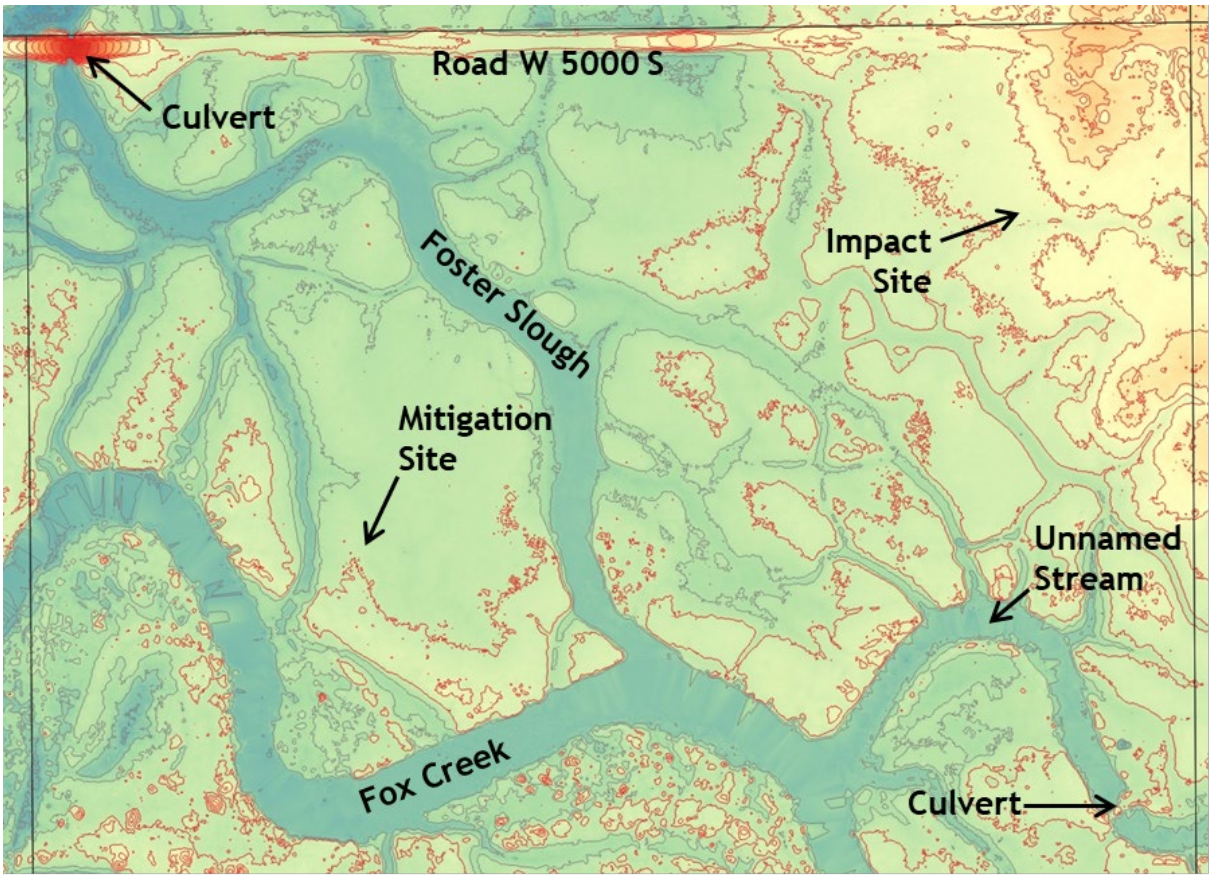


Figure 5: 2020 Lidar topographic map with half-foot contours (gray). Red contours are at 6002.5 ft and higher elevations. Note higher elevation of impact site.



2.B. IMPACT SITE

The impact site is 0.5 acres of palustrine emergent wetland dominated by native grasses/graminoids with some non-native grasses and noxious weeds (Figure 6). Development is restricted to the northeast corner of the Property by the TRLT conservation easement. This corner of the Property is on higher ground outside of the 100-year floodplain (draft 2022 FEMA FIRM). The ground surface is 1-4 feet higher than the wetlands and streams that occupy most of the site. Existing wetland hydrology here depends partly on irrigation return flow from a ditch that ends just east of the Property's northeast edge (visible on Figure 4). The 1998 TRLT baseline report, historic aerial imagery, and onsite observations show that the impact site is crossed by a longstanding farm access road and has been heavily used by livestock grazing and traveling to a feeding area in the upland next to road W 5000 S.

This site has relatively low functional value compared with the rest of the Property due to its higher elevation, isolation from streams, limited hydrology, historic grazing impacts, and lack of vegetation structure. Like the rest of the northern edge of the property, it is next to a well-used county road. Impacts due to fill for buildings, a driveway, utilities, and landscaping will be permanent and will include minor losses of low-quality habitat, off-stream runoff storage, and pollutant removal. No direct impacts to streams or other open water will occur.

Figure 6. Impact site at drier (left) and wetter (right) areas.

2.C. MITIGATION SITE

Mitigation will create 0.5 acres of new palustrine scrub-shrub wetlands from uplands to compensate for the minor losses of habitat, hydrologic storage, and pollutant removal functions on the impact site. Site selection was based on standard suitability criteria including hydrology, soils, relation to watershed and landscape scale functions, compatibility with adjacent land uses and anticipated development trends and landuse changes, compatibility with regional conservation goals, and reasonably foreseeable effects on ecologically important wetland/aquatic resources. The site has favorable hydrology, is similar to existing high-functioning PSS/PEM wetlands, is under easement, is part of a largely protected landscape in an area of ongoing stream and wetland restoration efforts, and is likely to be self-sustaining with minimal management.

The proposed mitigation site is an upland "island" north of Fox Creek and west of Foster Slough (Figures 4 and 7). It is dominated by FAC herbaceous species with smaller cover of FACU, FACW, and UPL species. Plants include native and introduced grasses, graminoids, and forbs. The site has been degraded by grazing. Canada thistle and musk thistle are common. There are no shrubs or trees.

The general area containing the mitigation site includes a mix of wetlands and uplands in the 100-year floodplain (Figures 4-5 and ARI). Hydrology and vegetation vary strongly with microtopography. Lidar data shows that the mitigation area is 0.1-0.8 ft higher than adjacent wetlands. Immediately adjacent wetlands include sedge dominated PEM along Foster Slough and in a swale west of the upland and a degraded willow stand mapped as PEM with willow patches visibly affected by grazing and browsing. Lowering the surface to match adjacent wetlands will realistically provide wetland hydrology.

The floodplain on the opposite, south side of Fox Creek is dominated by patchy shrub vegetation in both wetland and upland areas, presumably due to the more limited access for livestock. This area has much more complex vegetation structure including large willows, smaller understory shrubs, and herbaceous flora in the understory and provides a template. Based on the adjacent degraded willows, the south-of-Fox-Creek PSS/PEM vegetation, topography, and hydrology, the mitigation site can support healthy scrub-shrub wetland vegetation if the surface is lowered and livestock grazing is removed or reduced.

Figure 7. Mitigation site at drier upland area (left) and facing south from upland towards Fox Creek with PEM/patchy willows on adjacent lower ground and PSS wetland on opposite bank (right).

3. SITE PROTECTION INSTRUMENT

The mitigation site is protected from development under the existing conservation easement (Deed recorded by Teton County Clerk as Instrument #131118 August 3, 1998). Terms provide a framework for habitat restoration and enhancement and for memorializing commitments to management plans in writing. The easement is granted in perpetuity and runs with the Property. The Grantee is the Teton Regional Land Trust (TRLT).

Prohibited Uses and Practices include subdivision, development outside a designated 2.5-acre Building Area, alteration of natural watercourses except as permitted and consistent with Conservation Values, and alteration of native vegetation without prior consent of Grantee, and others. The easement also gives the Grantee the right to enter the Property to inspect conditions and a suite of remedies including notices of violation and corrective action, injunctive relief, damages, and enforcement.

The activities required by the Mitigation Plan will be agreed upon between the landowner and TRLT and recorded in writing. This will include the initial site manipulation and planting, fencing, any limits on livestock access and use, short and long-term maintenance (weed management, fences, additional planting), and monitoring. Intermountain Aquatics, Inc. will be responsible for maintaining the site until performance criteria are met. Supplemental plantings of shrubs and herbaceous plants will be installed if shrub mortality is excessive or if herbaceous performance criteria are not met in 3 years.

4. BASELINE INFORMATION

This section summarizes ecological conditions. Information on landscape setting, hydrology and general types and extents of aquatic resources is in Section 2A. Plant species, soils, and hydrology at specific sites are documented in the Aquatic Resource Inventory. Functional characteristics and species are described in Section 5 and Appendix B of this Plan and the TRLT Ecological Baseline Inventory.

Intermountain Aquatics inspected the site in the summer and fall of 2022 and collected field data for a wetland delineation in August 2022. Recent grazing made it challenging to identify some plant species, but physical conditions and general vegetation characteristics were clear. The NWI maps the entire area as wetland, but the 2022 delineation found many upland patches across the Property including in or around the development and mitigation sites.

The Property has been grazed for many decades, continuing through 2022. It is dominated by sedges, rushes, and grasses north and East of Fox Creek, where livestock access is greater, and mixed shrub and herbaceous cover south of Fox Creek. Grazing has nearly eliminated scrub-shrub cover north of Fox Creek and its unnamed tributary. Only one small stand of ten willows remains in this area, immediately south of the mitigation site. In 1943 aerial imagery, 80 years ago, there were other sparse clusters of willows along creeks and swales that are no longer present.

Site observations in 2022 were consistent with the more detailed baseline resource inventory done by the Teton Regional Land Trust in 1998. The baseline report included the Fraiz Property and the adjacent 40-acre parcel to the east, both then owned by David and Carolyn Foster and referred to at the “Foster Fox Creek Property”. Habitat resources named in the 1998 baseline report that were considered in the functional assessment (Section 5) and the Mitigation Plan include:

A. Unique resources of the Foster Slough area: This regionally significant wetland complex includes the Property. Hydrology of the Foster Slough channel has changed historically due to reduced flow between Fox Creek and wetlands north of the Property.
B. Wet meadow habitat: About 60% of the Fraiz Property is loosely classified as wet meadow.
C. Willow-dominated riparian and off-stream habitat: This makes up about 30% of the Property but is the highest value habitat on the Property and relatively scarce across the watershed.

D. The Property provides habitat for raptors, waterfowl and shorebirds, and songbirds. Specific species of concern are listed in Appendix B.

E. Cold water fisheries in Fox Creek: Cold water trout fisheries (importantly Yellowstone cutthroat trout) have been in decline throughout the Teton River watershed, but a trout fishery is still present and restoration efforts elsewhere on Fox Creek have been beneficial.

Existing conditions vary across the Property. They are worst in the northeast corner, which includes the impact site, and the far northwest corner where foot traffic and loose dogs on the IDFG property create disturbance. They are best in the southwest third where grazing has caused less damage and mixed riparian shrub and herbaceous vegetation create complex structure. The mitigation site is a moderately degraded upland "island". Herbaceous vegetation in the adjacent sedge-dominated wetlands is fairly healthy, but residual willows are sparse and damaged by livestock and wild ungulates.

Table 1 summarizes similarities and differences between the impact and mitigation sites and nearby points of reference. All except the impact site are on the floodplain and differ due to microtopography or grazing and browsing. Microtopography affects water table depth, frequency of flooding, and overall hydroperiod. Greater herbivory north of Fox Creek kills, suppresses, or damages shrubs and degrades herbaceous vegetations. The impact site is at the at the toe of an alluvial fan and rarely if ever is flooded from streams. Its hydrology involves a combination of irrigation overflow, local surface runoff, and shallow groundwater. It is in the most ecologically degraded part of the Property.

Stream resources are not directly involved in the Project but may be affected indirectly. The *Teton River Subbasin 2016 Total Maximum Daily Loads and Five-Year Review* report identifies temperature and lack of shade as the main concerns on Fox Creek. Shade is limited along streams on the Property and has been for at least 80 years. Sediment and phosphorus are concerns for the upper Teton River as a whole but not specifically listed for Fox Creek in the TMDL report.

5. DETERMINATION OF CREDITS

Functions were rated using the Montana Wetland Assessment Method (MWAM) method with slight modifications to better reflect conditions in the Teton Basin and Project Property, specifically adding more detail to evaluation of woody vegetation structure and its habitat value. The functional analysis is described in Appendix B and summarized here.

The wetland functional assessment evaluated three wetland conditions: (1) the entire PEM 17.3-acre PEM assessment area north of Fox Creek, (2) impact site existing condition, and (3) mitigation site future condition. Existing wetland functions were not rated for the mitigation site because it is upland, and future conditions were not rated for the impact site because that area will be lost. Reference sites were not rated but were used to develop ratings for the projected functions of the PSS mitigation site.

Functional losses from fill will be small due to the impact site's elevated, hydrologically marginal location and its historic degradation by grazing (Table 2). There will be small hydrologic impacts and minimal effects on pollutant removal and carbon export. Wildlife habitat losses will be relatively minor because existing vegetation structure is simple and nearly uniform and the site is directly next to a road.

Table 1. Baseline Information Summary. Adjacent and reference conditions (*) are shown to represent site potential and were used to develop functional ratings for the PSS mitigation wetland. GW = groundwater.

	Impact Site – Existing Conditions	Mitigation Site – Adjacent Conditions	Mitigation Site – Projected Conditions	Reference Site – Existing Conditions	Mitigation Site – Existing Conditions
Cowardin Classification	PEM	PEM	PSS	PSS *	UPLAND
Area	0.5 acres	0.5 acres*	0.5 acres	0.5 acres*	0.5 acres
Wetland Rating: Functional Units	0.57	Not rated	2.65	Not rated	0
Watershed context	Near mouth of Fox Creek, a significant Teton River tributary, within the regionally important Foster Slough wetland complex				
HGM Class	Slope/Riverine	Riverine (floodplain)			
Hydrology	GW <18", overbank flooding rare, limited surface storage & GW exchange, irrigation infl.	Groundwater at <18", significant overbank flooding & runoff storage, some groundwater exchange			GW >18", overbank flooding infrequent, little or no surface runoff storage
Vegetation type	Dominated by native grasses/graminoids and some non-natives		Patchy native scrub-shrub with herbaceous understory and openings		Mixed native/non-nat. grass/gram. and forbs
Veg. comments	Drier, some noxious weeds	Wetter, robust sedges	Not as diverse as ref. in short-term	Moderately diverse herbaceous flora	Significant noxious weed cover
Wildlife use	Limited use due to grazing and lack of scrub-shrub structure and cover		High use by birds, mammals and amphibians		Ltd use due to grazing and lack of structure
Existing Use	Moderate-heavy livestock grazing		—	Habitat, open space and recreation	Moderate-heavy livestock grazing
Future Use	Residential	Habitat, open space and recreation			Converted to PSS/PEM
Current owner	Brian Fraiz				

* The 8.7 acres of wetlands south of Fox Creek are mapped collectively as PSS in the ARI but are a mosaic of PSS and PEM patches.

Proposed mitigation will establish new PSS wetland by converting degraded upland pasture. The main changes will involve lowering the ground surface to create wetland hydrology, planting riparian shrubs, and seeding with native herbaceous species. This will enhance hydrologic functions, boost pollutant retention and food chain support, and improve vegetation structure and wildlife habitat. Given the site's location, these changes will benefit the larger Foster Slough landscape.

The planned wetland creation is estimated to add 2.65 Functional Units versus a loss of 0.57 Functional Units from development for a net gain of 2.08 Functional Units (Table 2). As documented in Appendix B, functional gains by wetland creation involve a combination of wildlife habitat, flood storage, food chain support, and other functions. Functional losses at the impact site include minor runoff storage, herbaceous production, and habitat value. Due to its degraded condition and non-floodplain, roadside location, functional losses from filling are less on a per-acre basis than gains at the new PSS site. As a result, 1:1 area replacement is estimated to yield a significant functional lift.

Ratings for the future condition of the mitigation site are based on the PSS reference south of Fox Creek and the odds of successfully reproducing many of its key features, especially patchy willow structure and associated habitat for songbirds, raptors, big game, and other animals and floodwater storage and exchange. Areas south of Fox Creek provide a template. The degraded willow patch between the mitigation site and Fox Creek and the patchy willows in older aerial images indicate that willows north of Fox Creek are suppressed by herbivory and could be more abundant.

The specific mitigation site and approach were chosen for their suitability for establishing patchy willow PSS wetland using simple, proven methods and for relative isolation from areas of high human activity. Seasonally flooded/saturated sedge swales immediately adjacent to the mitigation site support the expectation that minor grading can establish wetland hydrology, and the site is surrounded by similar low-lying active floodplain wetlands. The small relict patch of degraded willows between the mitigation site and Fox Creek indicates good potential for willows. Shrub plantings on sites with suitable hydrology have a proven track record for enhancing wildlife habitat in this landscape. Thus, it is realistic that the proposed mitigation can enhance wildlife habitat, wetland hydrology, overbank flooding, surface runoff and groundwater storage, and associated material exchange functions.

Table 2. Summary of functional losses and gains.

Site and condition	Functional points	Functional loss or gain	Area (acres)	Functional units (score*acres)	Loss or gain (units)
Existing condition of proposed residential development site	1.13		0.5	0.57	
Projected condition of residential development site	0	-1.13	0.5	0	-0.57
Existing condition of mitigation site in off-stream uplands	0		0.5	0	
Projected condition of mitigation site PSS wetlands	5.29	+5.29	0.5	2.65	2.65
Net gain					2.08

6. MITIGATION WORK PLAN

The proposed mitigation is on the north side of Fox Creek towards the west side of the Property and involves 0.5 acres of minor grading, willow planting, and herbaceous seeding. The work area location and typical cross-sections are shown in Appendix A.

A. Excavation of uplands will remove an average of ≈0.5 ft of soil to bring the ground surface down to the level of adjacent wetlands and closer to groundwater and create wetland hydrology. The shallow cut makes it highly likely that the resulting surface will be in soil suitable for revegetation, but organic matter may be amended if soil is too clayey or too coarse.

B. The resulting ≈400 cubic yards of cut will spoiled in the remaining contiguous 0.4 acres of upland at an average thickness of 0.75 ft. The soil source and shallow thickness ensure that the surface will be suitable for revegetation, nearly level, and visually inconspicuous.

C. Earth work will occur during drier or frozen seasonal conditions (fall-winter) using low-ground-pressure tracked equipment. Access will be from W 5000 S. Swamp mats or other stabilization will be used as necessary to minimize damage. Spoil haul routes will be within the upland work area.

D. All equipment will be cleaned before entering site to minimize introduction of invasives. Existing noxious weeds (Canada and musk thistle) will be treated with approved herbicides before work. Soil from heavily infested areas will be segregated for removal or follow-up post-construction control.

E. Routine water quality protection practices will be used: staging in uplands; equipment storage, fueling, and maintenance in uplands; containment of fuel storage; and sediment control BMPs such as straw wattles or silt fence around the perimeter of the disturbed area. The site will be seeded with a temporary cover crop for erosion protection after grading and before native revegetation.

F. The mitigation site will be planted with native, custom grown, 5-gallon container willows spaced approximately 8 ft on center. Species of willow will be selected based on existing species in the vicinity and those that will tolerate existing soil conditions as noted in baseline report. Planting will ideally occur when plants are dormant either in the fall or spring.

G. Bare ground in the mitigation site and associated upland spoil area will be seeded with custom native seed mixes for wetland and upland/transitional areas.

H. Planted areas will be fenced with 6 ft welded wire fencing to protect them from herbivory during establishment (approximately 3-5 years).

The preliminary mitigation work schedule calls for grading in fall 2023 before or concurrent with initial development site grading, followed by seeding in spring 2024 and shrub installation in fall 2024. Fall wetland seeding has relatively poor results compared to spring seeding in this landscape. Native shrubs are currently scarce at nurseries, and planting in 2024 will allow production of locally sourced material.

The mitigation layout and grading plan were developed using Lidar data and AutoCAD Civil3D. The proposed layout is estimated to require the least excavation and hauling based on the Lidar topographic surface. Conditions will be confirmed in field. Alternative layouts within the proposed upland “island” or ones using other upland patches north of Fox Creek are feasible and would achieve the same outcomes. See Appendix A for additional details.

7. MAINTENANCE PLAN

Maintenance through the first growing season will include weed control and fence repair as needed. Regular site visits will confirm whether site hydrology is behaving as expected and identify emerging problems such as: plant stress, mortality, or damage; ungulate incursion or fence damage; and noxious weeds. Given ambient hydrology, vegetation is expected to be self-sustaining once established, and willows planted at appropriate depths are expected to establish without irrigation. Based on experience at nearby sites, survival is expected to be very high. IMA will replace shrubs if survival drops below 75% during the monitoring period.

Annual maintenance in years 2-5 will include regular weed control and fence repair as needed. Weed control will include carefully spot treating with herbicide suitable for site conditions and consistent with easement terms and environmental regulations. Because existing vegetation includes some naturalized nonnative pasture grasses and some common non-noxious farm weeds, control will focus on state-listed noxious weeds and aggressive invasives. The owners will be responsible for watching for livestock trespass, fence damage, and noxious weeds after the monitoring period is complete and performance standards have been met, and for responding as needed. The owners do not plan to graze livestock as part of normal use but might use grazing as a management tool with TRLT approval. The mitigation site will not be grazed during the establishment period.

Wildlife exclusion fences may be kept in place longer than required to meet performance standards to improve long-term results. Browsing by wildlife, particularly moose, is a concern in this landscape. Once shrubs or trees are large enough, browsing damage generally is not a problem.

8. PERFORMANCE STANDARDS

Performance will be evaluated based on (1) establishing wetland hydrology, hydric soils, and hydrophytic vegetation in the 0.5-acre mitigation area to meet Cowardin PSS criteria within 5 years and (2) achieving shrub density and vigor consistent with development of structure comparable to reference area in the future. Specific standards are listed in Table 3.

Functional benefits of the mitigation work are from (1) establishment of wetland conditions and (2) the structure, shade, and stabilization provided by woody plants. Proposed standards recognize that willows will take more than 5 years to mature and that reference sites are patchy with a range of shrub vs herbaceous cover in a PSS/PEM mosaic. The near-term vegetation objective is to have enough wetland shrub and herbaceous species cover to stabilize the site, avoid increases in weeds and invasives, and meet criteria for PSS wetlands. Given the longer timeline for willows to fill in and mature, the near-term (5-year) objective for shrubs is to establish enough healthy, growing individuals to meet a 30% cover standard and be on course to develop into a robust willow stand. Existing PSS wetlands south of Fox Creek are very heterogeneous but typically have 30-80% willow canopy cover distributed as about 25-90 clumps per acre, each ≈10-50 ft in diameter and made up of an indeterminate number of individuals. The planting density (8 ft spacing or ≈680 shrubs/acre) will ensure that the 30% cover target can be met in 5 years and cover similar to reference can be reached with normal future growth if the 75% survival target is met (net density >500 shrubs/acre if survival ≥75%).

Table 3. Performance Standards and Target Values.

Component	Parameter	Target
1. Hydrology	Hydrology similar to adjacent wetlands and supports wetland vegetation and functions	
1. A	Grading establishes elevations matching existing wetlands and design	As-built ground surface elevations no higher that adjacent existing wetlands
1. B	Wetland hydrology present throughout the mitigation site	Wetland hydrology present for at least 14 days during the growing season
2. Vegetation	Overall patchy shrub/emergent wetland structure similar to reference PSS	
2. A	Herbaceous cover meets Cowardin class PEM criteria in areas between shrubs	30% aerial cover of wetland plants
2. B	Shrub survival and density	≥75% survival of planted willows including replacements, ≥500 live stems/acre
2. C	Shrub height and vigor	Height ≥6 ft, canopy healthy and expanding
2. D	Shrub cover	Shrub cover >30%
3. Soils	Hydric soils	Hydric indicators throughout mitigation area

* Field indicators of hydric soils may not develop during monitoring period due to recent disturbance but are expected to be present in subsoil given existing hydrology. If field indicators are lacking due to disturbance, criteria for problematic hydric soils in Chapter 5 of the Regional Supplement will be used.

9. MONITORING PLAN

Monitoring will be conducted annually for 5 years, near the end of each growing season after mitigation construction and planting is completed, or until performance standards are met. Monitoring and reporting will be performed by Intermountain Aquatics or another qualified party acceptable to the Corps. A concise report meeting the requirements of Corps *Regulatory Guidance Letter No. 08-03* will be submitted annually by December 31 and will evaluate overall mitigation site condition, progress toward meeting performance standards, and any adaptive management or remedial actions proposed. Key topics covered each year will be:

Year 1: Document as-built site layout, size, and elevations, permanent monitoring plots and photo points, wetland hydrology, and vegetation performance.

Year 2-3: Vegetation performance and wetland indicators.

Year 4-5: Vegetation performance and Cowardin class wetland acreage.

For efficient and repeatable monitoring of shrubs, three permanent 30 X 30 ft plots will be set up across the site at roughly equal spacing. At this size, each plot will include ≈10 planted willows. These plots will also be used for other observations. Evaluation of surface elevations and extent of wetlands will include the entire mitigation site. Determination of the extent of wetlands (year 4-5) will use wetland determination data forms and follow the 1987 manual, memorandums and the 2010 Western

Mountain, Valleys and Coast supplement and allowing for recent soil disturbance. In addition to the systematic permanent plot sampling, the entire mitigation site will be walked on each visit to visually evaluate shrub survival, vegetation development, hydrology, weeds, fences, and other conditions.

Table 4. Monitoring Methods and Schedule

Component	Parameter	Target	Methods	Years
1. Hydrology	Hydrology similar to adjacent wetlands			
1. A	Elevations match existing wetlands and design	As-built ground surface elevations no higher that adjacent existing wetlands	GPS and/or laser survey	1
1. B	Wetland hydrology across mitigation site	Wetland hydrology present ≥14 days in growing season	Field observation of saturation/inundation	1, 4, 5
2. Vegetation	Patchy shrub/emergent wetland structure			
2. A	Herbaceous cover meets Cowardin PEM criteria	30% aerial cover of wetland plants	Ocular estimates in 3 30X30 ft permanent plots	All
2. B	Shrub survival & density	≥75% survival of planted willows, ≥500 live stems/acre	Counts in 3 30X30 ft permanent plots	All
2. C	Shrub height and vigor	Willow height at 5 years ≥6 ft, canopy healthy and expanding	Heights & visual ratings in permanent plots	All
2. D	Shrub cover	Shrub cover >30%	Ocular estimates in permanent plots	All
3. Soils	Hydric soils	Hydric soil indicators present throughout the mitigation area	Depleted matrix or other field indicators*	1, 4, 5

* Allowing for recent disturbance. See Table 3 footnote.

10. LONG-TERM MANAGEMENT PLAN

Wetland hydrology and protection from excessive herbivory are the main requirements for long-term success. Suitable hydrology will be confirmed during the monitoring period. Experience in this landscape has shown that the vegetation objectives are feasible without exceptional efforts.

The owners commit to managing livestock grazing at an acceptably low level to allow willows to continue to mature and thrive if fencing is removed. The owners acquired the Property in 2022 and are still evaluating options for stream and wetland restoration, improved livestock management or removal, recreation, and other aspects of site management. A management plan will be developed for the mitigation area and memorialized in writing as stipulated in the Conservation Easement.

The owners will be responsible for long-term management. The intent is to deal with management plans, legal obligations, and remedies within the existing Conservation Easement framework. The

easement holder (TRLT) will be responsible for ensuring that long-term management is consistent with mitigation objectives. The required management is within the scope of normal rural land management and does not require additional financial commitments beyond the obligation to replace/repair unacceptable plant losses or fencing damage resulting from neglect or mismanagement.

11. ADAPTIVE MANAGEMENT PLAN

The mitigation site and design were selected for high odds of success based on landscape conditions and similarity to nearby high-functioning wetlands. IMA will be responsible for overseeing construction and revegetation, for annual monitoring, and for recommending changes in design or management. IMA or the owners or their representatives will notify the Corps if a significant modification of the Project is planned, or if monitoring suggests that mitigation is not on track to meet performance standards.

The Project design will be evaluated during construction. Specifically, site topography, soils, and hydrology conditions will be evaluated with pre-construction survey, exploratory excavation, and during grading. The depth of grading or specific mitigation location will be modified if site conditions require.

Field observations will identify deficiencies in physical conditions, vegetation, or site protection during the 5-year monitoring period. Common challenges including weed control, fence repair, and shrub replacement are addressed in the Maintenance Plan. Livestock trespass can be a problem on rural properties, but protective fencing will exclude animals from the mitigation site. The IDGS access raises the risk of human and dog trespass, which could require additional boundary fencing and signage.

Irrigation should not be needed given the depth to the water table and proposed grading. In our experience 5-gallon willows have high survival and growth in comparable settings. Irrigation will be provided if extraordinary drought or low stream levels cause the upper soil to be drier than expected.

Dealing with livestock trespass, human/dog trespass, and weed management falls within the scope of normal rural land management and will be the owners' responsibility once the monitoring period is finished. Unforeseen challenges after monitoring will be identified and addressed jointly by the owners and the conservation easement holder (TRLT).

Changes that cannot be anticipated include major increases in native herbivores and browsing, novel invasive species or pathogens, and shifts in area hydrology. Groundwater-and-snowmelt-fed wetland and stream hydrology is expected to remain relatively reliable (within normal variation), but climate change or changes in irrigation in the surrounding landscape could alter hydrology. The mitigation site's location and topography should buffer it from such changes; it is a floodplain with extensive swales in a valley bottom area where multiple streams converge and groundwater discharges. If significant changes in hydrology do occur, they will be happening across the landscape and watershed and will need to be addressed at that larger scale jointly by TRLT, landowners, and agencies.

Existing conservation easements, IDFG ownership to the west, and constraints imposed by wetland and landuse regulations and physical conditions make it very unlikely that land immediately adjacent to the mitigation site will be developed or put into cultivation. Given the extent of contiguous and nearby easements, problems that may emerge across the landscape will be recognized by TRLT and other local conservation professionals.

12. REFERENCES

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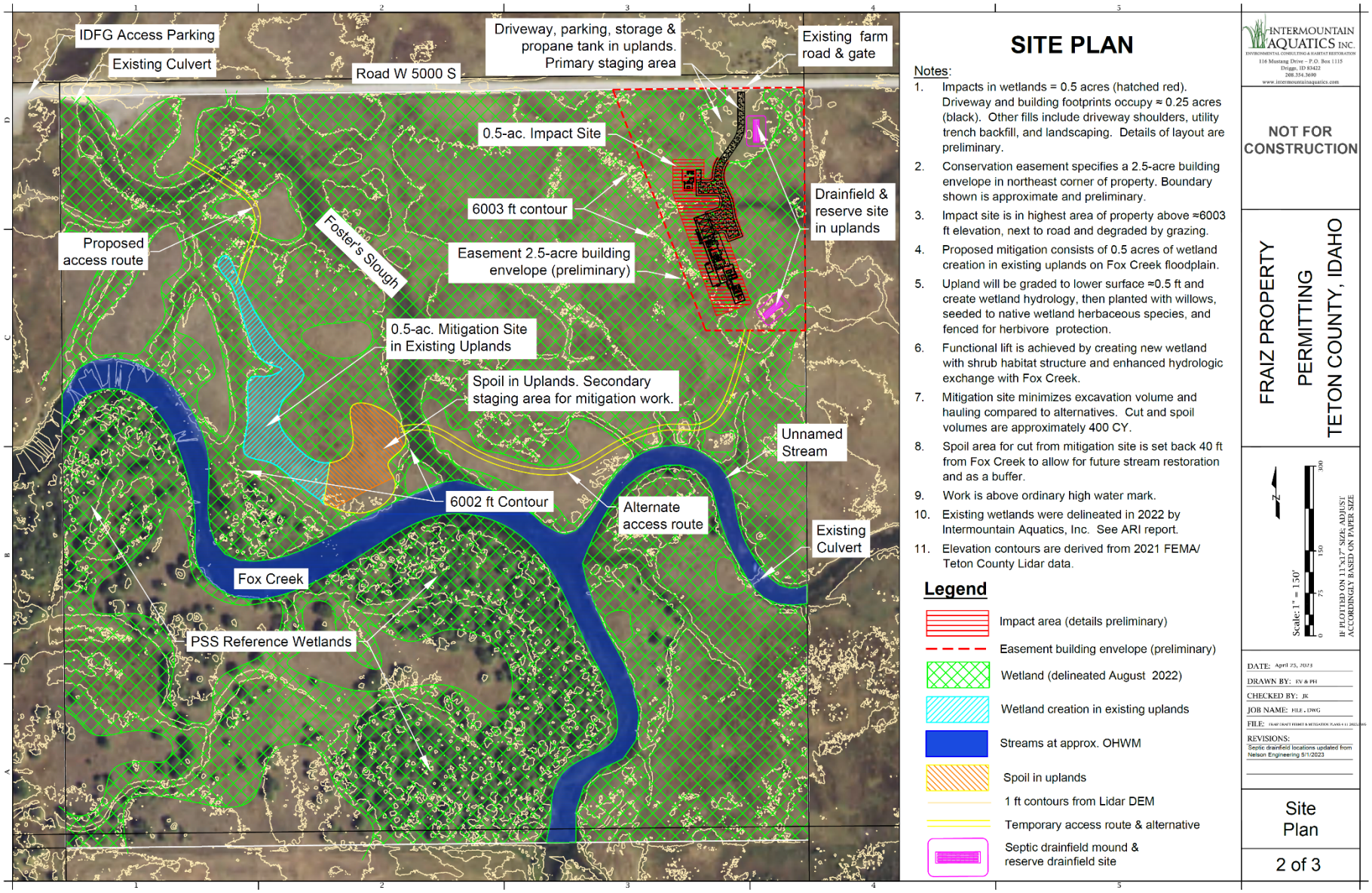
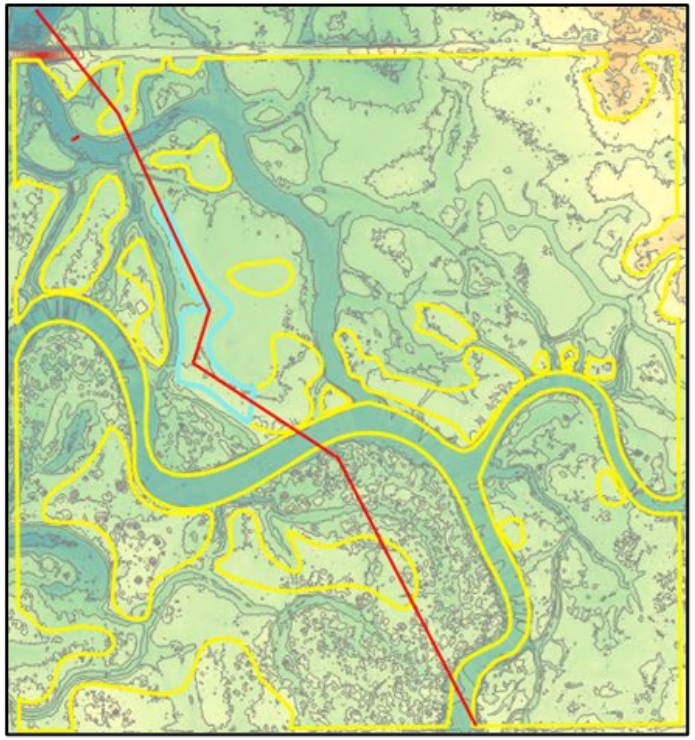
APPENDIX A: MITIGATION PLAN DRAWINGS

A-1) Mitigation Site Plan



A-2) Mitigation Site Cross-Section

Right: Lidar image with cross-section from county road W 4000 S to south boundary (red line), half-foot contours (gray), uplands (yellow), and mitigation site (blue).

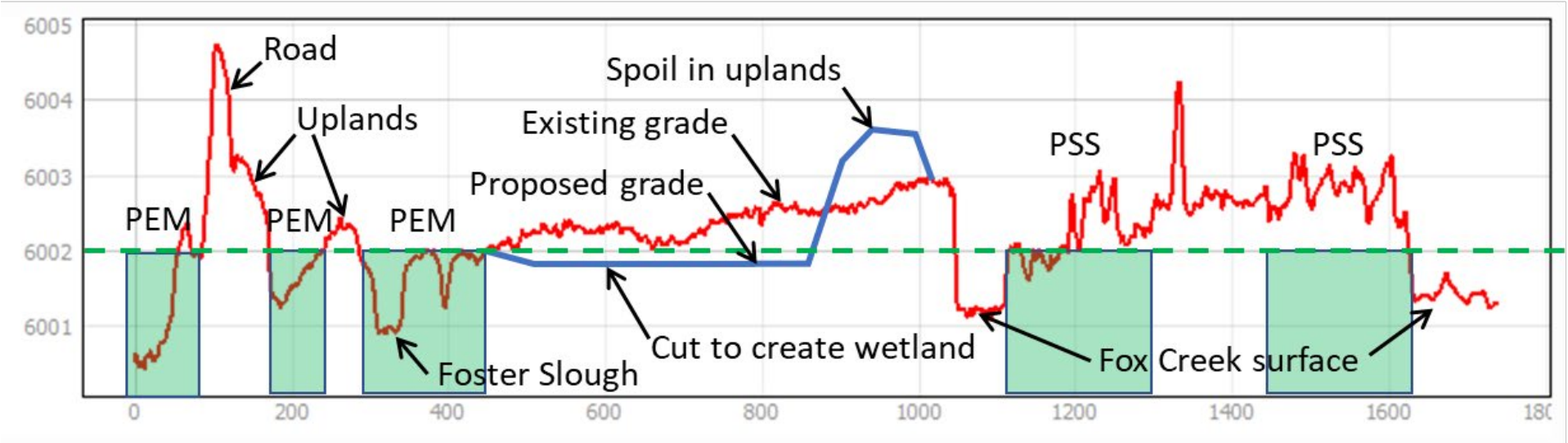


Below: Cross-section through mitigation site and floodplain.

Grading will lower 0.5 acres of marginal uplands to ≤6002 ft elevation, removing ≈400 CY of soil with 0.2-0.8 ft of cut (average ≈0.5 ft). Lowering the mitigation site surface to <6002 ft will provide hydrology similar to existing PEM wetlands and PSS wetlands.

Cut will be spoiled in the contiguous upland at an average thickness of 0.75 ft with a 40 ft setback from Fox Creek to allow for future stream restoration.

The target elevation of ≤6002 ft was determined by comparing floodplain wetland boundaries to Lidar data. All areas below ≈6002 ft elevation are currently wetlands (green). Wetland to upland transitions generally occur at 6002.1-6002.6 ft elevation. Most areas higher than 6002 ft are uplands.



APPENDIX B: WETLAND FUNCTIONAL ASSESSMENT

Project name & assessment purpose: Fraiz Residence, pre-construction mitigation planning

Evaluation date: October 26, 2022, updated 4/19/2023

Evaluator: Emma Vautour & Paul Hook, Intermountain Aquatics, Inc.

Location: Upper Teton River watershed, Teton County, NE4NE4 SEC 29 T4N R45E

Assessment Area size: 17.3 acres PEM excluding upland islands within the 23 acres hatched below

Figure B-1. Project Property with Assessment Area (AA) hatched in white.

B-1) INTRODUCTION

This appendix documents the functional assessment for the Fraiz Mitigation Plan. A modified version of the MDT Montana Wetland Assessment Method ("MWAM", Berglund and McEldowney 2008) that scores 12 types of functions and values was used to calculate debits and credits. Site characterization and functional assessment ratings followed the MWAM manual guidance and MWAM Assessment Form rating matrices where applicable. Some criteria were modified to better reflect conditions in the Teton Basin and Project Property, specifically adding more detail to evaluation of woody vegetation structure and its habitat value. Other modifications were applying weighting factors to the functional categories.

Sections 2 and 3 describe and rate the assessment area, overall site conditions, and ecological resources. Section 4 highlights distinctive characteristics of impact, mitigation, and reference sites that affect ratings. Section 5 contains rating forms. Overall results are summarized in Mitigation Plan section 5.

B-2) ASSESSMENT AREA OVERVIEW

The 17.3-acre Assessment Area (AA) includes contiguous wetlands and adjoining open water on the north half of the Fraiz Property. Under 4 acres of uplands distributed as nearly 20 scattered patches of <0.1 acres to 0.9 acres occur within the hatched area in Figure B-1 but are not included in the AA. The AA is palustrine emergent wetland, lacks significant areas of shrubs and trees, and contrasts with the areas to the south of the AA. The entire AA is grazed by livestock. Historic aerial imagery shows losses of shrubs in the mid-20th century, and robust willow stands south of Fox Creek suggest that the AA could support more shrubs. The site is nearly flat. Vegetation and ecological functions vary across the AA based mainly on microtopography and proximity to Fox Creek.

The south edge of the AA consists of ≈2 acres of Fox Creek and an unnamed tributary. Proposed impacts and mitigation do not involve the streams directly because the mitigation work area is set back from the banks. Streambanks near the mitigation site are approximately 2-3 ft high and steep with some erosion caused by livestock and lack of vegetation. Future stream restoration is being considered.

Characteristics of the entire Assessment Area are summarized below as background for assessing impact and mitigation areas. Also see section 2 of the Mitigation Plan.

Landscape Setting: Wetland complex occupying geomorphic floodplain and alluvial fans

The site is located at the southern end of a regionally significant wetland complex, Foster Slough, and is surrounded by other wetlands. It lies near the confluence of Fox Creek and the Teton River in a depositional setting with a mix of floodplain and alluvial fan features. All of the AA except the northeast corner is in the 100-year floodplain (1988 effective and 2022 draft FIRM maps). Microtopography is dominated by swales in former stream channels and side channels. The AA includes Fox Creek (~45' average bankfull width), an unnamed tributary (~35' average bankfull width), ≈17.3 acres of PEM wetlands not counting ≈3.8 acres of upland inclusions (2022 Aquatic Resource Inventory Report).

Relative Abundance of Similarly Classified Sites within Major Watershed Basin: Abundant

Wetlands similar to the AA are abundant in the landscape and the Teton River Watershed. Teton County wetlands occupy ≈27,000 acres, mainly in the Teton Basin between Highway 33 and the river. Roughly 90% are mapped as PEM in the National Wetland Inventory. PSS and PFO wetlands are much less common than PEM wetlands locally and in the larger Henry's Fork watershed (Jankovsky-Jones 1996).

General Condition: Vegetation and streambanks degraded by historic grazing

Disturbance is moderately high within the AA, which has been grazed by livestock for many decades. It fits the MWAM description, "Heavy to moderate cattle grazing resulting in severe loss of most shrubs…" Based on adjacent healthy PSS wetlands to the south, the AA probably once featured patches of robust willows with an understory dominated by sedges, rushes and other wetland plants in a mixed PSS, PEM, and grassland mosaic. The Property south of Fox Creek is less accessible to cattle and has significant areas of relatively intact willow thickets. Sedge dominated swales in the AA remain relatively healthy compared to the upland islands. Within the AA Fox Creek is over-widened with significant siltation. Some banks are eroded by livestock. Shrub cover along banks has been greatly reduced since the earliest aerial image from 1943.

Noxious weeds are present but not dominant in the AA. They include Canada thistle, musk thistle, and hounds' tongue. These are most abundant in upland islands and drier, marginal wetlands.

Structural Diversity: Very low

Structural diversity (type, stature, and spatial arrangement of plants) is very low due to grazing. There are almost no woody plants north of Fox Creek. Riparian shrubs are scarce and damaged by browsing.

B-3) SITE-WIDE FUNCTIONAL ASSESSMENT FOR CURRENT CONDITIONS

Following the MWAM scheme, up to 12 functions are scored from 0 to 1. Ratings followed MWAM manual guidance and MWAM Assessment Form rating matrices where applicable. Some criteria were modified to better reflect conditions in the Teton Basin and Project Property, specifically adding more detail to the evaluation of woody vegetation structure and its habitat value. Numeric ratings are tabulated in section B-5 of this appendix.

A. Habitat for Federally Listed or Proposed Threatened or Endangered (T&E) Plants or Animals

No listed or proposed T&E species are documented or suspected to occur in the Assessment Area.

B. Habitat for Plants or Animals Rated S1, S2, or S3 in the Idaho Natural Heritage Program

Existing habitat value for S1-S3 species is rated low/moderate due to the combination of degraded habitat in the AA partially offset by high-quality habitat in parts of the surrounding landscape.

Use of the Assessment Area by S1-S3 species is possible but speculative. Observations from the 1998 baseline report for the Conservation Easement are the main source for this assessment. Non-intensive surveys in 1998 observed sign of white-tailed deer, moose, fox, coyote, and many small mammals (mice, voles, weasels, etc.). The baseline inventory included both the 40-acre Project Property and the adjacent 40-acre Property to the east both referred to as the Foster Fox Creek Property.

The easement baseline report lists 43 species currently ranked as S1, S2, or S3 in the Idaho Species Conservation Status database (accessed 11/14/22). The baseline report mentions Yellowstone cutthroat trout (S4), Swainson's hawk (S5) and Bald Eagle (S5), which have been downgraded since the baseline.

The habitat value of southern Teton Basin wetlands results largely from watershed and landscape-scale characteristics. The Teton River and tributaries have relatively natural hydrology and few major fish barriers. Thousands of acres of intact wetlands are concentrated in the Foster Slough complex, a mosaic of emergent wetlands, grasslands, and hay fields, with smaller areas of shrub/scrub and forested wetlands. Surface water occurs in streams, swales, and depressional wetlands. Some sites such as fens have unique characteristics, but habitat value is due mainly to landscape-scale diversity of cover types and hydrologic environments, which provide habitat niches and resources for different life cycle needs. Large areas are protected by easements, and roads and development are limited.

Table A-1, next page. Idaho Natural Heritage Program S1, S2, and S3 species "suspected to be present on the Foster Fox Creek Property" in 1998 baseline report. *Codes: S1, critically imperiled; S2, imperiled because rarity or other factors create vulnerability to extinction; S3, rare or uncommon but not imperiled; S4 = not rare and apparently secure, but with cause for long-term concern; S5 = widespread, abundant, and secure.*

Common Name	Scientific Name	Category	S-Rank	Distribution Population
Spotted Sandpiper	*Actitis macularius*	Bird	S3B	Breeding
Moose	*Alces alces*	Mammal	S3	Year-round
Green-winged Teal	*Anas crecca*	Bird	S4B,S3N	Year-round
Blue-winged Teal	*Anas discors*	Bird	S2B	Breeding
Gadwall	*Anas strepera*	Bird	S3	Year-round
Golden Eagle	*Aquila chrysaetos*	Bird	S3	Year-round
Short-eared Owl	*Asio flammeus*	Bird	S3	Year-round
Lesser Scaup	*Aythya affinis*	Bird	S3B,S3N	Year-round
American Bittern	*Botaurus lentiginosus*	Bird	S1B	Breeding
Bufflehead	*Bucephala albeola*	Bird	S1B,S1N	Year-round
Barrow's Goldeneye	*Bucephala islandica*	Bird	S3B,S3N	Year-round
Western Sandpiper	*Calidris mauri*	Bird	S3M	Transient
Veery	*Catharus fuscescens*	Bird	S3B	Breeding
Black Tern	*Chlidonias niger*	Bird	S2B	Breeding
American Dipper	*Cinclus mexicanus*	Bird	S3	Year-round
Yellow-billed Cuckoo	*Coccyzus americanus*	Bird	S1B	Breeding
Trumpeter Swan	*Cygnus buccinator*	Bird	S1B,S4N	Year-round
Bobolink	*Dolichonyx oryzivorus*	Bird	S2B	Breeding
Snowy Egret	*Egretta thula*	Bird	S1B	Breeding
Least Flycatcher	*Empidonax minimus*	Bird	S2B	Breeding
Big Brown Bat	*Eptesicus fuscus*	Mammal	S3	Year-round
Peregrine Falcon	*Falco peregrinus*	Bird	S3B	Breeding
Northern Shrike	*Lanius excubitor*	Bird	S3N	Non-breeding
Loggerhead Shrike	*Lanius ludovicianus*	Bird	S3	Year-round
California Gull	*Larus californicus*	Bird	S3B, S2N	Year-round
Ring-billed Gull	*Larus delawarensis*	Bird	S2B,S2N	Year-round
Hoary Bat	*Lasiurus cinereus*	Mammal	S3	Year-round
Marbled Godwit	*Limosa fedoa*	Bird	S2M	Transient
Hooded Merganser	*Lophodytes cucullatus*	Bird	S2B,S2N	Year-round
Common Merganser	*Mergus merganser*	Bird	S3	Year-round
Long-eared Myotis	*Myotis evotis*	Mammal	S3	Year-round
Long-billed Curlew	*Numenius americanus*	Bird	S2B	Breeding
American White Pelican	*Pelecanus erythrorhynchos*	Bird	S3B	Breeding
White-faced Ibis	*Plegadis chihi*	Bird	S2B	Breeding
Eared Grebe	*Podiceps nigricollis*	Bird	S1N,S2B	Year-round
Pied-billed Grebe	*Podilymbus podiceps*	Bird	S3	Year-round
Virginia Rail	*Rallus limicola*	Bird	S2N,S3B	Year-round
American Avocet	*Recurvirostra americana*	Bird	S3B,S3M	Breeding
Forster's Tern	*Sterna forsteri*	Bird	S2B	Breeding
Lesser Yellowlegs	*Tringa flavipes*	Bird	S2M	Transient
Greater Yellowlegs	*Tringa melanoleuca*	Bird	S3M	Transient
Willet	*Tringa semipalmata*	Bird	S3B	Breeding
Solitary Sandpiper	*Tringa solitaria*	Bird	S1M	Transient

***S1 species*:** The Assessment Area could potentially provide primary or secondary habitat for critically imperiled waterbirds, but open water habitat other than Fox Creek is limited and shallow. The species listed above with S1 rankings were not observed on the Property in 2022.

***S2 and S3 species*:** The existing habitat in the AA is most likely to be used for foraging by species that nest, perch, or bed in less disturbed habitats outside the AA: in shrubs south of Fox Creek and on adjacent properties (e.g., raptors, moose), ponds south of the project Property, or grassland/wetland/ cropland mosaics around Foster Slough (curlews, cranes). Low structural diversity and lack of security cover in the AA likely limits habitat value for many species, but short-statured grasslands can be important habitat for some birds including Long-billed Curlews. Adding structure locally within the AA could enhance onsite nesting, perching, and foraging opportunities for songbirds and big game while providing a mosaic of complementary habitats. Habitat value may be compromised by traffic on the road to the Fox Creek East IDFG public access and recreational use of IDFG lands and streams.

C. General Wildlife Habitat

Overall rating of existing wildlife habitat and use in the AA is low based on a combination of low quality and low/moderate use. Existing habitat features are rated low due to low structural diversity and disturbance. The two perennial streams make up roughly 12% of the AA. The Foster Slough channel and other swales experience semi-permanent to seasonal flooding.

Wildlife use is moderate despite habitat degradation because the AA is embedded in a high functioning landscape. Moose and other native ungulates are common in the landscape, as are diverse songbirds, shorebirds, waterfowl, and raptors. Wildlife sign on the AA was not clear due to recent grazing. Use by birds that require significant woody plant structure is low. Use by native ungulates is likely reduced by forage and browse depletion by livestock, but adjacent woody habitats provide good security cover.

D. General Fish Habitat

Fish habitat is rated moderate. Fox Creek supports cold-water fish including Yellowstone Cutthroat Trout. Fox creek is perennial and is thermally buffered by groundwater discharge, but fish habitat in the AA is degraded by over-widening, siltation, loss of riparian vegetation, and lack of shading, a cause of temperature degradation. Teton River tributaries are subject to a TMDL for temperature. Stream restoration on properties near the AA has achieved significant improvements in Fox Creek fisheries.

E. Flood Attenuation

Flood attenuation is rated high/moderate. Based on the 2022 FEMA Draft 1% AEP floodplain, aerial images, and Lidar data, over 90% of the AA is likely to flood in extreme events. Overbank flooding probably covers less than 10% of the AA in most years, but a larger area of swales stores local runoff. No man-made structures at risk of damage by flooding occur in the AA or immediately downstream.

F. Short and Long-Term Surface Water Storage

Short-term surface water storage is rated moderate/high. The flatness of the site and abundant small swales and depressions provide storage to attenuate storm and snowmelt runoff. It is likely that one-third to half the area holds several inches to one foot of water for several weeks during runoff, amounting to 5-10 acre feet in most years.

G. Sediment/Nutrient/Toxicant Retention and Removal

Pollutant retention function is rated low/moderate. Topography and hydrology provide high potential to retain pollutants, but loading is limited due to surrounding land use dominated by pasture, hay, and wildlands. Livestock cause minor sediment and nutrient inputs. Stream sediment pulses occur during runoff, and some sediment is deposited in side channels (visible in 6/21/2017 Google Earth image).

H. Sediment/Shoreline Stabilization

This function is rated moderate/low due to the combination of over-steepened banks on the north side of Fox Creek and the tributary and limited vegetation/exposed soil in many places.

I. Production Export/Food Chain Support

This is rated moderate based on moderate primary production, large area of vegetated wetlands, presence of surface outlets and lateral exchange between streams and floodplains, and perennial flow. Aquatic and wetland biological activity is rated moderate based on wildlife and fish habitat factors.

J. Groundwater Discharge/Recharge

Groundwater discharge function is moderate. The Assessment Area is mainly floodplain with some HGM Slope wetland characteristics. The water table is shallow. Perennially saturated areas occupy less than half of the area. Unambiguous discharge indicators were not observed in the AA, but discharge is common in the Foster Slough wetland complex. Swales could act as seasonal recharge areas.

K. Uniqueness

Uniqueness is rated moderate. The grazed, structurally simple PEM wetlands in the Assessment Area are unexceptional. Any uniqueness value comes from being part of a regionally significant wetland complex with limited development and large areas protected by conservation easements.

L. Recreation/Education Potential

Recreation/education potential is rated low/moderate. Being next to a public access parking area could facilitate educational use if the owner wishes, but disturbance from recreation is already higher than desirable. Given existing access to adjacent IDFG land, Fox Creek, and the Teton River, public recreational access to the AA would have lower value than habitat protection.

B-4) Functional Assessment of Impact and Mitigation Sites

Credits and debits were calculated based on ratings for the specific impact and mitigation sites within the AA, using the PSS wetlands south of Fox Creek as a reference for mitigation. This section summarizes key factors that affect ratings and credits. The main factors producing net functional lift are the mitigation site's proximity to Fox Creek and more favorable future hydrology and shrub structure. Specifically, structure will enhance habitat for birds, big game, and other, lowering the surface will provide a slight increase in flood storage and associated pollutant removal functions, and the combination of increased production and more frequent inundation will boost organic matter export.

Impact site: The impact site in the northeast corner of the Property is relatively low functioning compared to the AA as a whole. It is at a slightly higher elevation (mostly at 6002.5-6004 ft elevation)

and drier than areas with higher quality wetlands (at 6000-6002 ft elevation). Vegetation in the impact site is heavily grazed and there is no woody vegetation. The site is at the edge of and mostly outside the 100-year floodplain as shown both by the 2022 draft FEMA FIRM map and the 1988 FIRM (exact boundaries differ). It is >200 ft from the Fox Creek, the tributary, and Foster Slough and is a15 ft from a road. Wetland fill will have impacts, but functional condition is already low.

Small areas of swales are present, and some are seasonally saturated or have temporary standing water during snowmelt runoff. Wetland hydrology is influenced by irrigation on neighboring properties to the east (upgradient); a minor ditch ends just east of the property line. Higher, drier, grass-dominated areas show greater degradation by grazing than average for the AA, probably due to higher use and lower capacity for regrowth than wetter areas (grazed sedges in lower, wetter areas appeared healthy). Historic aerials show that this corner of the Property has had concentrated cattle use for decades, likely associated with mineral blocks or supplemental feeding. This corner is also the longstanding entrance to a two-track farm road (1998 TRLT Baseline Report).

Due to its location, the development site has no fish habitat, overbank flood attenuation, or shoreline stabilization function, minimal pollutant removal function, and relatively little surface runoff storage or groundwater discharge/recharge function. These functions are rated lower than the average for the Assessment Area. Wildlife habitat in the impact area is slightly below average for the AA due to greater effects of grazing on vegetation structure and lower forage production.

Mitigation and reference sites: The proposed mitigation site is an upland island at lower elevation than the impact site, well within the 100-year floodplain, close to Fox Creek, and mostly surrounded by wetlands typical of the AA. Vegetation on and around the mitigation site is degraded by grazing. It is entirely herbaceous except for a small patch of 10 scattered willows directly south of the mitigation site. As an upland, zero wetland functions are zero by definition.

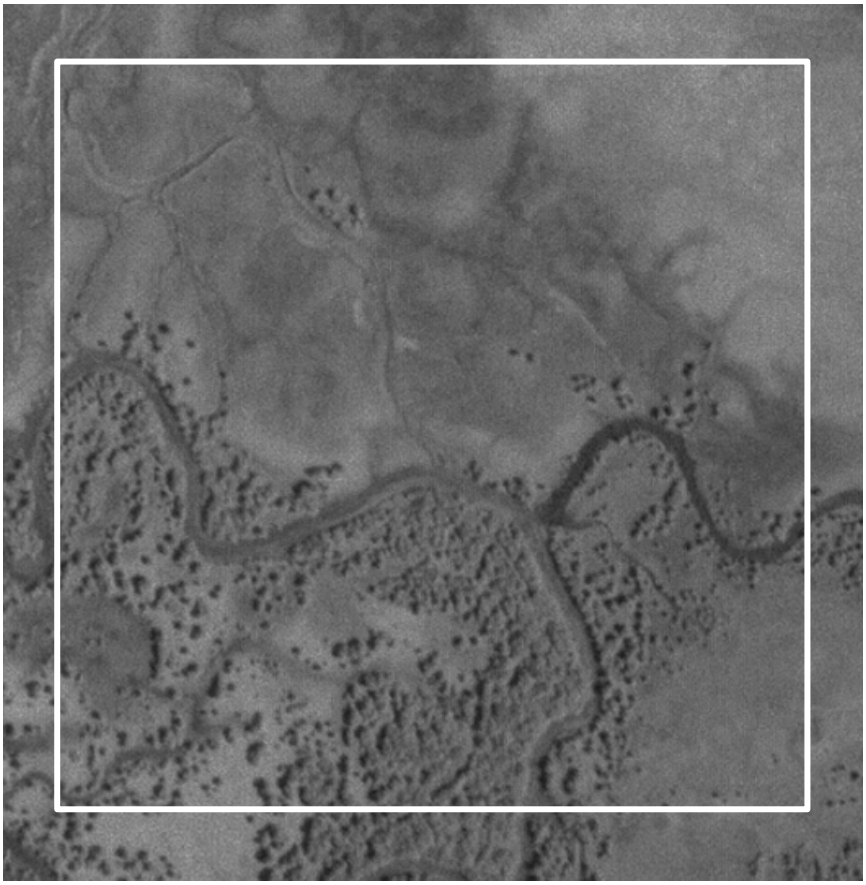
PSS & PEM reference areas were used to develop ratings for the projected functions of the mitigation site. The mitigation site was chosen for potential to create favorable hydrology with minor grading and achieve shrub cover with planting and protection. Potential hydrology can be estimated from directly adjacent PEM wetlands. These have relatively low function due to grazing, but they include vigorous sedge-dominated, seasonally flooded swales that are higher functioning than the impact site. Off-stream wetlands (>20-50 ft from Fox Creek) have moderate flood attenuation, pollutant removal, and food chain support functions but no fish habitat or shoreline stabilization function. Surface runoff storage, groundwater discharge/recharge functions, and wildlife habitat functions are typical of the AA. Overall, adjacent conditions indicate that it will be possible to create wetland from the existing upland island via minor grading and deliver hydrology-related functions.

Maximizing functional lift will require planting willows and protecting them from grazing and browsing. Feasibility of achieving PSS habitat functions is based largely on existing PSS wetlands on the south side of Fox Creek, which have complex structure with large willows, smaller understory shrubs, and sedges and other graminoids under and between shrubs. Historic aerial images with good resolution show that willows were more common along the north bank of Fox Creek in 1943 but not thick (Figure B-2), diminished markedly by 1980, and further depleted since 1980. A cluster of ten heavily browsed willows directly south of the mitigation site remains. The upland island that contains the mitigation site is near

the north bank of Fox Creek, but shrubs will not provide channel shading or bank stabilization. Proposed work does not involve Fox Creek directly because the mitigation work, including the upland spoil area, is set back 40 ft from the channel to allow for future stream restoration work. However, flood water exchange may enhance pollutant retention, organic matter export, and food web support.

The PSS wetland mapped south of Fox Creek in the ARI has thickets of tall shrubs (mainly willows) with the understory and openings dominated by sedges, rushes, and other wetland plants. Willow density varies widely, and PSS areas are mixed with PEM wetlands and upland grasslands in a mosaic. Structure provides diverse habitat niches for birds, big game, and other animals for foraging, nesting/bedding, and security cover (see photos on page 19 of ARI report). Cowardin wetland class depends partly on scale of mapping. Looking at any specific 0.5-acre area within the 8.7 acres mapped as PSS, vegetation ranges from dense willow thicket PSS to wet meadow PEM with scattered willows. The dense PSS areas show the "best case" potential for the mitigation site. Fully reaching that potential may take more than a decade, but important functions can realistically be achieved within 5 years based on the mitigation site's elevation, the relatively good condition and hydrology of adjacent sedge swales, and the PSS/PEM wetland south of Fox Creek. Ratings and performance standards for the proposed mitigation wetland are based largely on the PSS/PEM mosaic south of Fox Creek but do not assume conditions on the mitigation site will reach those of the mature comparison site within the 5-year monitoring period.

Figure B-2. 1943 Aerial Photo with approximate property boundary. Willows are more abundant north and east of Fox Creek than in later images but were probably already reduced by decades of grazing.



B-5) FUNCTIONAL RATING TABLES

Assessment Area:	**Fraiz Property north of Fox Creek & tributary excluding stream channel and uplands**			
Purpose:	Background for impact and mitigation site selection and ratings			
Size, acres:	17.3			
Minor & Major Watershed:	Fox Creek, tributary to Teton River			
USFWS Cowardin Class:	PEM			
HGM Class:	Predominantly riverine with slope features in northeastern corner			
Relative abundance of type:	Abundant in Teton River watershed			
General condition:	Degraded by historic grazing with nearly complete loss of woody plants, altered streambanks, reduced shading, and diminished wildlife and fish habitat quality			
Structural diversity:	Very low due to loss of shrubs from overgrazing			
Rationale for weightings (weightings are neutral [≈9-10%] except as justified)	Pollutant removal function weighting reduced because there is little off-site chemical loading, only episodic sediment pulses, and minor internal loading from livestock.			
	Uniqueness weighting is reduced because general wetland type and condition is well represented in the landscape and in areas under easement.			
	Recreation/Education weighting is reduced because land is private and there is already public access to adjacent IDFG lands.			
	Shoreline stabilization weighting is reduced because of limited bank length and relatively low energy (erosion potential) of streamflow.			
Function & Value Variables	**Weighting***	**Rating**	**Functional points**	**Weighted points**
	(% of total)		(0 to 1)	(maximum=10)
A. Listed/Proposed T&E Species Habitat	9	L	0.1	0.09
B. Idaho NHPSpecies Habitat	9	L/M	0.4	0.36
C. General Wildlife Habitat	9	L	0.2	0.18
D. General Fish Habitat	9	M	0.5	0.45
E. Flood Attenuation	9	H/M	0.8	0.72
F. Short and Long Term Surface Water Storage	9	M/H	0.7	0.63
G. Sediment/Nutrient/Toxicant Removal	8	L/M	0.3	0.24
H. Sediment/Shoreline Stabilization	8	M/L	0.4	0.32
I. Production Export/Food Chain Support	9	M	0.6	0.54
J. Groundwater Discharge/Recharge	9	M	0.6	0.54
K. Uniqueness	6	M	0.5	0.3
L. Recreation/Education	6	M	0.5	0.3
Totals:	100		5.6	4.67
Percent of Possible Score				47%
Functional units (ac. X points)	17.3	Acres		80.8

Site:	**Residential development site (impact site)**
System State:	Existing condition of proposed driveway and building site
Size, acres:	0.5
Minor & Major Watershed:	Fox Creek, tributary to Teton River
USFWS Cowardin Class:	PEM
HGM Class:	Borderline slope/riverine
Relative abundance of type:	Abundant in Teton River watershed
General condition:	Degraded by historic grazing with nearly complete loss of woody plants and diminished wildlife fish habitat quality
Structural diversity:	Very low due to loss of shrubs from overgrazing
Rationale for ratings that differ from AA	Development area is in higher elevation, drier area that is >200 ft from creek.
	As a result, it has no fish habitat or shoreline stabilization function and reduced flood attenuation function.
	In avoiding most lower/wetter microsites, it has little surface water storage, groundwater discharge, pollutant removal, or food chain support function.
	Wildlife habitat is typical of the drier and less productive PEM wetlands in the AA (below average).
	Drier, degraded condition reduces uniqueness and potential educational value.
	In summary, the selected development site has relatively low wetland function due to being overgrazed and dryer than most of the AA.

Function & Value Variables	**Weighting***	**Rating**	**Functional points**	**Weighted points**
	(% of total)		(0 to 1)	(maximum=10)
A. Listed/Proposed T&E Species Habitat	9	L	0	0
B. Idaho NHPSpecies Habitat	9	L/M	0.3	0.27
C. General Wildlife Habitat	9	L	0.2	0.18
D. General Fish Habitat	9	NA	0	0
E. Flood Attenuation	9	L	0.1	0.09
F. Short and Long Term Surface Water Storage	9	L/M	0.3	0.27
G. Sediment/Nutrient/Toxicant Removal	8	L	0.1	0.08
H. Sediment/Shoreline Stabilization	8	NA	0	0
I. Production Export/Food Chain Support	9	L	0.1	0.09
J. Groundwater Discharge/Recharge	9	L	0.1	0.09
K. Uniqueness	6	L	0.1	0.06
L. Recreation/Education	6	L	0	0
Totals:	100		1.3	1.13
Percent of Possible Score				11%
Functional units (ac. X points)	0.5	Acres		0.57
Functional units lost due to fill				-0.57

Site:	**Mitigation site**			
System State:	Projected condition of proposed mitigation site after PSS creation			
Size, acres:	0.5			
Minor & Major Watershed:	Fox Creek, tributary to Teton River			
USFWS Cowardin Class:	PSS with robust willows			
HGM Class:	Riverine			
Relative abundance of type:	Common in Teton River watershed			
General condition:	Robust woody vegetation and associated wildlife habitat following planting and protection from grazing and browsing			
Structural diversity:	High due to even mix of riparian shrubs and herbaceous wetland plants			
Rationale for ratings that differ from AA	Mitigation area is >40 ft from Fox Creek, so aquatic and water quality functions are minimally affected by this restoration.			
	The main differences from the existing AA are due to woody vegetation structure, overall habitat diversity, and general and sensitive wildlife habitat.			
	This PSS type is fairly common in the landscape but much less abundant than PEM.			
	In summary, restoration will lift structural diversity, overall habitat quality, and support for general wildlife and sensitive species.			
Function & Value Variables	**Weighting***	**Rating**	**Functional points**	**Weighted points**
	(% of total)		(0 to 1)	(maximum=10)
A. Listed/Proposed T&E Species Habitat	9	L/M	0.2	0.18
B. Idaho NHPSpecies Habitat	9	H/M	0.8	0.72
C. General Wildlife Habitat	9	H	0.9	0.81
D. General Fish Habitat	9	NA	0	0
E. Flood Attenuation	9	H/M	0.8	0.72
F. Short and Long Term Surface Water Storage	9	M/H	0.8	0.72
G. Sediment/Nutrient/Toxicant Removal	8	M	0.5	0.4
H. Sediment/Shoreline Stabilization	8	NA	0	0
I. Production Export/Food Chain Support	9	M	0.6	0.54
J. Groundwater Discharge/Recharge	9	M	0.6	0.54
K. Uniqueness	6	M/H	0.6	0.36
L. Recreation/Education	6	M	0.5	0.3
Totals:	100		6.3	5.29
Percent of Possible Score				53%
Functional units (ac. X points)	0.5	Acres		2.65
Functional units gained by wetland creation				2.65