



National Park Service
U.S. Department of the Interior
Yellowstone National Park

FINDING OF NO SIGNIFICANT IMPACT AND DECISION DOCUMENT

Yellowstone National Park

North Entrance Road Reconstruction Project (Mammoth Hot Springs, WY to Gardiner, MT) Environmental Assessment PEPC 148162

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The National Park Service (NPS) has considered the factors mandated by the National Environmental Policy Act (NEPA). This Decision Document represents the NPS's good-faith effort to fulfill NEPA requirements by prioritizing documentation of the most important relevant considerations within the statutorily mandated page limits and timeline. This prioritization reflects the NPS's expert judgment. The NPS certifies this Finding of No Significant Impact (FONSI) is substantially complete and thoroughly considered all relevant criteria raised in the NEPA process, and the NEPA process has concluded. The NPS also certifies that the Environmental Assessment contained analysis adequate to inform and reasonably explain this decision to issue a FONSI regarding the proposed action.

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FINDING OF NO SIGNIFICANT IMPACT AND DECISION DOCUMENT

1.1 INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [USC] 4321 et seq.), the National Park Service (NPS), in cooperation with the Federal Highway Administration-Western Federal Lands Highway Division (FHWA-WFLHD), prepared an Environmental Assessment (EA) to assess potential impacts for proposed construction of the North Entrance Road (project; Figure 1) in Yellowstone National Park (Park)¹. The purpose of the project is to restore reliable and safe long-term access to and from the Park's North Entrance while making it resilient to future floods and other natural hazards and protecting natural and cultural resources. In developing the project, NPS will provide a long-term solution to Park visitor access for current public enjoyment and for the enjoyment of future generations (16 USC § 1) and provide essential long-term access for Park staff, commercial users, concessioners, residents of nearby towns, and critical emergency vehicle access.

The statements and conclusions reached in this Finding of No Significant Impact (FONSI) and Decision Document are based on documentation and analysis provided in the EA and associated decision file. Relevant sections of the EA are summarized and incorporated by reference below. The EA is available on the NPS Planning, Environment and Public Comment (PEPC) project site at <https://parkplanning.nps.gov/NorthEntranceRoad>.

¹ Executive Order 14154, Unleashing American Energy (January 20, 2025) and a Presidential Memorandum, Ending Illegal Discrimination and Restoring Merit-Based Opportunity (January 21, 2025) require the U.S. Department of the Interior (DOI) to strictly adhere to NEPA, 42 USC §§ 4321 et seq. Further, such Executive Order and Presidential Memorandum repeal Executive Orders 12898 (February 11, 1994) and 14096 (April 21, 2023). Because Executive Orders 12898 and 14096 have been repealed, complying with such orders is a legal impossibility. The NPS verifies that it has complied with NEPA requirements, including the DOI regulations and procedures implementing NEPA at 43 Code of Federal Regulations (CFR) 46 and 516 of the Departmental Manual (DM), consistent with the January 2025 Executive Order and Presidential Memorandum. The DOI published an interim final rule, NEPA Implementing Regulations, on July 3, 2025, and a final rule on February 24, 2026, rescinding and making necessary targeted updates to its remaining regulations implementing NEPA, as well as a DOI NEPA Handbook at 516 DM 1. The Park published an EA on January 5, 2026, relying upon preexisting NEPA procedures that predate July 3, 2025, because the EA's NEPA review was sufficiently advanced at the time DOI issued the NEPA rule. Nonetheless, NPS will rely upon existing procedures to issue this FONSI, completing the NEPA review for the EA. The EA and FONSI are consistent with DOI's Final NEPA Implementing Regulations and the DOI NEPA Handbook.

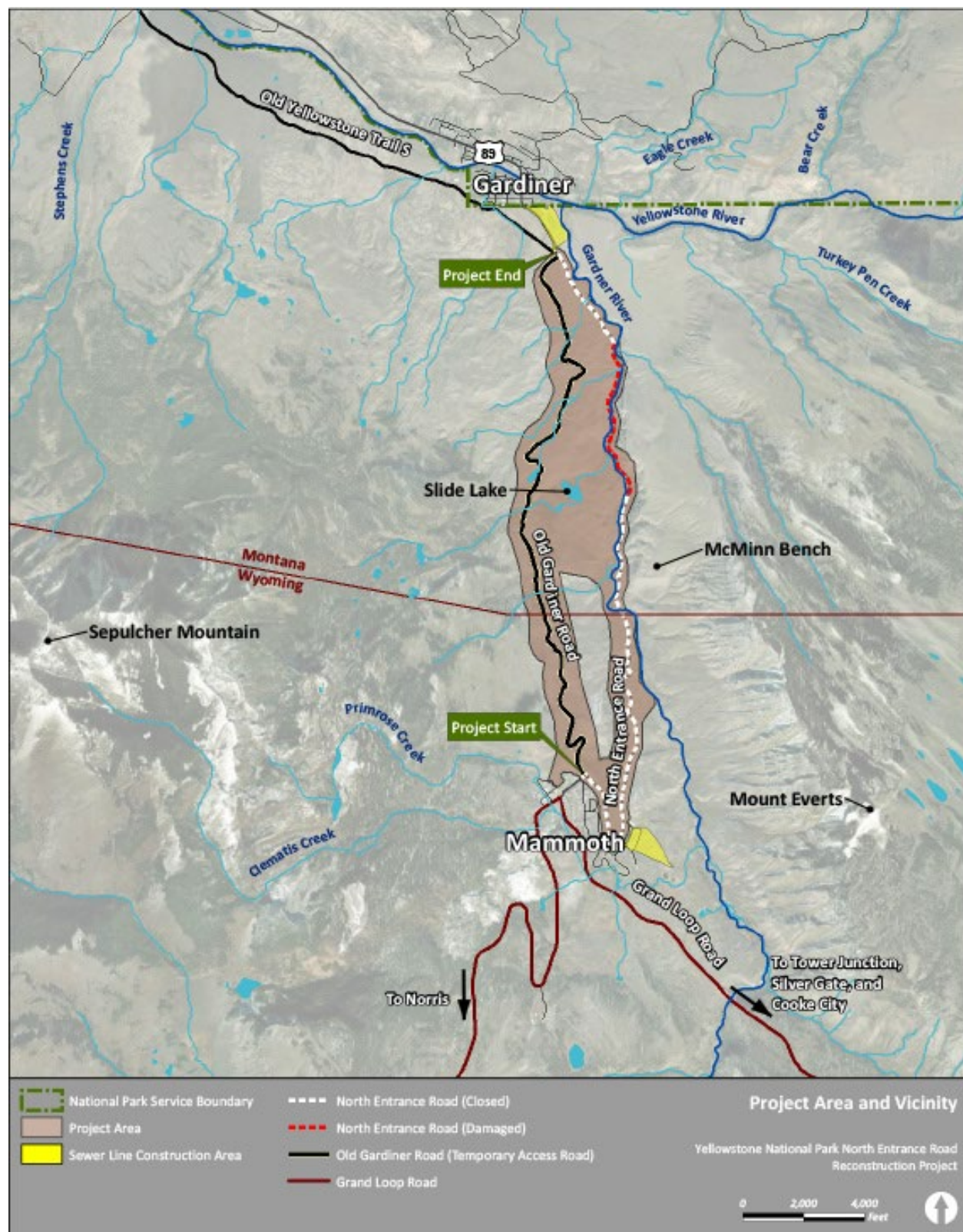


Figure 1. Project Area and Vicinity.

1.2 SELECTED ACTION AND RATIONALE FOR DECISION

1.2.1 *Selected Action*

NPS analyzed four alternatives in detail in the EA—the no action alternative and three action alternatives. NPS selected Alternative 2, the Center Alignment (selected action or new alignment) where the first segment heads north from Mammoth following the same route as the old North Entrance Road (canyon road impacted by the 2022 flood), south from Mammoth Hot Springs, circling around the Mammoth Campground, and then heading north toward the Gardner River (Figure 2). The new alignment will be constructed downstream of the Boiling River Bridge and will include two new bridge crossings over the Gardner River. The first new crossing will be near the existing bridge at the Boiling River parking area with an approximately 260-foot-long single-span bridge, and the second new crossing will be over an area known as the Chinese Gardens (Gardens) with an approximately 825-foot-long three-span bridge. The alignment continues northwesterly around Slide Lake, parallels the Old Gardiner Road (OGR) corridor, and then follows Gardner Canyon north to the North Entrance Station (North Entrance) near Gardiner (see Figure 2 and EA Chapter 2 for additional alignment details).

Once construction of the selected action is complete, the OGR will be narrowed to a multi-use pedestrian and bicyclist trail (multi-use trail). As described in the EA, use of bicycles on the multi-use trail is consistent with protection of the Park's natural, scenic and aesthetic values, safety considerations and management objectives, and will not disturb wildlife or Park resources. The multi-use trail will also serve as access for emergency vehicles when needed. During construction of the 0.4-mile overlap segment, a new 22-foot-wide construction bypass road will be constructed adjacent to the existing road to carry public traffic while the new alignment is being constructed. After construction, the bypass trail will be narrowed and converted to the multi-use trail. The northern access/parking area for the multi-use trail will be in Gardiner and two connection points along the route. At the southern/Mammoth Hot Springs end of the multi-use trail, the existing OGR will remain 22 feet wide from Mammoth Hot Springs up the first hill to an overlook parking area that will serve as the south end of the multi-use trail as well as parking for the Beaver Ponds Trailhead.

As part of the selected action, portions of the old North Entrance Road located in the Gardner Canyon will be removed, along with remaining flood-damaged infrastructure, including the old sewer line. The segment from the new Gardens Bridge to the large washout will be removed and replaced with a 6-foot-wide Architectural Barriers Act (ABA)-compliant trail into the canyon. Along this segment, interpretive wayside exhibits highlighting the 2022 flood may be installed. The selected action also includes construction of a new sewer line (reestablishing the connection between Mammoth Hot Springs and Gardiner that was destroyed during the 2022 flood) along the OGR. Portions of the sewer line will be located within the active roadway corridor (primarily near Mammoth) but primarily located within the OGR alignment to avoid traffic disruptions if maintenance is required. Generally, the portions of sewer located in active transportation corridors will be located within the shoulder to avoid traffic disruptions and asphalt demolition/repair. More details on the selected action are described in EA Appendix C.

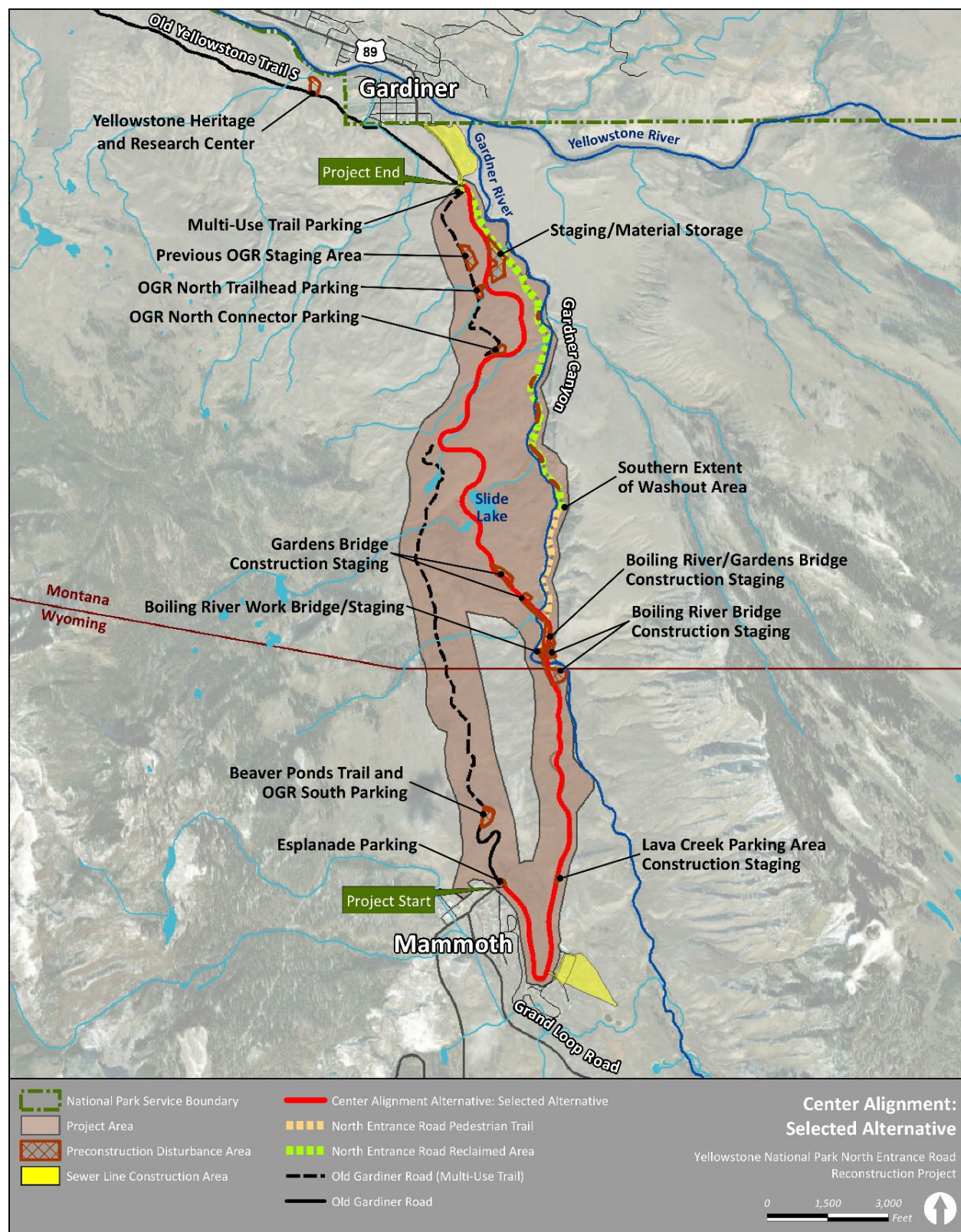


Figure 2. Center Alignment: Selected Action

1.2.2 Rationale

The selected action best meets the purpose and need for the action because it provides a feasible long-term solution to restore reliable access to the Park through the North Entrance following damage caused by the 2022 flood, while avoiding wetlands, waterways, and cultural resources to the greatest extent practicable. This access will provide long-term visitor access for current public enjoyment and for the enjoyment of future generations (16 USC § 1); and essential long-term access for Park staff, commercial users, concessioners, residents of nearby communities, and emergency vehicles.

The selected action was developed through an evaluation of multiple alignment options and design approaches and was determined to best address the purpose and need while maintaining engineering feasibility and long-term use. Other action alternatives were considered but were not selected because they did not meet the purpose and need as effectively, presented greater engineering or constructability constraints, or would have required greater disturbance to Park resources. These alternatives were dismissed from further analysis and are described in EA Chapter 2.

1.3 MITIGATION MEASURES

The NPS places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. Therefore, the NPS will implement multiple mitigation measures and best management practices (BMPs) to protect visitor use and experience, wildlife and wildlife habitat, special status species (including threatened and endangered species), vegetation and soils, water resources (including wetlands and floodplains), geologic resources, and cultural resources. These measures and practices are described in detail in Attachment D, Resource Protection Measures (RPMs) and are hereby incorporated by reference. These mitigation measures and BMPs are included as integral parts of the selected action. The NPS has the authority to implement mitigation measures under the Organic Act of 1916 (54 USC § 100101 et seq.); the National Historic Preservation Act of 1966, as amended (54 USC § 300101 et seq.); the Endangered Species Act (ESA), as amended (16 USC § 1531 et seq.); *NPS Management Policies 2006*; and other federal and state applicable requirements. A full listing of the NPS policies is available on the NPS Office of Policy website: [NPS Office of Policy website](#).

1.4 SIGNIFICANCE CRITERIA REVIEW

1.4.1 Potentially Affected Environment

The NPS identified important issues for detailed analysis in the EA through civic engagement, tribal consultations, and interdisciplinary team discussions. The NPS also identified issues that could be eliminated from further study.

The project area includes the northwest portion of the Park and consists of the area between Mammoth Hot Springs, where the Park headquarters are located (project start), and the North Entrance near Gardiner (project end). For some resources, such as cultural resources, the area

of analysis includes a 50-meter buffer on either side of the new alignment. The approximate disturbance calculations are subject to change during subsequent design phases. Changes that are not addressed by the range of impacts covered in the EA may require additional NEPA compliance or compliance with other laws.

1.4.2 Degree of Effects of the Action

As described in the EA and summarized below, although the selected action will have adverse impacts, no significant adverse impacts were identified for the resource topics retained for detailed analysis.

In addition, the DOI Handbook of NEPA Implementing Procedures (February 2026) identifies several considerations when determining whether an action will have significant impacts. The NPS reviewed each of these considerations, as documented below, and determined the selected action will not result in significant adverse effects.

Beneficial and Adverse, and Short-Term and Long-Term Effects of the Selected Action

No significant impacts on resources were identified in the EA that will require analysis in an environmental impact statement (EIS). Whether considered individually or as a whole, the impacts of the selected action, including direct and indirect impacts, do not reach the level of a significant effect because most adverse impacts associated with implementation of the project will be temporary or minor and will occur primarily during the duration of construction. Long-term impacts on wildlife and wildlife habitat, special status species, vegetation and soils, water resources (including wetlands and floodplains), geologic resources, and cultural resources will be addressed through BMPs and mitigation measures (see Attachment D, RPMs), which will further minimize any potential adverse impacts. The selected action will result in long-term beneficial impacts on visitor use and experience.

Visitor Use and Experience

A detailed analysis of impacts on visitor use and experience can be found in EA Chapter 3 (pages 39 through 41) and is summarized below.

The selected action will result in long-term beneficial impacts on visitor use and experience by restoring and improving access to scenic and recreation areas in the southern portion of Gardner Canyon that experienced reduced access following the 2022 flood. Following construction, visitors will regain access to key scenic and recreation areas along the old North Entrance Road, including improved vehicle turnouts, pedestrian trails, and upgraded parking facilities. New bridges will improve road safety and stability while restoring both vehicle and pedestrian access across the Gardner River. Design features such as stone masonry or natural stone facing on bridge elements will minimize visual effects and maintain consistency with the surrounding landscape. Improvements to parking areas, accessibility features, and visitor facilities will further enhance visitor use and experience. While views of the northern portion of the Gardner Canyon will be less accessible than under pre-flood conditions due to pedestrian-

only access upstream of the new Boiling River Bridge, overall visitor experience will be improved compared to current conditions.

Implementation of the selected action will result in temporary adverse impacts on visitor use and experience during construction, which will occur up to five construction seasons. Each construction season is anticipated to extend from early April through mid-November each year, with additional winter construction if weather conditions permit. Construction will occur 5 days a week for 10 hours each day. Temporary impacts will include intermittent closures of parking areas and recreation sites, restricted access to the Boiling River Trailhead and Lava Creek Trailhead while these areas are used for construction staging, and potential temporary access limitations at Mammoth Campground. These impacts will be limited in intensity because access to these areas is already reduced compared to pre-flood conditions. Temporary adverse impacts will be minimized through mitigation measures and BMPs described in Attachment D. Following construction, all affected sites will be restored and returned to visitor use with improved facilities.

Overall, impacts on visitor use and experience will not be significant because the selected action will contribute to improving overall visitor experience over current conditions. Adverse effects will be temporary and limited to the construction period. Temporary impacts will not be significant because areas that may not be accessible during construction are only currently accessible by pedestrians, and many other parking areas and recreation sites will remain open for visitor use during the construction period. Mitigation measures will be implemented to minimize disruptions, and long-term effects of the selected action will be beneficial.

Wildlife and Wildlife Habitat

A detailed analysis of impacts on wildlife and wildlife habitat can be found in EA Chapter 3 (pages 46 through 50) and is summarized below.

Ungulates

Impacts on ungulates will include temporary and permanent habitat loss and fragmentation. Removal of vegetation and ground disturbance in the project area will degrade the quality of foraging habitat. Approximately 47 acres of foraging habitat for ungulate species will be permanently lost. Approximately 7.3 acres of currently nonvegetated areas will be restored by deconstructing portions of the old North Entrance Road in the Gardner Canyon, resulting in a net loss of approximately 40 acres of habitat.

The anticipated net loss of approximately 40 acres as a result of this project represents less than 0.01 percent of winter range acreage and is an even more negligible and immeasurable loss to ungulate summer foraging habitat in acreage given the mobility and ability of ungulates to find alternative foraging habitats. Temporary impacts on ungulates may include behavior avoidance due to noise and increased human activity during the five construction seasons, which are anticipated to extend from early April through mid-November each year, 5 days a week for 10 hours each day, with additional winter work conducted as weather conditions permit. However,

these impacts will cease when construction is complete. Additionally, temporary work areas where vegetation removal will disturb ungulate habitat will be revegetated after construction.

The project area is a migration corridor and calving range for elk and provides habitat for mule deer and pronghorn. Constructing the new alignment will increase habitat fragmentation due to the addition of a busy road, and approximately four retaining walls ranging from 200 to 1,200 feet long could impede ungulate movements. Permanent impacts will also result from increased traffic noise in the area where the new alignment is constructed. The potential exists for vehicle strikes of wildlife from the new alignment. This risk will be reduced due to the relatively low proposed speed limit (35 mph). These impacts could adversely affect local populations but will not be expected to affect ungulates at the regional or Parkwide scale due to the availability of quality undisturbed habitat surrounding the project area. Potential RPMs to reduce construction-related impacts may be applied in an adaptive management framework if specific construction activities might impact species during a sensitive denning, nesting, or habitat/resource use during different times of the year.

Overall, impacts on ungulates, including both temporary and permanent impacts, will not be significant because anticipated habitat loss represents less than 0.01 percent of winter range acreage and an even more negligible and immeasurable loss of summer foraging habitat due to the mobility and ability of ungulates to find alternative foraging habitats.

Large Predators

Potential impacts on large predators could include disturbance or displacement during construction due to increased noise and human activity, and alteration of foraging activities if prey species are displaced from the area due to construction activities. As described for ungulates, these impacts will be temporary, lasting only during the five construction seasons, which are anticipated to extend from early April through mid-November each year, with additional winter work conducted as weather conditions permit. Permanent impacts will also result from traffic noise in the area where the new alignment is constructed. Given the temporary nature of construction impacts and the availability of extensive habitat nearby, however, the project is not expected to have measurable adverse impacts on large predator habitat beyond the permanent loss of approximately 40 acres of prey habitat and habitat fragmentation from the new road.

The risk of vehicle strikes also exists for large predators. This risk will be reduced due to the relatively low proposed speed limit (35 mph).

Overall, impacts on large predators, including both temporary and permanent impacts, will not be significant because of the availability of extensive habitat nearby and the implementation of RPMs that will minimize impacts.

Birds

As described for ungulates, impacts on bird species will include temporary and permanent loss of foraging habitat during and after construction. Approximately 47 acres of foraging habitat

will be permanently lost. Approximately 7.3 acres of currently nonvegetated areas will be restored by deconstructing portions of the old North Entrance Road in the Gardner Canyon. Birds may avoid the project area during construction and may be temporarily displaced from the immediate vicinity of the project area due to noise and human presence. However, ample habitat suitable for breeding, nesting, and foraging near the project area will accommodate displaced birds. Birds are expected to adapt to the changed conditions once construction is complete. Although the project will result in a net loss of bird habitat, habitat loss will not result in measurable impacts on birds due to the small size of the impacts relative to the amount of habitat available for these species in the Park.

Work during the summer breeding season (March 1 to August 15 for most species) could disrupt breeding activities with increased noise and human activities; however, as described in Attachment D, RPMs, ground-clearing and tree removal activities will occur outside the breeding season to avoid impacts on breeding birds.

Overall, impacts on birds, including both temporary and permanent impacts, will not be significant because of the small size of the impacts relative to the amount of habitat available for these species in the Park and the implementation of RPMs that will minimize impacts.

Fish

Under the selected action, construction activities will occur in and adjacent to the Gardner River, and will include the construction of two bridges with piers that will span the active channel. Work below the ordinary high water mark and ground disturbance from construction and staging activities in the Gardner River drainage could result in increased sedimentation and turbidity in the river during the five construction seasons. Construction activities will be monitored, and erosion- and sediment-control BMPs will be implemented to minimize erosion and sediment movement (see Attachment D). Work below the ordinary high water mark will occur at times that will have the least effect on fish and other aquatic organisms based on Clean Water Act (CWA) permits. Disturbed areas will be revegetated with native species following construction. The road and bridges will be designed to route surface water flows away from the river and wetlands to protect water quality; therefore, no long-term impacts on native fish species are expected.

Overall, impacts on fish, including both temporary and permanent impacts, will not be significant because of the implementation of RPMs that will reduce impacts on water quality and prevent work below the ordinary high water mark during critical times for fish.

Amphibians and Reptiles

Approximately 47 acres in the project area will be permanently affected by existing disturbance and new disturbance from the selected action. Vegetation in these areas includes a mix of xeric sagebrush steppe, mixed-conifer woodland, and riparian habitat.

Impacts on amphibians and reptiles will include temporary and permanent habitat loss and fragmentation in wetlands and riparian areas impacted by construction. Placement of fill for the

new road alignment and from construction of a pier for the Gardens Bridge will permanently remove 0.03 acre of the 16.1 acres of vegetated wetlands that occur in the project area. Permanent loss of 0.0017 acre (30 linear feet) of rivers and stream (unvegetated wetlands) will occur from cut and fill associated with the new road alignment. Temporary impacts on 0.187 acre of vegetated wetlands will occur from the construction of the Gardens Bridge and from cut and fill for the new alignment. Construction of the Boiling River Bridge and Gardens Bridge will also result in temporary impacts on 0.403 acre (1,520 linear feet) of streambed, which will impact soils and wetland vegetation. Temporary wetland impacts will occur from cut and fill associated with the new road alignment and from construction of the temporary work bridges. Temporary impacts will be restored by removing the work bridges and revegetating disturbed surfaces with native plant species. Wetlands that will be affected by Alternative 2 are supported by seeps and subsurface flow, pond surface water, and the Gardner River. The wetlands that will be affected consist mostly of palustrine emergent wetland communities and a few palustrine scrub-shrub communities that provide habitat for amphibians. These habitats are used for breeding, larval development, foraging, and overwintering. However, impacts will be limited to individuals and the selected action is not anticipated to affect amphibians at the population level. Wetland impacts are described in greater detail in the Wetland and Floodplain Statement of Findings (Attachment E).

In grassland habitats, project activities such as vegetation removal, grading, and increased human presence could result in direct mortality or displacement of reptiles, including bullsnake, particularly during active seasons. Construction and associated ground disturbance may degrade or fragment habitat by altering vegetative structure, reducing prey availability, and compacting soils used for burrowing or nesting. In addition, increased traffic on Park roads and access routes could elevate the risk of road mortality for snakes and other reptiles that use open habitats and travel between foraging and overwintering areas. However, impacts will be limited to individuals, and the selected action is not anticipated to affect reptiles at the population level.

Overall, impacts on amphibians and reptiles, including both temporary and permanent impacts, will not be significant because of the presence of suitable habitat adjacent to the project area and the implementation of RPMs that will minimize impacts.

Special Status Species

A detailed analysis of impacts on special status species can be found in EA Chapter 3 (pages 55 through 56) and the Biological Assessment (BA) for the EA and is summarized below (NPS 2026). Impacts on special status species will not be significant. As described below under *Agency and Tribal Consultation*, a project-specific BA was prepared and submitted to the U.S. Fish and Wildlife Service (USFWS) as part of informal consultation under the ESA. The USFWS concurred with the NPS's determination in a letter dated March 17, 2026 that the selected action may affect, but is not likely to adversely affect, grizzly bear, North American wolverine, or Ute ladies'-tresses orchid, and will have no effect on Canada lynx, monarch butterfly, or Suckley's cuckoo bumble bee.

Overall, impacts on special status species, including both temporary and permanent impacts, will not be significant because of the abundance of suitable habitat adjacent to the project area and the implementation of RPMs that will minimize impacts.

Monarch Butterfly, Suckley's Cuckoo Bumble Bee, Western Toad, and Common Loon

The project area does not provide suitable habitat for western toad and common loon, which are only likely to occur in the project area incidentally or during dispersal. The project area lacks suitable breeding habitat for monarch butterfly and contains minimal suitable foraging habitat for monarch butterfly and Suckley's cuckoo bumble bee, and neither species has been observed in the project area. Further, an abundance of suitable foraging habitat is adjacent to the project area. As such, the selected action will not impact these species.

Grizzly Bear and North American Wolverine

Under the selected action, approximately 47 acres of foraging habitat will be permanently lost, while approximately 7.3 acres of currently nonvegetated areas will be restored through deconstruction of portions of the old North Entrance Road in the Gardner Canyon. Although the project will result in a net loss of foraging habitat, the loss will be small relative to the amount of available habitat for grizzly bear and wolverine in the Park and will not result in measurable impacts on habitat use or populations.

Increased human activity and noise during the five construction seasons, which are anticipated to extend from early April through mid-November each year, with additional winter work conducted as weather conditions permit, could temporarily displace grizzly bears and wolverines from the project area. Because most disturbances occur during daylight hours when bears are less active, any changes in movement will be temporary and minor. Extensive surrounding habitat will accommodate displaced individuals, and habitat restoration will provide additional suitable habitat over the long term. The potential also exists for grizzly bear mortality from management actions to remove or relocate grizzly bears that become habituated to human presence or food conditioned during construction. To minimize this risk, all construction personnel will be required to attend a briefing session on grizzly bears and proper food storage. Food storage requirements will be strictly enforced, reducing the likelihood of human-bear conflicts. Impacts, if any, will be limited to individual animals and will not result in population-level effects. As a result, construction-related disturbance is not expected to affect grizzly bear or wolverine habitat or populations.

As with other large predators, there is also potential for vehicle strikes along the new alignment; however, this risk will be reduced by the relatively low proposed speed limit (35 mph) and will be similar to existing conditions.

Ute Ladies'-Tresses Orchid

Although no Ute ladies'-tresses orchid individuals were found during field surveys, suitable habitat for the species exists in wetland habitats in the project area. Potential habitat for the species could be adversely affected during ground-clearing activities or trampling by

construction equipment. Ground-clearing activities could diminish the suitability of potential habitat. RPMs (Attachment D) to avoid and minimize impacts on plants will include avoidance where possible.

Rare Plants

Thirteen rare plant species were documented in the project area for the selected action over approximately 2 acres. Two of the species, gray-green thistle (*Cirsium canovirens*) and lava aster (*Ionactis alpina*), are ranked as S1 (State Critically Imperiled) in Wyoming, and no Montana S1 plants are present in the project area. Two S2 (State Imperiled) fleabane species, linearleaf fleabane (*Erigeron linearis*) and Tweedy's fleabane (*Erigeron tweedyi*), are in the Wyoming portion of the project area. Rare plants within the project area could be adversely affected during ground-clearing activities or trampling by construction equipment. RPMs (Attachment D) to avoid and minimize impacts on rare plants will include avoidance (where possible), potentially harvesting seeds for use in revegetation, and transplanting of individual plants for use in revegetation efforts if avoidance is not practicable. Avoidance and restoration efforts will focus on S1 and S2 species.

Vegetation and Soils

A detailed analysis of impacts on vegetation and soils can be found in EA Chapter 3 (page 60) and is summarized below.

Under the selected action, temporary and permanent disturbance of the vegetation and soils in the project area will occur. Construction of the new bridge structures and development of the new alignment past the Gardens toward Gardiner will eliminate existing vegetation communities along the new alignment and expand the area of soil and vegetation disturbance. The majority of the project area is dominated by xeric sagebrush steppe, which is predominantly a mix of native species. However, nonnative species are also present in the project area with more invasions by annual grasses in the northern portion of the project area near Gardiner.

Approximately 47 acres in the project area will be permanently affected by existing disturbance and new disturbance. Approximately 7.3 acres of currently nonvegetated areas will be restored by deconstructing portions of the old North Entrance Road in the Gardner Canyon.

Short-term adverse impacts during construction will result from vegetation removal, soil disturbance and compaction, and the potential introduction or spread of nonnative species. Although construction could encourage the dispersal of nonnative species, much of the northern portion of the project area is already dominated by invasive annual grasses and does not represent a high-quality native vegetation community. Impacts on vegetation and soils will be minimized through implementation of RPMs described in Attachment D, including revegetating with native species, recontouring and restoring disturbed areas, and conducting weed-control measures. With these measures, disturbed areas will be restored as nearly as possible to natural conditions after construction activities are completed, and these short-term impacts on vegetation and soils will be localized and not significant.

Overall, impacts on vegetation and soils, including both temporary and permanent impacts, will not be significant because of the implementation of RPMs that will minimize impacts and due to preexisting disturbance in the project area that has led to lower quality vegetation communities in portions of the project area.

Water Resources

A detailed analysis of impacts on water resources can be found in EA Chapter 3 (pages 69 through 71), as well as Attachment E, and is summarized below.

Surface Water

Permanent impacts on the floodplain will include placement of a pier for the new Gardens Bridge within the regulatory floodplain of the Gardner River. The pier will be up to 12 feet in diameter and will have a permanent footprint in the floodplain of approximately 115 square feet (0.003 acre) in the 500-year and 100-year floodplains.

The project will also result in temporary impacts on the floodplain. Based on conservative estimates, construction and restoration work in the Gardner Canyon will temporarily impact approximately 1.2 acres of floodplains. Temporary impacts will result from using a cofferdam to isolate the pier from the river during construction and from installation of temporary work bridges. The work bridge will be designed to pass the 10-year flood event, with additional freeboard of 5 feet to the low chord. Permanent and temporary floodplain impacts are described in greater detail in Attachment E, Wetland and Floodplain Statement of Findings.

The new Boiling River Bridge and Gardens Bridge will span over the floodplain, which will minimize the disruption to the natural floodplain and help maintain the natural floodplain values. Other RPMs (Attachment D) will limit impacts to the degree that overall risks from temporary impacts on floodplains will be minor. The project will not alter the role of periodic floods in maintaining the health and diversity of floodplain ecosystems. Both bridges will be designed to pass the 100-year flood event with an additional 5 feet of clearance for woody debris and ice passage.

In addition, the existing embankment at the Boiling River Bridge will be graded to match the existing overbank, removing fill that was placed within the floodplain when the road and bridge were originally constructed. Excavating this fill material will provide additional floodplain capacity during high flows and reduce the risk of upstream flooding. Overall, the project will have minimal permanent impacts on floodplain values because the 115 square feet of impacts from the Gardens Bridge pier will not alter or constrict floodwaters. Increasing the span of the new Boiling River Bridge compared to the existing bridge will also reduce the potential for increased flooding. In addition, the project will likely not significantly reduce water infiltration because the total increase in impervious surface near the floodplain will be minor compared to the existing road. The project will not noticeably alter the existing stormwater runoff volumes or patterns. For these reasons, impacts on floodplains will not be significant. See Attachment E, Wetland and Floodplain Statement of Findings for additional details.

Wetlands

Under the selected action, wetlands will experience localized minor adverse impacts consisting of limited permanent loss and larger temporary disturbance (Attachment E). The project will permanently impact 0.03 acre of vegetated wetlands from placement of fill for the new alignment and from construction of a pier for the construction of the new Gardens Bridge. Permanent impacts on 0.0017 acre (30 linear feet) of rivers and streambed (unvegetated wetlands) will occur from cut and fill associated with the new alignment. Temporary impacts on 0.33 acre of vegetated wetlands will occur from construction of the new Gardens Bridge and from cut and fill for the new alignment. Construction of the new Boiling River Bridge and Gardens Bridge will also result in temporary impacts on 0.403 acre (1,520 linear feet) of streambed. The total temporary impacts will be 0.733 acre. Temporary impacts will generally be restored in less than one year and will be monitored as required under U.S. Army Corps of Engineers permits. The total acreage of permanent wetland impacts will be offset through compensatory mitigation by enhancing and restoring wetlands, as described in the Conceptual Restoration Plan (Attachment E). Up to 16.42 acres of potential mitigation credit has been identified in the Conceptual Restoration Plan. Overall, the impacts on wetlands under the selected action will be short-term and minor. Long-term impacts will be mitigated through compensatory mitigation. As a result, the selected action will not have significant impacts on wetlands. See Attachment E, Wetland and Floodplain Statement of Findings.

Geologic Resources

A detailed analysis of impacts on geologic resources can be found in EA Chapter 3 (page 75) and the impacts are summarized below.

The Gardner River floodplain surficial geology consists of unconsolidated materials and represents an area highly susceptible to geologic hazards along with potential for erosion and redistribution of alluvial sediments to affect structures built in the Gardner River floodplain. RPMs (Attachment D) such as sediment traps, silt and construction fencing, and regular inspection of construction areas for erosion will be implemented to minimize erosional impacts incurred during construction. Sewer line construction impacts will be similar to general road construction impacts. The impacts will be negligible and will not add any additional impacts to those already incurred from construction activities.

Approximately 200 to 1,200 linear feet of retaining walls will be used to minimize impacts on resources as well as to reduce the need to remove hundreds of feet of geologic material comprising the hillside. Damaged road sections in the Gardner Canyon will be removed and reclaimed (as funding allows), and materials will be reused in reconstruction to the greatest extent feasible. This will result in a beneficial impact on geologic resources in that areas of geologic materials that were previously covered will be restored, allowing a return of the natural character of the Gardner Canyon floor and floodplain.

The selected action will result in a negligible impact on the overall geologic resources in the Park. Sewer line construction impacts will be negligible and will not add any additional impacts

to those already incurred from the road construction activities. Therefore, impacts on geologic resources, including temporary and permanent impacts, will not be significant.

Cultural Resources

A detailed analysis of impacts on cultural resources can be found in EA Chapter 3 (pages 83 through 90) and is summarized below.

Twenty-two cultural resources were identified in the area of potential effects (APE) under the selected action. The selected action will have direct impacts on eight cultural resources, three of which are listed in or eligible for listing in the National Register of Historic Places (NRHP) and are therefore considered historic properties: OGR (24YE30/48YE827), North Entrance Road Historic District (24YE31/48YE822), and archeological site 24YE72. Site 24YE72 (NRHP-eligible) will be physically impacted by construction associated with the selected action, which will result in an adverse effect on historic properties, consistent with 36 Code of Federal Regulations (CFR) 800.5(d)(2).

There will be no direct adverse effects on the OGR and the North Entrance Road Historic District. Effects on the North Entrance Road Historic District have already occurred with the flood event; similarly, effects on the OGR occurred previously when rehabilitated for temporary use following the flood event. Indirect visual effects on the Mammoth Hot Springs Historic District and Fort Yellowstone National Historic Landmark from the introduction of the new alignment will not occur because the new alignment is already present on the landscape and any direct visual effects have already occurred.

The effects assessment on archeological historic properties under the selected action will be adverse from direct, physical construction impacts on NRHP-eligible site 24YE72. Adverse effects on site 24YE72 were resolved through mitigation, in consultation with the Wyoming and Montana State Historic Preservation Officers (SHPO) and tribes, pursuant to 36 CFR 800.6. The Park has entered into a Memorandum of Agreement (MOA) with the Wyoming and Montana SHPOs, outlining a treatment plan to address adverse effects (Attachment F). Temporary and permanent effects on cultural resources will not be significant because of the implementation of RPMs.

Degree to Which the Selected Action Affects Economic Activity

The selected action will not result in significant economic effects. Visitation to the Park will largely be unaffected after construction of the selected action because the road will convey the same traffic as current conditions. After construction, the road, parking, access, local goods and services, and recreational opportunities would still exist, and the proposed project would not likely alter economic factors over the long term such as changes in local economic bases, salary levels, land use, or plans or programs of other agencies.

The community of Gardiner, Montana, which serves as a gateway community to the Park's North Entrance, is expected to continue benefitting from visitor spending associated with ongoing Park access and use. During the construction period, short-term beneficial economic

effects may occur as a result of employment opportunities for construction crews and associated spending on local goods and services. No substantial long-term change in economic activity is expected from either construction or operation of the North Entrance Road. Overall, economic effects will be minor and not significant.

Degree to Which the Selected Action Affects Public Health and Safety

The selected action will not result in significant effects on public health and safety. A primary purpose of the project is to relocate the road out of the 100-year and 500-year floodplains of the Gardner River, which will reduce the risk of future flood-related road damage and improve the safety and reliability of year-round access to and from the Park. Under the selected action, the OGR will serve as a multi-use trail and as access for emergency vehicles when needed, maintaining emergency response capability between Gardiner and Mammoth Hot Springs. During construction, temporary adverse effects on public safety will be minimized through traffic management measures and construction BMPs described in Attachment D, RPMs. No hazardous materials will be generated by the project, and construction activities will comply with applicable air and water quality regulations. Overall, effects on public health and safety will be beneficial over the long term and will not be significant.

Degree to Which the Selected Action Affects the Quality of Life of the American People

The selected action will not result in significant adverse effects on the quality of life of the American people. Implementation of the selected action will improve the public's access to Federal lands by restoring reliable, year-round access to the Park through the North Entrance. The project will enhance visitor experience by restoring access to scenic and recreation areas in the Gardner Canyon that have had reduced access since the 2022 flood, including improved parking, pedestrian trails, and interpretive wayside exhibits. The conversion of the OGR to a multi-use trail will provide new recreational opportunities for pedestrians and bicyclists. Public services will be maintained, as the multi-use trail will continue to serve as access for emergency vehicles. Consultation with affiliated tribes has been conducted throughout the planning process to identify and address potential effects on tribal cultural resources and interests (see Appendix J of the EA and Attachment F, Signed MOA). The project will also support educational opportunities through interpretive exhibits highlighting the 2022 flood. Temporary impacts during construction will not be significant because areas that may not be accessible during the five construction seasons are only currently accessible by pedestrians, and many other parking areas and recreation sites will remain open for visitor use during the construction period. Overall, effects on the quality of life of the American people will be beneficial and will not be significant.

1.4.3 Public Involvement/Agency Consultation

Public Involvement

The public was provided with multiple opportunities to comment during the planning process. The NPS released a press release on February 2, 2024, with information about the proposed project, a link where comments on the project could be submitted, and registration information

for two virtual public meetings (webinars). A second press release was issued on February 16, 2024, to announce the addition of two additional webinars on March 1 and March 6, 2024. With the release of the newsletter, the NPS held a 30-day public comment period from February 12, 2024, to March 13, 2024. In total, approximately 370 people attended the public meetings, and the NPS received 154 unique pieces of correspondence during the public comment period. The comments received were reviewed by the NPS and considered in developing the EA.

The NPS requested public input on the EA during a 30-day EA public review period from January 5 to February 4, 2026. Two additional public meetings were held, one in-person meeting in Gardiner, Montana on January 13, 2026, and one virtual public meeting on January 14, 2026. In total, the NPS received 86 independent pieces of correspondence, several with substantive comments. See responses to substantive comments in Attachment B.

Agency and Tribal Consultation

Section 7 of the ESA requires federal agencies to ensure that the actions they authorize, fund, or carry out do not jeopardize the continued existence of listed species or destroy or adversely modify critical habitat.

Based on the analysis provided in the BA, activities authorized under the selected action either have *no effect* or *may affect, but are not likely to adversely affect* all analyzed federally listed plant species and their designated critical habitat, as applicable (NPS 2026). Table 1 provides ESA Section 7 determinations for listed wildlife species under the selected action.

Table 1. Threatened and Endangered Wildlife Section 7 Determinations.

Scientific Name	Common Name	Selected Action Section 7 Determination
<i>Lynx canadensis</i>	Canada lynx	<i>No effect</i>
<i>Ursus arctos horribilis</i>	Grizzly bear	<i>May affect, not likely to adversely affect</i>
<i>Gulo gulo luscus</i>	North American wolverine	<i>May affect, not likely to adversely affect</i>
<i>Spiranthes diluvialis</i>	Ute ladies'-tresses orchid	<i>May affect, not likely to adversely affect</i>
<i>Danaus plexippus</i>	Monarch butterfly	<i>No effect</i>
<i>Bombus suckleyi</i>	Suckley's cuckoo bumble bee	<i>No effect</i>

The selected action is covered under the NPS Programmatic BA (PBA): Yellowstone Park Road Reconstruction and Maintenance, 2008–2028 (NPS 2008) for Canada lynx and grizzly bear. A project-specific 2026 BA was also prepared and submitted to the USFWS as part of informal consultation under the ESA to address potential effects on other federally listed species (NPS 2026).

Prior to preparation of the 2026 BA, the NPS initiated informal consultation with the USFWS in September 2025 and provided justification for relying on the PBA (NPS 2008) to fulfill ESA Section 7 requirements for grizzly bear and Canada lynx. The PBA includes provisions for may affect, likely to adversely affect determinations and incidental take for Parkwide planning. The analysis presented in the BA relies on the PBA and the associated supplemental Biological Opinion for Canada lynx and grizzly bear (NPS 2010). The USFWS concurred with the NPS's

ESA Section 7 determinations (see Table 1) for the selected action in a memo dated March 17, 2026.

The NPS initiated Section 106 consultation with the Montana SHPO and the Wyoming SHPO regarding this undertaking on March 14, 2024. The Montana SHPO and Wyoming SHPO concurred with the NPS's definition of the APE and provided general recommendations for future correspondence in responses dated April 10, 2024, and May 27, 2024, respectively. In a letter dated June 26, 2024, the NPS provided design updates to both SHPOs and an opportunity to review and comment on preliminary (30 percent) construction plans (see EA Appendix J); the NPS also requested concurrence on preliminary identification of historic properties that may be affected by the project. The Wyoming SHPO concurred with the NPS determinations in a response dated June 19, 2024, and the Montana SHPO concurred in a response dated July 26, 2024 (see EA Appendix J for more information). On May 2, 2025, the NPS met with representatives for the Montana SHPO and Wyoming SHPO to discuss anticipated effects on historic properties and the historic significance and integrity of the North Entrance Road Historic District, which is listed in the NRHP. The NPS continued consultation with both SHPOs on determinations of NRHP eligibility for historic properties in the APE in a letter dated January 14, 2026. The Wyoming SHPO and Montana SHPO concurred with the NPS's recommendations on January 21, 2026, and February 12, 2026, respectively. On February 4, 2026, the NPS provided both SHPOs with documentation to support the finding of adverse effect on historic properties. The Montana SHPO concurred with the finding on March 9, 2026, and the Wyoming SHPO concurred on March 16, 2026.

The NPS sent letters to 27 tribes on February 29, 2024, to initiate Section 106 consultation for the undertaking, and extended an invitation for a meeting to discuss the proposed improvements and properties of religious and cultural significance that may be present within the project area and potentially affected by the undertaking. The NPS hosted a meeting on March 22, 2024; representatives from the Kiowa, Umatilla, Cheyenne River Sioux, Shoshone-Bannock, Northern Arapaho, Oglala Sioux, and Fort Belknap Tribes attended. As follow-up to the meeting, the NPS shared copies of the presentation and information on results of cultural resource inventories.

Tribal consultation continued during the public comment period for the EA. This included invitations to a virtual meeting to discuss results of the identification of historic properties and assessment of effects. The NPS also sent letters to tribes on January 7, 2026, as notification of NPS's finding of adverse effect and an invitation to consult on measures to resolve adverse effects for this undertaking and the Rescue Creek Bridge Replacement Project, a separate, but related undertaking. One response was received from the Blackfoot Nation (email dated January 12, 2026) who requested to participate as a consulting party in the development of the MOA to resolve adverse effects. The NPS hosted a meeting for interested tribes on January 21, 2026. Only one tribal representative (from the Colville Tribes) attended the meeting. Following the meeting, the Colville Tribes and the NPS corresponded via email, and the Colville Tribes confirmed they intend to participate as a consulting party in the development of the MOA.

The NPS has also consulted with the City of Bozeman, Livingston Historic Commission, Livingston Historic Preservation Commission, Park County (Wyoming) Historic Preservation Commission, Teton County (Idaho) Commissioners, and Teton County (Wyoming) Historic Preservation Board regarding the effects of the undertaking on historic properties and has invited them to sign the MOA as concurring parties.

In accordance with 36 CFR §800.6(a)(1), the NPS has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect finding on March 25, 2026; the ACHP responded on June 2, 2026, and declined to participate in consultation. To resolve adverse effects to archeological properties, the NPS continued consultation with the Montana and Wyoming SHPOs as well as interested tribes and other local consulting parties and developed an MOA and an archeological resources treatment plan (ARTP) that outlined the process and procedures for archeological data recovery. The Park hosted three meetings in April 2026 with the SHPOs, interested tribes, and other local consulting parties, after which drafts of the MOA and ARTP were circulated by the NPS for consulting party review and comment. Comments were received from the Montana SHPO, Wyoming SHPO, and Colville Tribes. The MOA was executed on 07/30/2026 (Attachment F).

1.5 CONCLUSION: FINDING OF NO SIGNIFICANT IMPACT

The selected action will not result in significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, elements of precedence were identified. Implementation of the NPS selected action will not violate any federal, state, or local environmental protection law. Implementing the selected action will adversely impact vegetation and nonvegetated wetlands and will be mitigated per Sections 401 and 404 of the CWA and per NPS policies. Implementing the selected action will result in an adverse effect on one archeological site eligible for listing in the NRHP. The adverse effect will be resolved through mitigation measures outlined in an MOA (see Attachment F, Signed MOA) executed with the Wyoming and Montana SHPOs, affiliated tribes, and other consulting parties pursuant to 36 CFR 800.6.

Based on the information contained in the EA and described above, the NPS has determined that the selected action will not result in significant effects on the human environment within the meaning of Section 102(2)(c) of NEPA nor does it constitute a major federal action meeting the criteria that normally requires preparation of an EIS. Based on the foregoing, the NPS has determined that an EIS is not required and will not be prepared.

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ATTACHMENT A: NON-IMPAIRMENT DETERMINATION

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North Entrance Road Reconstruction Project, Selected Action Yellowstone National Park Non-Impairment Determination

Introduction

This non-impairment determination has been prepared for the selected action, as described in the Finding of No Significant Impact (FONSI) for the Yellowstone National Park (Park) North Entrance Road Reconstruction Project (project), Mammoth Hot Springs, WY to Gardiner, MT Environmental Assessment (EA). As a basis for evaluating the potential impairment of Park resources, the National Park Service (NPS) relied on the EA, which is incorporated by reference herein.

The NPS Organic Act of 1916 directs the NPS to “conserve the scenery, natural, and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations” (54 United States Code 100101). NPS *Management Policies 2006*, Section 1.4.4, explains the prohibition of the impairment of Park resources and values:

“While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.”

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values.” To determine impairment, the NPS must evaluate the particular resources and values that will be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts (NPS 2006, Section 1.4.5).

An impact on any Park resource or value may constitute an impairment to the extent that it affects a resource or value, the conservation of which is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Park, or
- key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or

- identified in the Park's general management plan or other relevant NPS planning documents as being of significance (NPS 2006, Section 1.4.5).

Before approving a selected action that could lead to an impairment of Park resources and values, a NPS decision maker must consider the impacts of the selected action and determine, in writing, that the activity will not lead to an impairment of Park resources and values (NPS 2006, Section 1.4.7).

Fundamental resources and values for the Park are identified in the Park's Foundation Document (NPS 2014), the enabling legislation for the Park (summarized in Appendix A of the Foundation Document), and the Park's Master Plan (NPS 1974).

As described in the Foundation Document, the purpose of the Park is:

Yellowstone National Park, the world's first national park, was set aside as a public pleasuring ground to share the geothermal wonders and preserve and protect the scenery, cultural heritage, wildlife, and geologic and ecological systems and processes in their natural condition, for the benefit and enjoyment of present and future generations.

The fundamental resources and values for the Park are:

- Geothermal wonders
- Dynamic geologic processes and features
- Hydrologic systems
- One of the largest, mostly intact temperate ecosystems in the world
- An enduring human connection to the Park
- A park for the people
- Opportunities for wildness and a wild experience (NPS 2014).

The resources carried forward for detailed analysis in the EA prepared for the project and for which a non-impairment determination has been made include: wildlife and wildlife habitat, special status species, vegetation and soils, water resources, geologic resources, and cultural resources. These resources are considered necessary to fulfill specific purposes identified in the establishing legislation of the Park, are identified for management in relevant NPS planning documents, or are key to the natural or cultural integrity of the Park.

Non-impairment determinations do not include a discussion of impacts on wilderness, visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and Park operations as these resources do not constitute impacts on Park resources and values identified through the NPS Organic Act or General Authorities Act that are subject to the non-impairment standard.

Accordingly, a non-impairment determination is made for each of the resources carried forward in the 2026 EA, with the exception of visitor use and experience (see below). Any impacts on other resources that would be subject to a non-impairment determination (see NPS 2006,

Section 1.4.6) are so minor that they were not carried forward for analysis in the 2026 EA (see EA Appendix A) and would not result in impairment.

Non-Impairment Determination for the Selected Action

Wildlife and Wildlife Habitat

Construction will result in permanent habitat loss associated with the new road alignment and related features, including a net loss of approximately 40 acres of wildlife foraging habitat after deconstruction and restoration of portions of the old North Entrance Road. This represents less than 0.01 percent of available ungulate winter range in the Park and an even smaller percentage of available summer foraging habitat.

Temporary impacts on wildlife will occur during construction as a result of increased noise, human activity, and habitat disturbance, including potential short-term displacement or avoidance in the project area, which is located in a migration corridor and calving range for elk and provides habitat for other ungulates, birds, fish, and large predators. These temporary impacts will be limited to the duration of construction and will cease once construction is complete.

Permanent impacts will be localized and limited in extent and will not affect wildlife populations at the Parkwide or regional scale due to the availability of extensive undisturbed habitat throughout the Park. The potential for adverse effects will be further minimized through implementation of Best Management Practices and RPMs identified in Attachment D, including seasonal construction restrictions to avoid sensitive periods for wildlife, nesting bird surveys and avoidance measures, food storage requirements to prevent wildlife habituation, erosion- and sediment-control measures, and design features intended to reduce wildlife-vehicle collision risk. Overall, the selected action will not result in impairment to the Park's wildlife populations because wildlife will continue to be present for the enjoyment of current and future generations.

Special Status Species

As documented in the 2026 EA and the Biological Assessment (BA; NPS 2026) prepared to support consultation under the Endangered Species Act, the selected action may affect, but is not likely to adversely affect, grizzly bear, North American wolverine, or Ute ladies'-tresses orchid, and will have no effect on Canada lynx, monarch butterfly, or Suckley's cuckoo bumble bee. The U.S. Fish and Wildlife Service concurred with these determinations.

The project area provides limited or marginal habitat for several special status wildlife species, including grizzly bear, North American wolverine, and Ute ladies'-tresses orchid, and these species are expected to occur in the project area only incidentally or during dispersal.

Temporary impacts associated with construction, including increased noise, human presence, and localized habitat disturbance, could result in short-term displacement of individual animals traveling through the area. These impacts will be limited to the duration of construction and will

not affect habitat use or populations at the Parkwide or regional scale due to the availability of extensive suitable habitat throughout the Park.

Suitable habitat for certain special status plant species occurs within the limits of disturbance, and ground-clearing activities could adversely affect individual plants or localized habitat after construction has been completed. RPMs identified in Attachment D, including avoidance where practicable, transplanting, and restoration measures, will minimize long-term adverse effects. Although impacts on individual plants or localized habitat could occur, these impacts will be small in extent and will not affect the viability or distribution of special status plant species at the Parkwide scale. Overall, the selected action will not result in impairment of special status wildlife or plant species because their integrity will be maintained and these resources will continue to be present for the enjoyment of current and future generations.

Vegetation and Soils

Implementation of the selected action will result in temporary and permanent disturbance to vegetation and soils associated with construction of new road segments and bridge structures, including areas that are already disturbed, as well as areas of new disturbance. Permanent impacts will be localized in the project area, and short-term adverse effects during construction will include vegetation removal, soil disturbance and compaction, and the potential introduction or spread of nonnative species. The majority of the project area is dominated by xeric sagebrush steppe, which is predominantly a mix of native species. However, nonnative species are also present in the project area with more invasions by annual grasses in the northern portion of the project area near Gardiner.

Since much of the northern portion of the project area is already dominated by nonnative or previously disturbed vegetation and does not represent a high-quality native vegetation community, adverse impacts will be minimal. Additionally, impacts on vegetation and soils will be minimized through implementation of RPMs identified in Attachment D, including revegetating with native species, recontouring and restoring disturbed areas, and conducting weed control measures. With these measures, disturbed areas will be restored as nearly as possible to natural conditions following construction.

Based on the localized extent of permanent impacts, the temporary nature of construction-related disturbance, the existing disturbed conditions of much of the project area, and the implementation of restoration and minimization measures, the selected action will not result in impairment of vegetation or soils because it will not harm the integrity of these resources at the Park, which will continue to be present for the enjoyment of current and future generations.

Water Resources

Implementation of the selected action will result in localized permanent and temporary minor impacts on surface waters, floodplains, and wetlands associated with construction of new bridge structures, road realignment, and related features within the Gardner River corridor.

Permanent floodplain impacts will be limited to the placement of a single bridge pier within the regulatory floodplain of the Gardner River, with a very small permanent footprint relative to the overall floodplain area. Based on conservative estimates, construction and restoration work in the Gardner Canyon will temporarily impact approximately 1.2 acres of floodplains. Temporary impacts will result from using a cofferdam to isolate the pier from the river during construction and from installation of temporary work bridges. The work bridge will be designed to pass the 10-year flood event, with additional freeboard of 5 feet to the low chord. Permanent and temporary floodplain impacts are described in greater detail in Attachment E, Wetland and Floodplain Statement of Findings.

Bridge designs will span the active channel and floodplain to the extent practicable, maintaining floodplain connectivity and allowing the passage of flood flows, woody debris, and ice. In addition, removal of existing fill at the Boiling River Bridge will increase floodplain capacity and reduce the risk of upstream flooding, resulting in beneficial effects on floodplain function. The selected action will not alter the role of periodic flooding in maintaining floodplain ecosystems.

Wetlands will experience limited permanent impacts and larger temporary disturbances associated with construction activities. Temporary impacts on 0.33 acre of vegetated wetlands will occur from construction of the new Gardens Bridge and from cut and fill for the new alignment. Construction of the new Boiling River Bridge and Gardens Bridge will also result in temporary impacts on 0.403 acre (1,520 linear feet) of streambed. The total temporary impacts will be 0.733 acre. Temporary impacts will generally be restored in less than one year and will be monitored as required under U.S. Army Corps of Engineers permits. The total acreage of permanent wetland impacts will be offset through compensatory mitigation by enhancing and restoring wetlands, as described in the Conceptual Restoration Plan (Attachment E). Up to 16.42 acres of potential mitigation credit has been identified in the Conceptual Restoration Plan. RPMs identified in Attachment D, including erosion- and sediment-control measures, construction monitoring, and restoration of disturbed areas, will minimize adverse effects on water quality, wetlands, and aquatic resources.

Based on the small scale and localized nature of impacts, the preservation and enhancement of floodplain functions, the use of compensatory mitigation and restoration measures, and the implementation of avoidance and minimization measures, the selected action will not result in impairment of water resources as the integrity of these resources will be maintained at the Park, and the resources will continue to be present for the enjoyment of current and future generations.

Geologic Resources

Geologic conditions within the Gardner River floodplain consist primarily of unconsolidated surficial materials that are susceptible to erosion and redistribution; however, short-term adverse impacts from the erosion and redistribution of unconsolidated geologic materials associated with construction activities will be minimized through design features and RPMs identified in Attachment D.

Retaining walls will be used to reduce the extent of excavation and minimize removal of geologic materials from hillsides, resulting in localized beneficial effects by allowing previously covered geologic materials to be restored and supporting the return of the natural character of the Gardner Canyon floor and floodplain. Damaged road sections in the canyon will be removed and reclaimed as feasible, further contributing to beneficial effects on geologic resources.

Short-term adverse impacts from erosion and redistribution of unconsolidated geologic materials associated with sewer line construction will be a negligible addition to impacts already associated with road construction activities. Overall, impacts associated with the selected action will be localized and will result in a negligible effect on geologic resources of importance in the Park.

Based on the limited extent of impacts, the use of design features to minimize disturbance, the incorporation of restoration measures, and the Parkwide scale and resilience of geologic resources, the selected action will not result in impairment of geologic resources as the integrity of these resources will be maintained at the Park, and the resources will continue to be present for the enjoyment of current and future generations.

Cultural Resources

Direct effects on historic properties associated with the North Entrance Road Historic District and the Old Gardiner Road will not be adverse because the effects of the 2022 flood have already occurred to these historic properties, and indirect effects on the Mammoth Hot Springs Historic District and Fort Yellowstone National Historic Landmark will not be adverse because the road alignment and associated features are already present on the landscape, and the selected action will not introduce new visual or physical elements.

One archeological site will be physically impacted by construction, resulting in an adverse effect on historic properties pursuant to 36 CFR 800.5(d)(2). Adverse effects on archeological resources are resolved through the MOA (Attachment F) developed in consultation with State Historic Preservation Officers and tribes, consistent with 36 CFR 800.6.

Based on the resolution of adverse effects through the Section 106 process and the implementation of avoidance, minimization, and mitigation measures, the selected action will not diminish the integrity, significance, or availability of cultural resources at the Parkwide scale. Accordingly, implementation of the selected action will not harm the integrity of or result in impairment of cultural resources, and the resources will remain available to be enjoyed by current and future generations.

Summary

The NPS has determined that implementation of the selected action will not constitute an impairment of the resources or values of the Park. This conclusion is based on the Park's purpose, significance, fundamental resources and values, a thorough analysis of the

environmental impacts described in the 2026 EA and appendices, comments provided by the public and others, relevant scientific studies and resource reports, and the professional judgment of the decision maker guided by the direction in NPS *Management Policies 2006*. The selected action will not result in major adverse impacts on a resource or value, the conservation of which is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Park; (2) key to the natural or cultural integrity of the Park; or (3) identified as a goal in the Park's Foundation Document (NPS 2014) or other relevant NPS planning documents.

ATTACHMENT B: RESPONSES TO SUBSTANTIVE PUBLIC COMMENTS ON THE ENVIRONMENTAL ASSESSMENT

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Attachment B: Responses to Substantive Public Comments on the Environmental Assessment

North Entrance Road Reconstruction Project, Selected Action

Yellowstone National Park

The National Park Service (NPS) prepared an Environmental Assessment (EA) for the North Entrance Road Reconstruction Project (project) at Yellowstone National Park (Park; project area) in compliance with the National Environmental Policy Act (NEPA). The EA was open for public comment on the Planning, Environment, and Public Comment (PEPC) website from January 5 through February 4, 2026. The NPS received 86 correspondences, from which 215 comments were derived.

The NPS considers all substantive comments that are received within the comment period, and the standard NPS practice is to summarize similar substantive comments into concern statements (e.g., consolidated issues, views, and suggestions expressed in comments) and to respond collectively to each concern statement. Substantive comments are those that question, with reasonable basis, the accuracy of the information in the NEPA document or the adequacy of the environmental analysis, or present reasonable alternatives other than those described in the EA. Comments that merely support or oppose a proposal or that merely agree or disagree with NPS policy are not considered substantive. This attachment summarizes comments that are substantive or otherwise warranted a response.

Alternatives

Two One-Way Roads Instead of One New Road

Concern Statement: Commenters recommended that the NPS analyze an alternative that retains both the existing temporary Old Gardiner Road (OGR) and the Old North Entrance Road (washed-out), potentially operating as a one-way system in each direction. Commenters stated this approach could enhance safety by reducing head-on conflicts, minimize the need for road widening, maintain winter access and redundancy during closures, accommodate potential bicycle use, and avoid construction impacts on unstable hillsides and fragile areas, such as Slide Lake.

NPS Response:

Scientific analyses and engineering were used to inform and develop preliminary alternatives for the new North Entrance Road that met the draft goals and objectives identified in 2022 for the project (Federal Highway Administration-Western Federal

Lands Highway Division [FHWA-WFLHD] 2022). As described in EA Section 2.1.1, Alternatives Development, the NPS and FHWA-WFLHD considered several potential alternatives and completed a value analysis study (NPS 2022) for those preliminary alternatives in November 2022 based on five criteria: (1) protect public health, safety, and welfare; (2) protect cultural and natural resources; (3) provide visitor services and educational and recreational opportunities; (4) improve operational efficiency and sustainability; and (5) provide cost-effective, environmentally responsible, and otherwise beneficial development (NPS 2022). Although one-way routes were considered and documented in the value analysis study (NPS 2022), none were carried forward as a viable alternative for detailed analysis in the EA. Repairing the damaged old North Entrance Road and bringing the OGR up to current engineering standards (including associated disturbance and traffic impacts) would not improve operational efficiency and sustainability nor would such an alternative provide cost-effective, environmentally responsible, or otherwise beneficial development. See also the comment response below regarding proximity of the road to Slide Lake.

Alternative 2 (NPS Preferred Alternative)

Commenters made suggestions regarding the various elements that make up Alternative 2 (NPS preferred alternative), including suggested mitigations.

Suggested Change or Addition to Road Design

Concern Statement: Commenters recommended incorporating multimodal facilities into the road design, including accommodations for both bicycles and buses, such as dedicated or shared bus/bike lanes where feasible to support alternative transportation and reduce private vehicle use. Commenters also requested that the final design explicitly address operational needs for these modes—confirming continuous, usable shoulder or lane widths on curves, bridges, and constrained areas with a minimum shoulder width of 18 inches (paved, not chip sealed); careful planning of rumble strip placement; and committing to maintenance practices (e.g., sweeping and managing pavement joints/edge drop-offs) that affect safe bicycle and bus transit operations.

NPS Response:

As discussed above, under the selected action (Alternative 2), the road will be constructed according to Parkwide standards, including widened curves and flatter profile grades (as compared to the temporary entrance road), with a surface width of up to 30 feet (two paved 11-foot-wide travel lanes with two 4-foot-wide shoulders). The new entrance road will be safer for all motorized modes of transportation, including buses, but is not intended as a bicycle route. Adding designated bike and/or bus lanes would lead to additional disturbance and would not necessarily meet the purpose and need of the project. To improve visitor safety and access, separate routes will be provided for bicycle and vehicle traffic. Under the selected action, the OGR would be

converted to a paved multi-use path, allowing visitors a safe cycling route between Gardiner and Mammoth.

Suggested Change to Bridges/Drainage Structures

Concern Statement: Commenters recommended that culverts and stream crossings be designed to facilitate wildlife movement, including sizing culverts to accommodate small mammals, amphibians, and reptiles and incorporating features such as natural substrates, side ledges, and reduced water velocities. Commenters also suggested evaluating the need for larger wildlife crossing structures and designing bridges to allow animal passage beneath them, with appropriate study, funding, and long-term monitoring to ensure effectiveness and reduce habitat fragmentation and wildlife-vehicle collisions.

NPS Response:

Two box culverts located beneath the selected road alignment have been sized to allow for wildlife movement. The box culverts will accommodate the hydraulic capacity needs, while also providing dry banks for smaller wildlife, bears, and wolves to cross under the road. Larger structures, such as overpasses or underpasses, would have a greater impact on natural resources and therefore were not selected. Fencing on both sides of the road to control the crossing would have a larger impact on migration and lead to undesirable aesthetic impacts. Potential impacts of the project on wildlife and habitat effects are analyzed in EA Chapter 3, Section 3.4.2.

Suggested Change to Parking and Paved Pullouts

Concern Statement: Commenters express interest in additional roadside parking to facilitate recreational access to the Gardner River and to facilitate wildlife viewing and photography while maintaining traffic safety. They also request adequate and appropriately sized parking at the Rescue Creek trailhead, including space for stock trailers.

NPS Response:

The selected action (Alternative 2) balances goals for enhancing visitor facilities with those for traffic safety and minimizing new resource disturbance (see discussion in EA Section 3.4.1, Visitor Use and Experience). The selected action will enhance the visitor experience by providing numerous roadside parking areas along the Gardner River as well as new parking lots at popular trailheads. Specific details, such as designated parking spaces for oversized vehicles and stock trailers, would be part of the final design process. EA Appendix E provides a detailed description of the parking areas, trails, and roadside turnouts that will be constructed as part of the project.

Suggested Change to Multi-Use Path

Concern Statement: Commenters requested additional clarification and public input regarding management of the proposed Old Gardiner Road multi-use path, including allowable uses (e.g., e-bikes, snowmobiles), winter plowing policies, wildlife and noise impacts, and long-term

maintenance. Suggestions include designing the route as a dedicated non-motorized trail for walking, cycling, and skiing; considering seasonal management such as leaving it unplowed for winter recreation; evaluating surface type and width (including gravel or narrower configurations); and ensuring the facility provides a safe, separated connection between Gardiner and Mammoth.

NPS Response:

The EA discloses the purpose and design of the multi-use path in Chapter 2, Alternatives. Potential impacts on resources, including visitor use and experience, and wildlife and habitat effects are analyzed in the applicable resource sections of Chapter 3. The selected action (Alternative 2) balances goals for enhancing visitor facilities with those for traffic safety and minimizing new resource disturbance (see discussion in EA Section 3.4.1, Visitor Use and Experience). Although a final determination has not been made, the multi-use path is not anticipated to be plowed in the winter due to resources being focused on the main Park roads around Mammoth and the Northeast Entrance. The multi-use path will be used for sewer line maintenance and emergency response such as law enforcement, accident response, and fire response.

Suggested Change to Sewer Infrastructure and Utilities

Concern Statement: A commenter suggested that the EA should clarify the placement of wastewater and sewer infrastructure in relation to the proposed roadway and expressed concern that locating utilities beneath the road surface could result in future roadway disturbance for maintenance or repairs.

NPS Response:

The placement of wastewater and sewer infrastructure was considered during project design to balance infrastructure needs with the goal of minimizing new ground disturbance and environmental impacts. As described in EA Chapter 2, locating wastewater and sewer infrastructure within the road corridor was selected where practical to limit additional surface disturbance outside the existing disturbed footprint; any future maintenance would occur within the existing disturbed corridor and would be subject to applicable Resource Protection Measures described in EA Appendix D. Portions of the sewer line will be located within the active road corridor near Mammoth but primarily located within the OGR alignment to avoid traffic disruptions if maintenance is required. The portions of sewer infrastructure located in active transportation corridors will be located within the shoulder to avoid traffic disruptions and asphalt demolition and repair when maintenance is needed.

Area-Specific Concerns

Slide Lake

Route Road Away from Slide Lake

Concern Statement: Commenters recommended an alternative that is similar to Alternative 2 but that avoids or minimizes impacts to Slide Lake, including rerouting the roadway to reduce shoreline disturbance, to consider soil stability constraints, and to avoid important wildlife habitat areas.

NPS Response:

Potential impacts of the project on wildlife and habitat effects, water resources, vegetation, and soils are analyzed in EA Chapter 3. While the Slide Lake area is more active than landslide formations to the north and south, geotechnical instrumentation as well as InSAR change detection has shown little movement in recent history (more active areas in the region are north and west of the proposed alignment and existing OGR). Some continual movement and shifting of soils are anticipated around Slide Lake, even if happening slowly – consequently the road engineering has incorporated flexible road stabilization systems to reduce any damage to the road that may be caused by weak or shifting soils. No trail would be constructed around Slide Lake. The proposed Slide Lake trail would be above the lake and overlook the lake without passing next to it. Access from the trail to the lake is not likely due to the steepness of the terrain.

Geologic Hazards and Slope Instability in Slide Lake Area

Concern Statement: Commenters expressed concern about geologic hazards and slope instability in the Slide Lake area, questioning whether Alternative 2 places the roadway in landslide-prone terrain and whether the EA adequately discloses risks related to avalanches, slope failure, extreme weather events, and long-term roadway resilience. They note deficiencies in the analysis of landslide probability, potential impacts to Slide Lake, associated costs and safety implications, and request clearer disclosure of site history, hazard risk, and protective design measures.

NPS Response:

While the Slide Lake landslide is more active than landslide formations to the north and south, geotechnical instrumentation as well as Interferometric Synthetic Aperture Radar (InSAR) change detection has shown little movement in recent history (more active areas in the region are north and west of the proposed alignment and existing OGR). Some continual movement and shifting of soils are anticipated around Slide Lake, even if happening slowly – consequently the road engineering has incorporated flexible road stabilization systems to reduce any damage to the road that may be caused by weak or shifting soils. Geologic hazards, including landslide risks in the Slide Lake area, are

analyzed in EA Section 3.4.6, Geology and Soils, including consideration of slope stability, engineering controls, and long-term risk reduction.

Slide Lake Hydrology

Concern Statement: Commenters asserted that the EA inadequately evaluates the ecological significance and environmental risks to Slide Lake under Alternative 2 and dispute its characterization as having low to moderate uniqueness. They request additional analysis of the lake's hydrology, water sources and flow paths, depth and substrates, slope stability adjacent to the lake, potential for sedimentation and pollutant runoff due to proximity of the road, and potential long-term water quality impacts. Commenters also called for disclosure of specific protective measures, development of a biological mitigation plan in the event of wetland degradation, and clarification of responsibility and liability should roadway failure or environmental damage occur during or after construction.

NPS Response:

Potential impacts on Slide Lake and associated wetlands, including drainage and hydrologic connectivity, are summarized in EA Section 3.4.5, Water Resources and evaluated in detail in the Wetland and Floodplain Statement of Findings (WFSOF). A Stormwater Management Plan (SWMP) is being developed and implemented for all areas of the proposed alignment that will treat stormwater runoff prior to entering any jurisdictional waterbody or wetland. The SWMP primarily relies on minimum buffers, which are treatments allowable by permitting agencies. The WFSOF and SWMP were prepared for the project to guide design, minimize impacts, and identify mitigation measures, including compensatory mitigation for any unavoidable wetland impacts. The EA and WFSOF disclose that approximately 32.71 acres of lakes, ponds, rivers, and streams (unvegetated wetlands) and 18.0 acres of vegetated wetlands occur in the project area, including the Slide Lake Drainage Area. However, the selected action would result in permanent disturbance to only approximately 0.03 acre of wetland and temporary disturbance to 0.7 acre of wetland. Compensation for permanent impacts on wetlands would be accomplished by enhancing or restoring existing wetlands – see the WFSOF for additional detail. See above response regarding road design.

Wildlife in Slide Lake Area

Concern Statement: Commenters expressed concern that the proximity of the preferred alternative to Slide Lake could increase human use and disturbance in an area currently characterized by low visitation and high wildlife use. They cited observations of diverse bird species, amphibians, aquatic-dependent mammals, and ungulates using the wetland complex, and questioned the EA's conclusion that habitat loss would be minor, urging more detailed analysis of potential effects and measures to avoid or minimize disturbance from roadway construction, overlooks, and new trails.

NPS Response:

The road was located to provide and maintain the green buffer around Slide Lake for wildlife use. No pullouts will be located adjacent to the lake. The Slide Lake pullout above the lake will allow people to view this area without impacting habitats near the lake. No trail would be constructed around Slide Lake. The proposed Slide Lake trail would be above the lake and overlook the lake without passing next to it. Unauthorized access from the trail to the lake is not likely due to the steepness of the terrain. Potential impacts of the project on wildlife and habitat effects, water resources, vegetation, and soils are analyzed in EA Chapter 3.

Slide Lake Mitigations

Concern Statement: A commenter expressed concern about potential impacts to Slide Lake and associated wetlands, including hydrologic connectivity, drainage alterations, and prior disturbance from emergency road work, and note the absence of identified mitigation or compensation measures in the EA. They request restoration of affected wetland areas, development and transparency of performance standards and monitoring plans, adequate funding for implementation, and consideration of amphibians and related habitat in mitigation and monitoring efforts.

NPS Response:

Potential impacts on Slide Lake and associated wetlands, including drainage and hydrologic connectivity, are summarized in EA Section 3.4.5, Water Resources and evaluated in detail in the WFSOF. A SWMP is being developed and implemented for all areas of the proposed alignment that will treat stormwater runoff prior to entering any jurisdictional waterbody or wetland. The SWMP primarily relies on minimum buffers, which are treatments allowable by permitting agencies. The WFSOF and SWMP were prepared for the project to guide design, minimize impacts, and identify mitigation measures, including compensatory mitigation for any unavoidable wetland impacts. The EA and WFSOF disclose that approximately 32.71 acres of lakes, ponds, rivers, and streams (unvegetated wetlands) and 18.0 acres of vegetated wetlands occur in the project area, including the Slide Lake Drainage Area. However, the Proposed Action would result in permanent disturbance to only approximately 0.03 acre of wetland and temporary disturbance to 0.7 acre of wetland. Compensation for permanent impacts on wetlands would be accomplished by enhancing or restoring existing wetlands – see the WFSOF for additional detail. Consideration of amphibians and wetland-associated habitat is included in the errata as an attachment to the Finding of No Significant Impact (FONSI; Attachment C), and applicable design features and best management practices (BMPs) would be implemented to avoid and minimize impacts on aquatic and wetland resources.

Concern Statement: A commenter recommended limiting public access at Slide Lake and not constructing a loop trail around the shoreline in order to protect riparian and wetland habitats.

The rationale provided is to preserve shoreline vegetation and soils, maintain wildlife access to the water source, and minimize disturbance to birds and small mammals.

NPS Response:

The road was located to provide and maintain the green buffer around Slide Lake for wildlife use. The Slide Lake pullout above the lake will allow people to view this area without impacting habitats near the lake. No trail would be constructed around Slide Lake. The proposed Slide Lake trail would be above the lake and overlook the lake without passing next to it. Access from the trail to the lake is not likely due to the steepness of the terrain. Potential impacts of the project on wildlife and habitat effects, water resources, vegetation, and soils are analyzed in EA Chapter 3.

Mammoth and Mammoth Campground

Mammoth Campground

Concern Statement: A commenter requested that the NPS evaluate an alternative that avoids routing traffic around the Mammoth Campground. The commenter suggested the flood recovery process presents an opportunity to improve visitor experience and reduce traffic-related effects within the campground area.

NPS Response:

Mammoth Campground is an important visitor use area in the Park but was not the specific focus of the Park's purpose and need for the project (see EA Section 1.2, Purpose and Need for Action). As described in the comment response regarding one-way routes (see *Alternatives* above), several conceptual road alignments were investigated and dismissed as project alternatives (EA Section 2.1.1, Alternatives Development). The criteria that the NPS and FHWA-WFLHD considered for identifying alternatives to study in detail addressed public safety and the visitor experience. During construction of the new road, there will be temporary access restrictions to the Mammoth Campground that may temporarily exacerbate traffic conditions there. However, over the long term, access to Mammoth Campground and associated traffic conditions would be improved under all action alternatives as compared to current conditions. An alternative that avoids routing traffic around the Mammoth Campground would likely require building new segments of road in previously undisturbed areas, which would create additional resource and visual impacts.

Concern Statement: A commenter suggested that the project design more fully incorporate measures to protect the Mammoth Campground from roadway-related effects, such as traffic noise, lighting, and proximity impacts, in order to preserve visitor experience and the campground's historic character.

NPS Response:

Mammoth Campground is an important visitor use and historic area in the Park but was not the specific focus of the Park's purpose and need for the project (see EA Section 1.2, Purpose and Need for Action). As discussed above, the long-term visitor experience to the campground would be improved by all action alternatives, including the selected action (Alternative 2). There will be short-term impacts on the campground, including construction noise and lighting, but the potential for those effects will be reduced with implementation of the RPMs discussed in EA Appendix D. At times during construction, the campground may be closed temporarily, but the construction schedule would be coordinated and communicated through the Park website and other appropriate means to inform Park visitors. Cultural and historic resources in the Mammoth Hot Springs Historic District would be protected through avoidance and implementation of the RPMs discussed in EA Appendix D.

Mammoth-Area Traffic Mitigations

Concern Statement: Commenters recommend incorporating roadway design and management measures to improve traffic flow and safety in the Mammoth area, including consideration of a bypass to reduce congestion and enhance emergency access. They also urge implementation of traffic calming, speed management, and enforcement strategies to address concerns about speeding, collisions, wildlife mortality, and pedestrian safety in residential and high-visitor-use areas.

NPS Response:

The selected action (Alternative 2) includes traffic calming, speed management, and road design considerations that will improve visitor safety and traffic conditions throughout the project area, including the Mammoth area. For example, under the selected action, the road would be constructed to meet Park-wide standards, and the posted speed limit would be 35 mph, with certain areas posted for 25 mph. An advisory speed would be posted for 25 mph where tighter curves exist (see EA Section 2.4.1, Road Elements). See also the response to comments above regarding Mammoth Campground.

Boiling River/Gardens Area***Gardner River Crossings***

Concern Statement: A commenter proposed an alternative roadway alignment (similar to Alternative 2) but that would not require new bridge construction over the Gardner River and would potentially avoid wetlands, steep riverbanks, and unstable soils. The commenter's proposed route would depart from the Old Entrance Road (north of Mammoth and south of the existing Gardner River bridge) and ascend northwest toward Slide Lake at a grade of approximately 6 percent or less before generally reconnecting with the proposed Alternative 2 alignment near Slide Lake (graphic of proposed route was included).

NPS Response:

Concept alignments similar to what is discussed in this concern statement were investigated and dismissed due to the amount of new disturbance that such an alignment would cause, in addition to the length of overlap that would be necessary between the proposed alignment and the current North Entrance Road. Traffic studies and analysis found that any overlap alignment with the current North Entrance Road that extended further than 0.5 mile (with no available bypass or detours) could not be constructed while maintaining Park operations with a reasonable construction duration. Single lane operations would be limited to nighttime and shoulder season work to maintain allowable public traffic delays, thereby greatly increasing the cost and time to construct the new alignment.

Concern Statement: Commenters expressed concern that Alternative 2 proposes two new bridges across the Gardner River in close proximity, asserting that the crossings may be unnecessary, costly, visually intrusive, and potentially harmful to wetlands, riparian habitat, wildlife, and scenic values. Suggested design changes include relocating the alignment to a higher contour on the west side of the river to eliminate one or both crossings, reconsidering the need for the longer 'Gardens Bridge,' relocating bridge placement to avoid sensitive wetlands, utilizing slope benching where feasible, and providing pedestrian access and parking to the river corridor in lieu of additional vehicle bridges.

NPS Response:

Concept alignments similar to what is discussed in this concern statement were investigated and dismissed due to the amount of new disturbance that an alignment would cause. This option would have required the construction of a complex viaduct as indicated by geotechnical analysis, which would have created additional visual and physical impacts. Alternatives were carefully considered; the alternative with the least amount of new disturbance was selected.

Boiling River

Concern Statement: Commenters provide differing perspectives regarding the Boiling River area, with some requesting restoration and potential enhancement of access and amenities, including picnic areas and rest facilities, while others emphasized maintaining existing restrictions on swimming and related activities to prevent resource damage. Suggestions also included improving access to adjacent features such as Chinese Garden and considering additional points of interest to enhance visitor experience while protecting natural resources.

NPS Response:

The selected action (Alternative 2) balances goals for enhancing visitor facilities at the Boiling River area with those for resource protection and minimizing new disturbance (see discussion in EA Section 3.4.1, Visitor Use and Experience). EA Appendix E

provides detailed information about the visitor facilities planned for the Boiling River area.

Impact Concerns and Proposed Mitigations

Visitor Use and Experience

Concern Statement: A commenter recommends designing the roadway alignment to maximize scenic viewpoints, particularly opportunities to view the canyon, in order to enhance visitor experience and preserve access to notable landscape features.

NPS Response:

The selected action (Alternative 2) balances road safety and resiliency goals with those for scenic visitor experiences (see discussion in EA Section 3.4.1, Visitor Use and Experience). The selected action will enhance the visitor experience and provide numerous opportunities to enjoy scenic vistas. EA Appendix E provides a detailed description of the parking areas, trails, and roadside turnouts that will be constructed as part of the project.

Concern Statement: Commenters expressed concern that the proposed design, including large bridge structures and modern roadway engineering standards, could diminish scenic quality and visitors' connection to the river corridor and surrounding landscape. They questioned whether visual impacts have been fully analyzed or effectively mitigated and assert that flattening grades, straightening curves, and relocating roads away from natural features may be inconsistent with the Park's mission to preserve natural character and visitor experience.

NPS Response:

As discussed in other responses, the selected action (Alternative 2) balances road safety and resiliency goals with those for scenic visitor experiences (see discussion in EA Section 3.4.1, Visitor Use and Experience). Constructing a safe road that meets Park-wide engineering standards is a primary goal of the project; therefore, the design of the selected action includes flattened grades, straightened curves, and relocation of the road away from areas of geologic and hydrologic hazard. As disclosed in EA Section 3.4.1.2.2, construction of the road, including new bridges, will alter the viewshed from pre-flood conditions; however, numerous enhancements to the visitor experience (e.g., trails and scenic pull-outs) have been built into the selected action to provide visitors with new opportunities to enjoy scenic vistas. EA Appendix E provides a detailed description of the parking areas, trails, and roadside turnouts that will be constructed as part of the project. In addition, bridges and abutments will be constructed in a manner that minimizes visual impacts, including facing walls with stone masonry or natural stone.

Water Resources and Wetlands

Wyoming's Surface Water Quality Standards

Concern Statement: The WWDEQ-WQD requests that the EA acknowledge its authority under Wyoming's Surface Water Quality Standards and ensure that any project-related discharges to state waters comply with designated uses and antidegradation requirements. The agency emphasizes that all surface waters within national parks are designated as Outstanding Resource Waters under state rules and therefore require the highest level of water quality protection.

NPS Response:

For waters designated as Outstanding National Resource Waters, existing water quality will continue to be maintained and protected as the Park maintains a “no degradation” policy for all waters within its boundary (see EA Appendix D, RPMs). A SWMP is being developed and implemented for all areas of the proposed alignment that would treat stormwater runoff prior to entering any jurisdictional waterbody or wetland. The SWMP primarily relies on minimum buffers, which are treatments allowable by permitting agencies. Regarding the protection of water resources, including wetlands and floodplains, the NPS will adhere to the following policies:

- Procedural Manual #77-1 for Wetland Protection, which outlines how the NPS will carry out the mandates in Executive Order 11990 to protect wetlands.
- Procedural Manual #77-2 for Floodplain Management, which outlines how the NPS will carry out the mandates in Executive Order 11988 to protect floodplains.
- NPS Management Policies (2006), Section 4.6, Water Resource Management).

Concern Statement: The WWDEQ-WQD noted that although EPA is the permitting and certifying authority for CWA Sections 401 and 402 within Yellowstone National Park, Wyoming's Surface Water Quality Standards apply to all surface waters within the state, including those inside the Park. The agency expressed concern regarding the EPA's position that state standards are not applicable for CWA purposes in the Park may reduce water resource protections, and reiterates that state standards remain enforceable under Wyoming law.

NPS Response:

The Park and FHWA have obtained and will continue to obtain necessary permits through all the appropriate permitting authorities prior to construction of the project. The NPS will acquire National Pollutant Discharge Elimination System (NPDES) permits from the appropriate permitting authority prior to construction. At this time, no pollutant discharges are anticipated. The NPS will defer to EPA's requirements for reporting and consultation.

WYPDES General Permit

Concern Statement: The WWDEQ-WQD requested that the EA clearly state that, in addition to federal CWA Section 404 requirements, certain discharges of dredged or fill material to state

waters that are not federally defined as waters of the United States may require coverage under Wyoming's Pollutant Discharge Elimination System (WYPDES) General Permit. The agency outlined thresholds distinguishing small and large discharges and noted that larger impacts would require submission of a Notice of Intent and permit verification prior to construction.

NPS Response:

The Park and FHWA have obtained and will continue to obtain necessary permits through all the appropriate permitting authorities prior to construction of the project. The NPS will acquire NPDES permits from the appropriate permitting authority prior to construction. At this time, no pollutant discharges are anticipated. Regarding the protection of water resources, including wetlands and floodplains, the NPS will adhere to the following policies:

- Procedural Manual #77-1 for Wetland Protection, which outlines how the NPS will carry out the mandates in Executive Order 11990 to protect wetlands, located here: Procedural Manual 77-1: Wetland Protection.
- Procedural Manual #77-2 for Floodplain Management, which outlines how the NPS will carry out the mandates in Executive Order 11988 to protect floodplains, located here: Director's Order #77-2: Floodplain Management.
- NPS Management Policies (2006), Section 4.6, Water Resource Management, located here: Management Policies 2006 (as amended in 2020 and 2025).

Gardner River Corridor

Concern Statement: A commenter expressed support for passive rehabilitation of the Gardner River corridor, recommending that the river be allowed to restore its channel naturally and that rebuilding within the floodplain be avoided. They suggested limiting new road access to the river, relying on existing trails for visitor access, and maintaining portions of the corridor as lightly accessed refuge areas to protect fish, riparian ecosystems, wildlife habitat, and long-term ecological resilience.

NPS Response:

Alternatives were carefully considered; the alternative with the least new disturbance was selected. The potential impact of the selected action on wildlife, water resources, and wetlands is analyzed in detail in EA Chapter 3. All potential wetland impacts associated with the project are in a watershed that is entirely within the Park's boundary. The permanent loss of 0.03 acre of wetlands would be compensated at a ratio of 2:1 (see EA Appendix G, combined WFSOF).

Concern Statement: Commenters expressed concern about long-term hydrologic and water quality impacts associated with bridges and large culvert installations near the Gardner River and Slide Lake, questioning whether stormwater runoff, snowmelt, and de-icing materials would be adequately treated prior to infiltration or discharge to adjacent wetlands and river

systems. They requested additional analysis and clarification regarding the extent of permanent and temporary wetland and stream impacts, the size and function of proposed box culverts (including their role in wildlife passage), potential replacement of natural streambeds, and the design of crossings for identified perennial drainages, noting inconsistencies and insufficient detail in the EAs impact disclosures.

NPS Response:

A SWMP is being developed and implemented for all areas of the proposed alignment that will treat stormwater runoff prior to entering any jurisdictional waterbody or wetland. The SWMP primarily relies on minimum buffers, which are treatments allowable by permitting agencies. All potential wetland impacts associated with the project are in a watershed that is entirely within the Park's boundary. The permanent loss of 0.03 acre of wetlands would be compensated at a ratio of 2:1 (see EA Appendix G, combined WFSOF). Two box culverts located beneath the road alignment have been sized to allow for wildlife movement. The box culverts will accommodate the hydraulic capacity needs, while also providing dry banks for smaller wildlife, bears, and wolves to cross under the road. Larger structures, such as overpasses or underpasses, would have a greater impact on natural resources and therefore were not selected. Fencing on both sides of the road to control the crossing would have a larger impact on migration and lead to undesirable aesthetic impacts. Potential impacts of the project on wildlife and habitat effects are analyzed in EA Chapter 3, Section 3.4.2.

Wetland Mitigations

Concern Statement: A commenter raises concern that the project would result in direct and permanent wetland impacts and urges the NPS to fully address findings from the Aquatic Resources Inventory. The commenter recommends avoiding wetland areas where feasible and, where impacts are unavoidable, incorporating design measures such as culverts or bridge crossings to maintain hydrologic connectivity between adjacent wetland features.

NPS Response:

Potential impacts on wetlands, including drainage and hydrologic connectivity, are summarized in EA Section 3.4.5, Water Resources and evaluated in detail in the WFSOF. The Aquatic Resources Inventory was utilized in the EA and WFSOF analysis. The EA and WFSOF disclose that approximately 32.71 acres of lakes, ponds, rivers, and streams (unvegetated wetlands) and 18.0 acres of vegetated wetlands occur in the project area, including the Slide Lake Drainage Area. The Alternatives analyzed in the EA were routed to avoid wetlands where feasible. The Proposed Action would result in permanent disturbance to only approximately 0.03 acre of wetland and temporary disturbance to 0.7 acre of wetland. Compensation for permanent impacts on wetlands would be accomplished by enhancing or restoring existing wetlands – see the WFSOF for additional detail.

Concern Statement: A commenter sought clarification regarding whether proposed wetland compensatory mitigation would occur within the same drainage as impacted wetlands and expresses a preference for improving or expanding existing wetlands rather than creating new wetland areas.

NPS Response:

Compensation for permanent impacts on wetlands would be accomplished by enhancing or restoring existing wetlands located in the same drainage or in nearby drainages, as described in the WFSOF prepared for the project. Adequate mitigation sites are available to provide compensation for impacts on both vegetated and unvegetated wetlands. The NPS has identified up to 16.42 acres of potential wetland compensation, compared with 0.0017 acre of unvegetated wetlands/streambed and 0.03 acre of vegetated wetlands, that would be permanently disturbed. The NPS, with coordination and input from the U.S. Army Corps of Engineers, will identify selected areas for compensation at the 70 percent design stage. Additional information on wetland compensation is provided in the Conceptual Restoration Plan (EA Appendix G) prepared for the project.

Wildlife and Wildlife Habitats

Wildlife Habitat Fragmentation and Disturbance

Concern Statement: Commenters expressed concern that the preferred alternative could increase habitat fragmentation and disturbance to wildlife, particularly along the Gardner River and in the Slide Lake area, which serve as important water sources for ungulates and carnivore, potentially resulting in behavioral stress and reduced survival. They emphasize that, in the context of climate change, increasing visitation, and development pressures in the Greater Yellowstone Ecosystem, the project should apply precautionary principles and prioritize protection of wildlife connectivity, riparian areas, wetlands, and access to water to support long-term ecological resilience.

NPS Response:

Impacts on wildlife are disclosed in EA Section 3.4.2, Wildlife and Wildlife Habitat. Habitat fragmentation and displacement of ungulates and carnivores were considered in EA Section 3.4.2.2.2. There would be permanent habitat loss and fragmentation as a result of the project, including disturbance associated with road construction near the Gardner River and Slide Lake; however, the overall effect would be negligible to minor because it is a fraction of overall habitat in the Park. The WFSOF analyzed and discloses impacts on wetlands. RPMs described in EA Appendix D, such as requiring ground clearing and tree removal to occur outside of the breeding seasons, will help minimize displacement effects.

Concern Statement: Commenters expressed concern that restricting the North Entrance to small vehicles could divert oversized traffic to other Park entrances, potentially increasing

wildlife disturbance in areas such as the Lamar Valley. They also noted that expanding trailhead parking capacity may increase visitor use and associated disturbance, contributing to wildlife displacement and habitat fragmentation.

NPS Response:

Impacts on wildlife are disclosed in EA Section 3.4.2, Wildlife and Wildlife Habitat. The North Entrance will not be restricted to small vehicles; it will continue to be open to all vehicle types under the selected action (Alternative 2); therefore, there should be no additional wildlife impacts in the Lamar Valley. Habitat fragmentation and displacement were considered in EA Section 3.4.2.2.2. There would be permanent habitat loss and fragmentation as a result of the project, including disturbance associated with new parking areas at trailheads, that will total approximately 40 net acres; however, the overall effect would be negligible to minor because it is a fraction of overall habitat in the Park. RPMs described in EA Appendix D, such as requiring ground clearing and tree removal to occur outside of the breeding seasons, will help minimize displacement effects.

Amphibians

Concern Statement: Commenters asserted that the EA inadequately addresses amphibians in the Slide Lake and Gardner River areas, despite decades of monitoring and research indicating that Slide Lake is a high-diversity amphibian site and potential source area within the drainage. They raised concerns that the EA relies on limited data (including out-of-state databases), contains inconsistent statements regarding Western Toad habitat suitability, and does not reflect available NPS Greater Yellowstone Network monitoring data or prior research, thereby failing to use the best available scientific information in evaluating potential impacts. Commenters suggested amphibian-related articles and data sources for consideration in the EA.

NPS Response:

Impacts on wildlife are disclosed in EA Section 3.4.2, Wildlife and Wildlife Habitat and impacts on wetlands are disclosed in EA Section 3.4.5, Water Resources (Surface Water and Wetlands). An analysis of potential impacts on amphibians was developed and included in the EA errata (FONSI Attachment C). The articles and data sources provided were incorporated into the analysis, as applicable.

Reptiles

Concern Statement: A commenter asserted that the EA does not adequately address reptile species, specifically bullsnakes, which occur at low elevations near Mammoth and the Gardner River. They expressed concern that roadway construction and increased traffic could result in road mortality or loss of overwintering dens, potentially affecting one of the limited populations of this species in the Park, and request analysis of potential impacts under the alternatives.

NPS Response:

Impacts on wildlife are disclosed in EA Section 3.4.2, Wildlife and Wildlife Habitat and impacts on wetlands are disclosed in EA Section 3.4.5, Water Resources (Surface Water and Wetlands). An analysis of potential impacts on reptiles was developed and included in the EA errata (FONSI Attachment C). The analysis includes a discussion of potential impacts of the selected action on bullsnakes.

Wildlife Mitigations

Concern Statement: A commenter states that the proposed alignment occurs within known peregrine falcon and golden eagle nest territories and expresses concern that potential effects to nesting activities were not addressed in the EA. The commenter recommends that construction timing and activities incorporate protective measures to avoid disturbance to these raptor species during nesting periods.

NPS Response:

Impacts on wildlife, including peregrine falcon and golden eagle, are disclosed in EA Section 3.4.2, Wildlife and Wildlife Habitat. Work during the summer breeding season (March 1 to August 15 for most species) could disrupt breeding activities with increased noise and human activities; however, as described in EA Appendix D, RPMs, ground-clearing and tree removal activities would occur outside the breeding season to avoid impacts on breeding birds.

Vegetation*Native Seed Collection*

Concern Statement: A commenter seeks clarification regarding the timing and methods for collecting and distributing native seeds and plants for restoration of areas disturbed by construction activities.

NPS Response:

Revegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species using native species as described in the Park's revegetation plan (NPS 2025a). EA Appendix D, RPMs that will be used to avoid and minimize impacts on rare plants, which would include potentially harvesting seeds for use in revegetation and transplanting individual plants if avoidance is not practicable.

Vegetation Mitigations

Concern Statement: Commenters suggested vegetation-related mitigations. Some expressed concern about the potential spread of invasive plant species associated with roadway construction and disturbance and recommend implementation of a comprehensive prevention plan, including inspection of equipment and materials, control measures during construction, and revegetation with native species. Others requested that qualified NPS botanists be directly

involved in identifying and protecting rare plant species within construction areas to ensure adequate resource protection.

NPS Response:

Vegetation protection and invasive species RPMs are listed in EA Appendix D. The project includes design features such as equipment inspections, erosion and sediment controls, and revegetation with native species to minimize spread of invasive plants. Qualified NPS botanists would be involved in identifying and protecting rare plant species in construction areas, consistent with BMPs and resource protection standards described in the EA.

Cultural Resources

Concern Statement: A commenter urged continued prioritization of cultural resources protection during project implementation, including ongoing consultation with tribes that have ancestral and contemporary ties to the area. The commenter emphasized the importance of identifying any additional cultural sites through consultation and ensuring their protection in a manner appropriate to tribal interests.

NPS Response:

The NPS sent letters to 27 federally recognized tribal nations as notification of the start of the planning process and to initiate consultation on February 29, 2024 (see EA Appendix J, Consultation and Coordination). The NPS continued tribal consultation throughout the planning process, inviting input on the identification of historic properties, assessment of effects, and measures to resolve adverse effects (see FONSI, Section 1.4.3, Agency and Tribal Consultation). The Park has not been made aware of any Indian sacred sites related to the project. None of the alternatives would impact Indian trust resources, sacred sites, or ethnographic resources.

The project design avoids cultural resources and minimizes new ground disturbance where possible to protect cultural resources. To further avoid and minimize impacts on cultural resources, the NPS would implement the RPMs discussed in EA Appendix D, including archeological monitoring and use of exclusionary fencing, where appropriate, to prevent encroachment in sensitive areas during construction. Where avoidance is not feasible, adverse effects would be resolved through mitigation, in consultation with the State Historic Preservation Office and tribes, pursuant to 36 Code of Federal Regulations 800.6 (see EA Section 3.4.7.2.2). Mitigation measures are outlined in a Memorandum of Agreement between the NPS and the Montana and Wyoming State Historic Preservation Officers (FONSI Attachment F).

Dismissed Resource Topics

Socioeconomic Impacts

Concern Statement: A commenter expressed concern about potential socioeconomic impacts of construction-related road closures on the Gardiner community and requested that major closures be scheduled outside the peak tourism season. They emphasized the importance of maintaining year-round access to Yellowstone to support the local economy, which is heavily dependent on visitor access.

NPS Response:

Impacts on day-to-day visitor traffic would be minimal as most of the construction would not be on the temporary access road. Because part of the selected action would overlap the temporary access road, a construction bypass would be constructed to move visitor traffic around the construction area. The bypass would mitigate impacts on visitors and minimize lane reduction, closures, and delays. There still may be short-term periods when road construction would need to occur on the OGR. During these periods, there would be adverse impacts on visitors associated with lane reductions and temporary closures for up to 30 minutes; though it is anticipated that much of this work would occur at night when traffic volumes are less.

Although the project could result in short-term socioeconomic impacts during construction, no substantial change to economic factors from the proposed construction activities or long-term operation of the North Entrance Road are likely to occur. After construction, the road, parking, access, local goods and services, and recreational opportunities would still exist, and the proposed project would not likely alter socioeconomic factors over the long term such as changes in local economic bases, salary levels, land use zoning, plans or programs of other agencies, or a particular socioeconomic group.

Additional details on Socioeconomics and Visitor Use are available in EA Appendix A, Issues Considered but Dismissed.

Noise Impacts

Concern Statement: A commenter expressed concern about potential construction-related noise, particularly from engine braking near visitor use areas such as trailheads, and highlights prior experiences with disruptive truck noise in the area.

NPS Response:

Sounds generated from construction would be temporary, lasting only during the construction activities. Project-related construction noise would be minimized by using BMPs (see EA Appendix D, RPMs), including limiting work to daylight hours in the project area to avoid night-time noise disruption and properly maintaining construction equipment to minimize noise. The Proposed Action would not increase the amount of

traffic on the North Entrance Road in the long term and, therefore, would not increase vehicular noise over current conditions. Additional details on soundscapes are available in EA Appendix A, Issues Considered but Dismissed.

Comments on Public Involvement

Role of Public Comments in NEPA Process

Concern Statement: Commenters contend that the EA inadequately addresses the public's prior scoping comments, including those about wildlife impacts (including amphibians) and landslide risks in the Slide Lake area, and question whether the preferred alternative reflects a predetermined outcome. Commenters asked for public comments to be directly and specifically addressed in the EA.

NPS Response:

The EA was developed in accordance with NEPA and Department of the Interior guidance and incorporates and responds to issues raised during the civic engagement process. EA Appendix J, Consultation and Coordination summarizes the comments received, EA Section 2.1.1 explains how public comments informed the development of the alternatives, and EA Appendix A explains the rationale for dismissing resource topics.

Wildlife is addressed in EA Section 3.4.2, Wildlife and Wildlife Habitat and EA Section 3.4.3, Special Status Species, which evaluate direct, indirect, and reasonably foreseeable impacts and identifies design features and mitigation measures to minimize impacts. Geologic hazards, including landslide risks in the Slide Lake area, are analyzed in EA Section 3.4.6, Geology and Soils, including consideration of slope stability, engineering controls, and long-term risk reduction. Geologic hazards were also thoroughly considered during alternative design and development. An analysis of potential impacts on amphibians was developed and added to the errata, which is provided as an attachment to the FONSI (Attachment C).

All public comments were reviewed and considered in refining the purpose and need, identifying issues, and developing alternatives. EA Chapter 2 documents the alternatives considered and describes the iterative and interdisciplinary alternative development process. EA Appendix B describes alternatives eliminated from detailed study. The preferred alternative was identified after completion of the effects analysis and comparison of alternatives (EA Section 2.7 and Chapter 3), and is based on its ability to best meet the purpose and need of the project while minimizing environmental impacts to the extent practicable.

Concern Statement: A commenter expressed concern that the proposed conversion of the Old Gardiner Road to a multi-use pathway was not clearly presented during the pre-NEPA civic engagement/scoping stage of the process and that potential impacts of that part of the project,

including associated costs, carbon emissions, and potential effects related to habitat fragmentation and increased human use were not fully evaluated or disclosed for public comment.

NPS Response:

The potential conversion of the OGR to a multi-use path was identified during civic engagement and shared during the public meeting ([Yellowstone National Park's North Entrance Road Public Meeting Feb. 12, 2024](#) 28:00). The EA, which was available for public comment, discloses its purpose and design in Chapter 2, Alternatives. Potential impacts on resources, including visitor use and experience, and wildlife and habitat effects are analyzed in the applicable resource sections of EA Chapter 3. Project costs are not a required element of NEPA analysis.

Prepare an Environmental Impact Statement (EIS)

Concern Statement: A commenter stated that the proposed action warrants preparation of an Environmental Impact Statement, asserting that the project involves substantial costs, risks, and potentially significant environmental impacts that they believe require a more comprehensive level of NEPA analysis.

NPS Response:

NPS, in cooperation with FHWA-WFLHD, prepared an EA pursuant to NEPA of 1969, as amended (42 United States Code 4321 *et seq.*) to determine if the proposed federal action (or its alternatives) had the potential to significantly impact the environment. The NPS considered the degree of effects, including beneficial and adverse and short-term and long-term effects of the selected action (Alternative 2), and has determined that the selected action does not constitute a major federal action with the potential for significant impacts that requires preparation of an EIS. The NPS has documented its rationale in the FONSI. In addition, cost is not a criteria for preparing an EIS.

Project Mailing List or Public Notices

Concern Statement: The Wyoming Department of Environmental Quality -Water Quality Division (WDEQ-WQD) indicated it learned of the public EA through a newspaper notice and raised concerns regarding compliance with interjurisdictional notification requirements under Section 401 of the CWA. Specifically, the agency asserts that, if EPA serves as the certifying authority within the Park, it must notify potentially affected downstream states and tribes, and notes it has not received such notifications for recent certification decisions.

NPS Response:

The Park and FHWA have obtained and will continue to obtain necessary permits through all the appropriate permitting authorities prior to construction. The NPS will defer to EPA's requirements for reporting and consultation.

ATTACHMENT C: ERRATA INDICATING TEXT CHANGES TO THE ENVIRONMENTAL ASSESSMENT

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Attachment C: Text Change Errata

North Entrance Road Reconstruction Project

Yellowstone National Park

Introduction

This errata documents changes (corrections and minor revisions) to the text of the Yellowstone National Park Environmental Assessment (EA) as a result of comments received on the EA during the public review process, as well as other corrections.

The page numbers referenced in this Finding of No Significant Impact (FONSI) pertain to the EA released to the public for review on January 5, 2026.

Errata

These errata are to be attached to the North Entrance Road Reconstruction Project (project) EA dated January 2026 and are intended to correct or clarify statements in the EA other than typographical and minor editorial errors and to address substantive comments on the document received during the public review period. Original text from the EA is included below to provide context and to allow for comparison to the text change. Existing text (no proposed changes) is in regular text, additions/new text is shown as *italicized text*, and deleted text is shown by ~~strikeout~~. These modifications did not change the assessment of impacts in the EA.

Chapter 2: Alternatives, Alternative 2: Center Alignment (NPS Preferred Alternative)

Alternative 2: Center Alignment (NPS Preferred Alternative)

Page 13, fourth sentence and following, in the paragraph beginning "As part of Alternative 2, portions of the old North Entrance Road canyon alignment would be removed. . .": ~~This alternative also includes construction of a new sewer line beneath the new alignment (as described in Section 2.3.3, Sewer Line Alignment above), reestablishing the connection between Mammoth Hot Springs and Gardiner that was destroyed during the 2022 flood. Due to changes in elevation along the Alternative 2 alignment, up to three pump stations may be required to pressurize portions of the new sewer line. These pump stations would require a new underground power line to be installed along the new alignment from Gardiner.~~

New text (same location as removed text): *This alternative also includes construction of a new sewer line, reestablishing the connection between Mammoth Hot Springs and Gardiner that was destroyed during the 2022 flood. The OGR is the preferred alignment for the sewer line (as described in Section 2.3.3, Sewer Line Alignment above). Portions of the sewer line would be located within the active road corridor primarily near Mammoth, but the sewer line would be primarily located within the OGR alignment to avoid traffic disruptions if maintenance is required. Generally, the portions of the sewer line located in active transportation corridors would be located within the*

shoulder to avoid traffic disruptions and asphalt demolition/repair. A lift station would be required and would be connected to a new underground power line installed from Gardiner.

Chapter 3: Affected Environment and Environmental Consequences

Section 3.3

Table 2

New text (additional row)

Project	Project Description	Completion Date (Construction)	Resources Affected
<i>Mammoth Wastewater Treatment Plant Headworks</i>	<i>The project involves the construction of a new headworks building to supplement the existing facility, addressing critical operational and safety deficiencies resulting from an expedited construction timeline.</i>	<i>Spring 2026</i>	<i>Air quality, natural resources, geological resources, lightscapes, scenic resources, and socioeconomics.</i>

Section 3.4.2 Wildlife and Wildlife Habitat

Page 47, fourth paragraph under Ungulates:

In addition, impacts would be partially offset because the damaged road in Gardner Canyon (including bridges) between the ~~Boiling River picnic area~~ and Rescue Creek parking area would be reclaimed and restored by removing the asphalt and road base materials, and recontouring and revegetating the area.

New text (same location as removed text): In addition, impacts would be partially offset because the damaged road in Gardner Canyon (including bridges) between the *Gardner River Picnic Area* and Rescue Creek parking area would be reclaimed and restored by removing the asphalt and road base materials, and recontouring and revegetating the area.

New text/subsection (after 3.4.2.1.3 Fish):

3.4.2.1.4 Amphibians and Reptiles

Wetlands comprise approximately 3 percent of the total area of the Park. Wetland wildlife species such as amphibians serve as excellent indicators of ecosystem health (Ray et al. 2014). Amphibian populations in proximity to developed areas are particularly potent indicators because they are easier to observe and likely the first to encounter stressors like contamination and nonnative species introductions. Amphibians consistently remain one of the most threatened group of animals, with more than 40 percent of all species represented as a conservation concern.

*The project area contains riparian vegetation and wetlands that can support amphibians. Within the Greater Yellowstone Area, four amphibian species are expected to be present based on recent and historical amphibian surveys (NPS 2025b; Ray et al. 2014; Peterson et al. 1991). These amphibian species include the boreal chorus frog (*Pseudacris maculata*), Columbia spotted frog (*Rana luteiventris*), western toad (*Anaxyrus boreas*), and western tiger salamander (*Ambystoma mavortium*).*

*Reptiles comprise a small but ecologically important component of the Park's wildlife community. Species such as the bullsnake (*Pituophis catenifer sayi*) occupy grassland, shrubland, and open forest habitats, where they contribute to ecosystem function through predation on small mammals. Because reptiles rely on specific thermal conditions and habitat structure for movement, foraging, and reproduction, they may be affected by habitat alteration, fragmentation, and increased human disturbance.*

*The project area contains grassland and riparian habitat that can support reptiles. Six reptile species are found in the Park, including the bullsnake, terrestrial gartersnake (*Thamnophis elegans*), prairie rattlesnake (*Crotalus viridis*), rubber boa (*Charina bottae*), sagebrush lizard (*Sceloporus graciosus*), and common gartersnake (*T. sirtalis*; NPS 2025c). Bullsnakes have historically been observed along the Gardner River near the Boiling River on the North Entrance Road (Kock and Peterson 1995). Bullsnakes are vulnerable to road mortality due to their large size, extensive movements, and behavior that increase exposure to vehicles such as land use of open habitats and road margins for thermoregulation (Kapfer et al. 2008). The species also relies on communal overwintering dens and exhibits fidelity to hibernacula; therefore, disturbance or loss of these sites from land disturbance such as construction can adversely affect local populations (Kapfer et al. 2008).*

New text/subsection (Section 3.4.2.2 Alternative 2: Center Alignment – NPS Preferred Alternative):

Amphibians and Reptiles

Approximately 47 acres in the project area would be permanently affected under Alternative 2 by existing disturbance and new disturbance. Vegetation in these areas includes a mix of xeric sagebrush steppe, mixed-conifer woodland, and riparian habitat.

Impacts on amphibians and reptiles would include temporary and permanent habitat loss and fragmentation in wetlands and riparian areas impacted by construction. Placement of fill for the new road alignment and from construction of a pier for the Gardens Bridge would permanently remove 0.03 acre of the 16.1 acres of vegetated wetlands that occur in the project area. Permanent loss of 0.0017 acre (30 linear feet) of rivers and stream (unvegetated wetlands) would occur from cut and fill associated with the new road alignment. Temporary impacts on 0.187 acre of vegetated wetlands would occur from the construction of the Gardens Bridge and from cut and fill for the new alignment. Construction of the Boiling River Bridge and Gardens Bridge would also result in temporary impacts on 0.403 acre (1,520 linear feet) of streambed, which would impact soils and wetland vegetation. Temporary wetland impacts would occur from cut and fill associated with the

new road alignment and from construction of the temporary work bridges. Temporary impacts would be restored by removing the work bridges and revegetating disturbed surfaces with native plant species. Wetlands that would be affected by Alternative 2 are supported by seeps and subsurface flow, pond surface water, and the Gardner River. The wetlands that would be affected consist mostly of palustrine emergent wetland communities and a few palustrine scrub-shrub communities that provide habitat for amphibians. These habitats are used for breeding, larval development, foraging, and overwintering. However, impacts will be limited to individuals, and the selected action is not anticipated to affect amphibians at the population level. Wetland impacts are described in greater detail in the Wetland and Floodplain Statement of Findings (EA Appendix G).

In grassland habitats, project activities such as vegetation removal, grading, and increased human presence could result in direct mortality or displacement of reptiles, including bullsnakes, particularly during active seasons. Construction and associated ground disturbance may degrade or fragment habitat by altering vegetative structure, reducing prey availability, and compacting soils used for burrowing or nesting. In addition, increased traffic on Park roads and access routes could elevate the risk of road mortality for snakes and other reptiles that use open habitats and travel between foraging and overwintering areas. However, impacts will be limited to individuals, and the selected action is not anticipated to affect reptiles at the population level.

New text (Section 3.4.2.2.3 Alternative 3: OGR Alignment)

Amphibian and Reptiles

Potential impacts on amphibians and reptiles would be similar to those described above for Alternative 2 and would include temporary and permanent habitat loss. Removal of vegetation and ground disturbance in the project area would degrade the quality of vegetated habitat used by amphibians and reptiles. Under Alternative 3, approximately 30.4 acres of vegetated habitat would be permanently lost, and approximately 10.1 acres of habitat would be restored by deconstructing portions of the previous North Entrance Road in the Gardner Canyon. Although the project would result in a net loss of habitat, habitat loss would not result in measurable impacts on amphibians and reptiles due to the small size of the impacts relative to the amount of habitat available for these species in the Park and the implementation of Resource Protection Measures describes in Appendix D, which includes revegetation of disturbed areas.

Impacts on amphibians and reptiles would also include temporary and permanent habitat loss and fragmentation in wetlands and riparian areas impacted by construction. Approximately 0.001 acre of riverine wetlands and 0.004 acre of vegetated wetlands would be permanently affected under Alternative 3. Approximately 0.006 acre of riverine wetlands and 0.129 acre of vegetated wetlands would be temporarily disturbed under Alternative 3 for a total of approximately 0.14 acre of impacts on wetlands. Most wetland impacts from Alternative 3 would result from the road widening activities and construction of a retaining wall. Removal and reclamation of the flood-damaged road in the Gardner Canyon could also potentially provide benefits to wetlands, if road sections within the former river channel are removed and vegetated wetlands are able to establish. Wetlands that would be affected by Alternative 3 are mostly supported by seeps and subsurface flow, with a few

wetlands around the ponds supported by surface water from precipitation and the surface flow from upgradient beaver ponds. The wetlands that would be affected consist mostly of palustrine emergent communities and a few palustrine scrub-shrub communities that provide habitat for wildlife, including amphibians and reptiles.

New text (Section 3.4.2.2.4 Alternative 4: Gardner Canyon Alignment)

Amphibian and Reptiles

Potential impacts on amphibians and reptiles would be similar to those described above for Alternative 2. Impacts on amphibians and reptiles would include temporary and permanent habitat loss and fragmentation. Impacts on amphibians and reptiles from Alternative 4 would include temporary and permanent habitat loss and fragmentation. The types of impacts would be the same as described for Alternative 2, with the addition of rock scaling. Rock scaling would include workers climbing the slopes of the Gardner Canyon and dislodging loose or fractured rock. For steep slopes such as the hillsides above the road in the Gardner Canyon, this would likely require access to the top of the cliff face. Removal of vegetation and ground disturbance in the project area would degrade the quality of habitat. Under Alternative 4, approximately 29.1 acres of habitat would be permanently lost.

Approximately 0.16 acre of riverine wetlands would be permanently affected under Alternative 4. Approximately 0.30 acre of riverine wetlands and 0.12 acre of vegetated wetlands would be temporarily disturbed under Alternative 4 for a total of approximately 0.58 acre of impacts on wetlands. Wetland impacts would occur from road demolition and construction, road realignment, and the construction of three bridges. Most wetland impacts from Alternative 4 would result from demolishing the existing road and reconstructing the new road. All but one of the wetlands that would be affected under Alternative 4 are supported by surface water from the Gardner River; the other is a depressional wetland supported by subsurface flows and seeps.

Section 3.4.5 Water Resources (Surface Water and Wetlands)

Page 71, first paragraph under "Wetlands" heading, sentences 1 and 3:

~~Placement of fill for the new road alignment and from construction of a pier for the Gardens Bridge would permanently remove 0.028 acre of the 16.1 acres of vegetated wetlands that occur in the project area. Permanent loss of 0.0017 acre (30 linear feet) of rivers and stream (unvegetated wetlands) would occur from cut and fill associated with the new road alignment. Temporary impacts on 0.187 acre of vegetated wetlands would occur from the construction of the Gardens Bridge and from cut and fill for the new alignment. Construction of the Boiling River Bridge and Gardens Bridge would also result in temporary impacts on 0.403 acre (1,520 linear feet) of streambed, which would impact soils and wetland vegetation.~~

New text (sentence 1, same location as removed text): *Placement of fill for the new road alignment and from construction of a pier for the Gardens Bridge would permanently remove 0.03 acre of the 16.1 acres of vegetated wetlands that occur in the project area.*

New text (sentence 3, same location as removed text): Temporary impacts on 0.33 acre of vegetated wetlands would occur from the construction of the Gardens Bridge and from cut and fill for the new alignment.

Page 70, second paragraph under "Wetlands" heading, sentence 5:

~~A total of approximately 0.028 acre of vegetated wetlands and 0.0017 acre of streambed (unvegetated wetland) would need to be reestablished.~~

New text (same location as removed text): A total of approximately 0.03 acre of vegetated wetlands and 0.0017 acre of streambed (unvegetated wetland) would need to be reestablished.

3.4.7 Cultural Resources

Section 3.4.7.1.2 Cultural Landscapes

Page 84, Table 3. Cultural Resources in the Proposed North Entrance Road Project Area:

Site 48YE289 | Indigenous Archeological | ~~Eligible~~ | Center, Canyon

New text (same location as removed text): Not Eligible

New text (insert endnote for Table 3): Site 48YE289 was initially determined eligible. After further discussion, the NPS, in consultation with the WY SHPO, determined that 48YE289 is not eligible for listing in the NRHP.

Section 3.4.7.2.2 Alternative 2: Center Alignment – NPS Preferred Alternative

Page 86, first paragraph under 3.4.7.2.2 heading, sentences 2 and 3:

~~Under Alternative 2, 22 cultural resources are located in the APE. The alignment would have direct impacts on eight cultural resources, three of which are listed in the NRHP and, therefore, historic properties (Table 5). Two archeological sites (24YE72 and 48YE289) would be physically impacted by construction associated with Alternative 2, which would result in an adverse effect on historic properties, consistent with 36 CFR 800.5(d)(2).~~

New text (sentence 2, same location as removed text): The alignment would have direct impacts on eight cultural resources, three of which are listed in or eligible for listing in the NRHP and, therefore, are historic properties (Table 5).

New text (sentence 3, same location as removed text): One archeological site (24YE72) would be physically impacted by construction associated with Alternative 2, which would result in an adverse effect on historic properties, consistent with 36 CFR 800.5(d)(2).

Page 86, second paragraph under 3.4.7.2.2 heading, sentence 3:

Direct impacts on OGR and the North Entrance Road Historic District would not be adverse. Indirect impacts on the Mammoth Hot Springs Historic District and Fort Yellowstone NHL

from the introduction of a new road would not introduce new elements on the landscape and would not be considered adverse because the road alignment is already present on the landscape. ~~The remaining resources, all of which are archeological sites, would be avoided and not impacted under Alternative 2.~~ The effects assessment on historic properties under Alternative 2 would be adverse for archeological properties and not adverse for the built environment. Adverse effects would be resolved through mitigation, in consultation with the State Historic Preservation Office (SHPO) and tribes, pursuant to 36 CFR 800.6.

New text (sentence 3, same location as removed text): *The remaining historic properties, all of which are archeological sites, would be avoided and not impacted under Alternative 2.*

Page 87, Table 5. List of Cultural Resources Under Alternative 2:

Site 48YE289 | Indigenous Archeological | ~~Eligible~~ | Direct-Construction (~~data recovery~~) | ~~Adverse effect~~

New text (same location as removed text): NRHP Status changes to *Not Eligible* and Effects Assessment column changes to *No effect*.

New text (insert endnote for Table 5): *Site 48YE289 was initially determined eligible. After further discussion, the NPS, in consultation with the WY SHPO, determined that 48YE289 is not eligible for listing in the NRHP and, therefore, is not considered a historic property.*

Section 3.4.7.2.3 Alternative 3: OGR Alignment

Page 87, second paragraph under 3.4.7.2.3 heading, sentence 3:

Direct impacts on OGR and the North Entrance Road Historic District would not be adverse. Indirect impacts on the Mammoth Hot Springs Historic District and Fort Yellowstone NHL from the introduction of a new road would not introduce new elements on the landscape and would not be considered adverse because the road alignment is already present on the landscape. ~~The remaining resources, all of which are archeological sites, would be avoided and not impacted under Alternative 2.~~ The effects assessment on historic properties under Alternative 3 would be adverse for archeological properties and not adverse for the built environment. Adverse effects would be resolved through mitigation, in consultation with the SHPO and tribes, pursuant to 36 CFR 800.6.

New text (sentence 3, same location as removed text): *The remaining historic properties, all of which are archeological sites, would be avoided and not impacted under Alternative 2.*

Section 3.4.7.2.4 Alternative 4: Gardner Canyon Alignment

Page 88, first paragraph under 3.4.7.2.4 heading, sentences 2 and 3:

Under Alternative 4, 17 cultural resources are located in the APE. ~~The alignment would have direct impacts on seven cultural resources, all of which are listed in or eligible for listing in the~~

~~NRHP and are therefore considered historic properties (Table 7). Five archeological sites (24YE72, 24YE92/24YE344, 24YE100/24YE101, 48YE289, and 24YE722) would be directly affected by Alternative 4 during construction.~~

New text (sentence 2, same location as removed text): *The alignment would have direct impacts on seven cultural resources, six of which are listed in or eligible for listing in the NRHP and, therefore, are considered historic properties (Table 7).*

New text (sentence 3, same location as removed text): *Four historic properties are archeological sites (24YE72, 24YE92/24YE344, 24YE100/24YE101, and 24YE722) and would be directly affected by Alternative 4 during construction.*

Page 88, second paragraph under 3.4.7.2.4 heading, sentence 3:

Direct impacts on OGR and the North Entrance Road Historic District would not be adverse. Indirect impacts on the Mammoth Hot Springs Historic District and Fort Yellowstone NHL from the introduction of a new road would not introduce new elements on the landscape and would not be considered adverse because the road alignment is already present on the landscape. ~~The remaining resources, all of which are archeological sites, would be avoided and not impacted under Alternative 4.~~

New text (sentence 3, same location as removed text): *The remaining historic properties, all of which are archeological sites, would be avoided and not impacted under Alternative 2.*

Page 89, Table 7. List of Cultural Resources Under Alternative 4:

Site 48YE289 | Indigenous Archeological | ~~Eligible~~ | Direct-Construction (~~data recovery~~) | ~~Adverse effect~~

New text (same location as removed text): NRHP Status changes to *Not Eligible* and Effects Assessment column changes to *No effect*.

New text (insert endnote for Table 7): *Site 48YE289 was initially determined eligible. After further discussion, the NPS, in consultation with the WY SHPO, determined that 48YE289 is not eligible for listing in the NRHP and, therefore, is not considered a historic property.*

ATTACHMENT D: RESOURCE PROTECTION MEASURES

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ATTACHMENT D: RESOURCE PROTECTION MEASURES

Resource protection measures (RPMs) are followed by the authority and responsibility for the measure.

General

- To minimize the amount of ground disturbance, staging and stockpiling areas would be in previously disturbed sites, including the road, and away from visitor use areas to the extent possible. All staging and stockpiling areas would be restored to pre-flood conditions following construction. (National Park Service [NPS] *Management Policies 2006*, Section 9.1.3.2 (NPS/Federal Highway Administration [FHWA]))
- Special resource areas in the construction zones would be identified and fenced with construction fencing or some similar material prior to any construction activity. In general, construction zones would be designed to confine activities to the minimum area required for construction. All RPMs would be clearly stated in the construction specification plans, and workers would be instructed to avoid conducting activities beyond the construction zone, which would be defined by the construction zone fencing. (NPS *Management Policies 2006*, Sections 4.4.2.1 and 9.1.3.1)
- This project will use only topsoil, rock, sand, gravel, mulch, and other natural materials from Park-approved sources. Where stockpile storage allows, topsoil will be retained for short periods in shallow windrows or stored in areas determined by Park staff to be free of invasive weeds for reuse throughout the project area to facilitate successful revegetation efforts. (NPS *Management Policies 2006*, Section 9.1.3.2 (NPS/FHWA))
- If necessary, fugitive dust generated by construction would be controlled by spraying water on the construction site. Construction vehicle speeds on unpaved roads would be limited to further reduce the generation of fugitive dust. (Clean Air Act [CAA]) (NPS/FHWA)
- To reduce air pollution and noise, construction equipment and vehicles would be well-maintained and properly functioning, and equipment idling would be limited to only what is necessary for safety and/or mechanical reasons. Equipment and vehicles would also be checked for leaking oil and fluids. (CAA) (NPS/FHWA)

Visitor Use (Includes Recreation, Traffic, and Visual/Scenic Resources)

- With each alternative, portions of the temporary entrance road would remain open during construction so visitors could still access the Park from the North Entrance. The Mammoth Campground facilities and recreation amenities located along the temporary entrance road would still be accessible. Short-term closures of the road may be necessary during active construction. These closures would be posted on the Park website and other means to alert the public. (NPS *Management Policies 2006*, Section 8.2) (NPS)
- During construction activities, safety measures to protect visitors would be implemented, such as restricting visitors from active work areas, to ensure their safety,

and safely storing any hazardous materials required for construction. (NPS *Management Policies 2006*, Section 8.2) (NPS)

- The construction schedule would be coordinated and communicated through the Park website and other appropriate means to inform Park visitors. (NPS *Management Policies 2006*, Section 8.2) (NPS)
- Traffic safety signs and flaggers would be used to inform motorists, bicyclists, and pedestrians and manage traffic on affected roads during construction activities. (NPS *Management Policies 2006*, Sections 8.2 and 9.2.1) (NPS/FHWA)

Wildlife and Wildlife Habitat, and Special Status Species (Includes Threatened and Endangered Species)

- Construction workers and supervisors would be informed of the occurrence and status of special status species (including federally listed species) and would be advised of the potential impacts on the species and potential penalties for taking or harming a special-status species. Provisions would be included in construction contracts that would require the cessation of construction activities if a special status species were discovered in the project area and until Park staff reevaluate the project. (Endangered Species Act [ESA]) (NPS/FHWA)
- The contractor would be required to keep all waste and contaminants contained and remove them daily from the work site. (NPS *Management Policies 2006*, Sections 9.1.1.2 and 9.1.6.1) (NPS/FHWA)
- All construction personnel working on the project would be required to attend a briefing session on grizzly bears and proper food storage. Food storage requirements would be strictly enforced. (ESA) (NPS/FHWA)
- RPMs to avoid and minimize impacts on rare plants would include avoidance (where possible), potentially harvesting seeds for use in revegetation, and transplanting individual plants for use in revegetation efforts if avoidance is not practicable. Avoidance and restoration efforts would focus on S1 (State Critically Imperiled) and S2 (State Imperiled) species. (ESA) (NPS/FHWA)

Vegetation and Soils

- Existing vegetation would be retained to the extent possible. (NPS *Management Policies 2006*, Section 4.4.2.1) (NPS/FHWA)
- Recontouring and revegetation disturbed areas would take place during and following construction and would be designed to minimize the visual intrusion of any new structures. Revegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species using native species as described in the Park's revegetation plan (NPS 2025a). All disturbed areas would be restored as nearly as possible to natural conditions shortly after construction activities are completed. Weed control methods would be implemented to minimize the introduction of noxious weeds. (NPS *Management Policies 2006*, Section 4.4.2.1) (NPS/FHWA)

- No imported topsoil or straw bales would be used during revegetation to avoid the introduction of exotic plant species or inappropriate genetic stock of native plant species. (Federal Noxious Weed Act; *NPS Management Policies 2006*, Section 4.4.4) (NPS/FHWA)
- Following revegetation, restored areas would be monitored and managed to prevent colonization by nonnative invasive species. (Federal Noxious Weed Act; *NPS Management Policies 2006*, Section 4.4.4) (NPS/FHWA)
- RPMs for construction equipment would be followed such as decontamination and equipment washing prior to entrance to avoid exposure of the environment to risks such as oil leaks and fuel spills. (Federal Noxious Weed Act; *NPS Management Policies 2006*, Section 4.4.4; Clean Water Act [CWA]; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- Ground protection mats, or similar, would be placed in construction areas to reduce trampling impacts on wetland vegetation from heavy machinery. (NPS/FHWA)
- Locations of special status plant populations would be clearly identified in the field prior to the start of construction activities. (*NPS Management Policies 2006*, Section 4.4.1.5) (NPS/FHWA)

Water Resources (Surface Water and Wetlands)

- Erosion and storm runoff impacts would be mitigated through measures including, but not limited to, sediment traps, silt fences, and regular inspection of construction areas for erosion. (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- No heavy equipment would operate in a live stream. (CWA; NPS Director's Order #77-1) (FHWA)
- No equipment servicing would be done near the river channel or immediate floodplain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps and generators). (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- If necessary, all servicing of equipment done at the job site would be conducted in a designated, protected area to reduce threats to water quality from vehicle fluid spills. These designated service areas would not directly connect to the groundwater or surface water. The service areas would be clearly designated with berms, sandbags, or other barriers. Secondary containment, such as a drain pan, to catch spills or leaks would be used when removing or changing fluids. Fluids would be stored in appropriate containers with covers and properly recycled or disposed of off-site. (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)

- No large fuel storage containers would be allowed in the project area. (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- Only emergency repairs necessary to move equipment to a more secure location would be conducted in the channel or floodplain. (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- Spill kits would be readily available on the project site. (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- Confinement techniques would be used during the removal of the existing portion of the road to prevent construction debris from entering the Gardner River and the wetlands located in the project area. (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- RPMs (e.g., sediment curtains) would be used to reduce sedimentation and turbidity as needed for any in-water work, including installation of new stream barbs. (CWA; Montana Title 75, Chapter 5; Chapter 2 of the Wyoming Water Quality Rules and Regulations) (NPS/FHWA)
- Provide compensatory mitigation and monitoring requirements to offset wetland impacts per Attachment E. (NPS Director's Order #77-1) (NPS/FHWA)

Cultural Resources

- The NPS would have monitors on-site during ground disturbance activities. Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the Park would consult with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, as necessary, according to 36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed. (National Historic Preservation Act [NHPA]; Native American Graves Protection and Repatriation Act) (NPS)
- The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction. (NHPA) (NPS/FHWA)
- Exclusionary fencing of cultural resources near ground disturbing activities would be considered in order to prevent encroachment. (NHPA) (NPS/FHWA)
- Implement the Memorandum of Agreement to resolve adverse effects on historic properties per Attachment F. (NHPA) (NPS/State Historic Preservation Offices/Tribal Historic Preservation Offices)

ATTACHMENT E: SIGNED WETLAND AND FLOODPLAIN STATEMENT OF FINDINGS

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United States Department of the Interior
National Park Service
Yellowstone National Park

North Entrance Road Reconstruction Project

Statement of Findings for Director's Order #77-2 Floodplain Management and Director's
Order #77-1 Wetland Protection

April 2026

Recommended:

CAMERON
SHOLLY

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CAMERON SHOLLY
Date: 2026.05.13 14:58:44
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Superintendent,

Date

Yellowstone National Park

Certification of Technical
Adequacy and Service-Wide
Consistency:

TERRY FISK

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TERRY FISK
Date: 2026.06.02
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Acting Chief,

Date

Water Resources Division

Approved:

Herbert C. Frost

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Regional Director (Acting),

Date

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Attachment B Conceptual Restoration Plan

STATEMENT OF FINDINGS

1 INTRODUCTION

The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA) Western Federal Lands Highway Division (WFLHD), is proposing the North Entrance Road reconstruction (project) in Yellowstone National Park (Park).

This Statement of Findings was prepared to evaluate the impacts on floodplains and wetlands for the reconstruction of the North Entrance Road. The purpose of the Statement of Findings is to comply with NPS wetland protection and floodplain management procedures, which is required by Executive Order (E.O.) 11988, “Floodplain Management,” and E.O. 11990, “Protection of Wetlands.” NPS Director’s Order (D.O.) #77-2 and its accompanying updated draft *Procedural Manual* #77-2 (NPS 2024) provide procedures to comply with E.O. 11988. NPS D.O. #77-1: *Wetland Protection and Procedural Manual* #77-1 (NPS 2024) provide NPS policies and procedures to comply with E.O. 11990.

This combined (floodplain and wetland) Statement of Findings is being prepared because constructing the North Entrance Road would occur within the NPS regulatory floodplain and adversely impact wetlands. The Statement of Findings is recommended to be included with the Finding of No Significant Impact to complete the National Environmental Policy Act (NEPA) compliance process. A floodplain Statement of Findings must describe the rationale for siting the project in a floodplain, disclose the amount of risk associated with the chosen site, and explain flood mitigation plans. A wetland Statement of Findings must document the impacts of the project on wetlands, provide the rationale for identifying a preferred alternative that has adverse impacts on wetlands, and explain why no alternatives with less wetland impacts were practicable.

2 PROJECT BACKGROUND

The purpose of the project is to restore reliable and safe long-term access to and from the Park’s North Entrance while making the road resilient to future floods and other natural hazards and protecting natural and cultural resources. The wastewater line must also be replaced to provide adequate and continued reliable wastewater service for the Mammoth Hot Springs area. A June 2022 flood, described below in *Background* section, caused significant damage to the North Entrance Road, making the road impassable, and also destroyed the 4.5-mile wastewater line between Mammoth Hot Springs and Gardiner. The Old Gardiner Road (OGR) was upgraded to provide temporary access to the Park’s North Entrance in October 2022. Providing long-term access is essential for Park staff, visitors, and Cooke City residents and critical for emergency vehicle access.

The proposed project is needed for the NPS to provide a long-term solution for Park access for current public enjoyment and for the enjoyment of future generations (16 United States Code 1). The OGR upgrade has served as temporary access after the 2022 flood made the North Entrance Road impassable.

2.1 PROJECT AREA

The North Entrance Road project area (Figure 1) is in the northwest portion of the Park and consists of the area between Mammoth Hot Springs, Wyoming, where the Park headquarters is located (project start), and the North Entrance check station gate (North Entrance) in Gardiner, Montana (project end).

The North Entrance Road is the second most popular entrance, and one of the two-year-round entrances to the Park. The North Entrance and Northeast Entrance (Figure 1) are the only entrances open year-round and serve as the only winter vehicle access in and out of the Park (Highway 212 between Cooke City and the Pilot Creek parking lot is closed early November through mid-May). Additionally, the North Entrance Road provides the only year-round access to Cooke City, Montana. The road is a popular scenic drive that includes the Roosevelt Arch at the northern boundary near Gardiner and generally follows the Gardner River to Mammoth Hot Springs. The North Entrance Road provides vehicular access for Park staff, visitors, and Cooke City residents and critical access for emergency vehicles.

2.2 BACKGROUND

On June 12 and 13, 2022, the Park experienced record-breaking flood events (2022 flood) in several locations, primarily along the Yellowstone River, Gardner River, and tributaries in Park County, Montana and Park County, Wyoming. Devastating flood impacts occurred in the Park on multiple sections of the North Entrance Road between Gardiner and Mammoth Hot Springs, necessitating closure of the road and temporary closure of the North Entrance on June 13, 2022. During the summer and fall of 2022, the FHWA, in cooperation with the NPS, improved the existing gravel OGR using FHWA Emergency Relief for Federally Owned Roads funding. The road now serves as the temporary entrance road, and the North Entrance was re-opened to the public on October 30, 2022. The temporary entrance road has an estimated 5- to 10-year design life because it is partially located on slow-moving geologic slides. Currently, wastewater is being diverted to existing emergency treatment ponds near Mammoth Hot Springs.

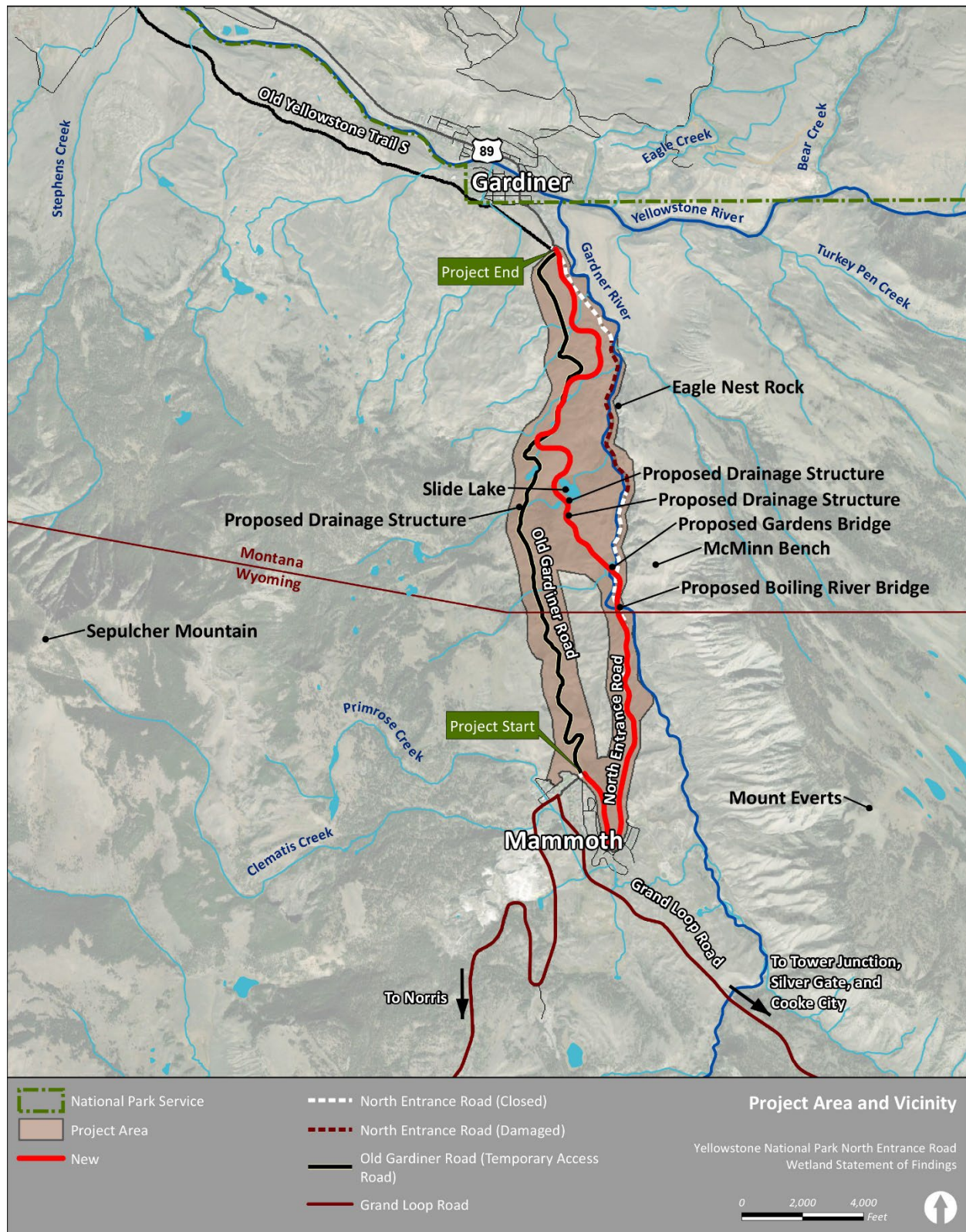


Figure 1. Project Area.

2.3 PROPOSED ACTION

A detailed description of the project (Alternative 2: Center Alignment, the preferred alternative) is provided in Chapter 2 of the Environmental Assessment (EA). Under the preferred alternative, the NPS and FHWA Western Federal Lands Highway Division would construct the North Entrance Road following the pre-flood North Entrance Road alignment for 2 miles north out of Mammoth Hot Springs, first crossing the Gardner River with an elongated and elevated (260-foot-long, single-span) Boiling River Bridge. The alignment would continue along the pre-flood North Entrance Road to Chinese Gardens, where a new 715-foot-long, multispans bridge structure would provide a high second crossing of the Gardner River. Past the second river crossing, the new road alignment would flow in a northwestern direction to pass west of Slide Lake, where it would converge with the temporary entrance road for 0.4 mile before diverging northeast back toward the former North Entrance Road on the approach to Gardiner.

Once construction of the new road alignment is complete, the OGR would be narrowed to a multi-use pedestrian and bicyclist trail (multi-use trail). The OGR would also serve as access for emergency vehicles when needed. During construction of the 0.4-mile overlap segment (described above), a new 22-foot construction bypass road would be constructed adjacent to the existing road for public traffic. After construction, the bypass would be narrowed and converted into a multi-use path. The northern access/parking area for the multi-use trail would be in Gardiner with two connection points along the route. At the southern/Mammoth end of the multi-use trail, the existing OGR would remain 22 feet wide from Mammoth up the first hill to an overlook parking area that would serve as the north end of the multi-use trail as well as parking for the Beaver Ponds Trailhead.

As part of the project, segments of the old North Entrance Road canyon alignment would be removed along with all other old flood-damaged infrastructure such as the old sewer line. The segment from the new Gardens Bridge to the large washout would be removed and replaced with a 6-foot Architectural Barriers Act (ABA) trail to the washout. Along this segment, interpretive wayside exhibits highlighting the 2022 flood may be present. The relocated segment of the North Entrance Road is not within the NPS regulatory floodplain.

The project also includes construction of a new sewer line (as described in the Sewer Line Alignment section below), reestablishing the connection between Mammoth and Gardiner that was destroyed during the 2022 flood.

The road alignment was designed to avoid wetlands, waterways, and cultural resources to the greatest extent practical. Where such areas could not be avoided entirely, structures, such as walls, would be used to minimize impacts.

2.3.1 Access, Staging, and Construction Equipment

Construction access to the project area would use existing roads. Where roads have been damaged, temporary construction structures and access roads would need to be constructed. After the permanent road and infrastructure are built, the temporary roads and temporary structures would be removed. Disturbed ground would be returned to preexisting conditions to the greatest extent feasible.

Various areas along the OGR, which is the temporary entrance road, would be used for construction staging, material stockpiling, and equipment storage. Staging and stockpiling also could occur in existing pullouts along the North Entrance Road including at the Rescue Creek parking area, the Gardner River Picnic Area, and at the Reese Creek Pit. Areas in the project area where road realignment or new or changed parking areas are planned could also be used for staging and stockpiling. Staging areas would also be needed around bridges to temporarily place bridge materials, such as girders, before cranes place them on the bridge foundation. Staging areas for bridge construction would be approximately 4 to 5 acres for each bridge and would include areas near the Boiling River Bridge and the Gardens Bridge construction location.

General construction equipment and materials would be staged at existing and proposed road pullouts. Various types of construction equipment would be needed such as excavators, front-end loaders, cranes, pavers, and material delivery trucks. Resource Protection Measures and Best Management Practices (BMPs) would be implemented during construction to minimize impacts on resources.

Potential staging and stockpiling areas for the project include the following:

- Lava Creek Trailhead (0.27 acre)
- Boiling River (staging area southeast of the existing bridge; 3.1 acres)
- Boiling River/Gardens Bridge construction staging (2.6 acres)
- Yellowstone Northern Range parking area staging and material storage for canyon restoration (5.81 acres)
- (Proposed) Beaver Ponds Trailhead staging area (2.0 acres)

Staging and stockpiling would use existing parking areas or would be subsequently used to construct new parking areas to avoid additional disturbance to the greatest extent possible. Delineated resource impacts would be avoided. Proposed temporary features of the project would overlap permanent features to avoid additional impacts on resources.

The Reese Creek Pit (approximately 5.0 acres) could be used as a concrete or asphalt batch plant, for material storage and staging, or as a material waste site during some phases of the project. A batch plant would require the space to accommodate semi-trucks, deliveries of materials, and placement of temporary propane tanks for fuel to heat materials to produce asphalt. Propane tanks would be protected and contained within 110 percent containment capacity systems. No washing of concrete materials would occur at any of these sites.

2.3.2 Construction Schedule

The anticipated construction time for all the work would be five construction seasons (beginning of April to mid-November each year with winter work as weather allows). Under this schedule, the new road would be open to public traffic in the fourth year and would include the following anticipated steps:

- Construction of the realigned construction bypass segment (0.04 mile) of the OGR in the first construction season.

- Construction of the new road alignment, including demolition of the old Boiling River Bridge, and construction of the new Boiling River Bridge and Gardens Bridge during the first four construction seasons.
- Restoration of Gardner River Canyon from the second through fourth construction seasons.
- The OGR, from the Beaver Ponds Trailhead to the North Entrance Station, would be narrowed to a multi-use trail during the fifth construction season.

2.3.3 Road Elements

The road would be constructed to the Park-wide standard of 30 feet wide. This paved width would consist of two 11-foot travel lanes and two 4-foot paved shoulders. Segments of the road that follow existing alignments not impacted by the flood would be reconstructed to the same 30-foot paved width.

Both new bridges, the Boiling River Bridge and the Gardens Bridge, would be constructed to the full 30-foot paved width. In addition, both bridges would have 6-foot-wide sidewalks on both sides that meet accessibility standards.

The posted speed limit would be 35 miles per hour (mph) with certain area posted for 25 mph. The advisory speed limit would be 25 mph where tighter curves still exist.

The narrowed OGR multi-use trail would be reconstructed to a width of 12 feet. A center stripe would delineate two 6-foot multi-use lanes.

The segment of the OGR connecting Mammoth to the Beaver Ponds Trailhead would not be reconstructed and would remain at its current 22-foot paved width, consisting of two 10-foot travel lanes and two 1-foot paved shoulders.

2.3.4 Road Construction Methods

The road width would be designed with 11-foot-wide travel lanes and 4- to 6-foot-wide shoulders. The pavement would consist of 4 inches of asphalt underlain by 8 inches of aggregate base and 12 inches of select borrow. Damaged road sections would be removed, and materials would be reused in the reconstruction to the greatest extent feasible. The post-construction speed limit would be 35 mph for most of the corridor but may be reduced in congested areas or curved sections. The maximum grade along the corridor would be 8 percent.

2.3.4.1 Parking Areas and Pullouts

Parking areas and pullouts would not be in floodplains or wetlands. Parking areas would be constructed in previously disturbed areas, such as staging and stockpiling areas, to the greatest extent feasible.

2.3.4.2 Water Quality

To avoid or reduce water quality effects, roads would be designed to allow for water to flow off the road surface and to infiltrate into adjacent land. On bridges, water would be routed to the bridge end and infiltrated (i.e., no direct discharge to surface water would occur). In areas of wetlands, road runoff would be routed away from wetlands to infiltrate into upland soils.

2.3.4.3 Architectural Barriers Act (ABA) Accessibility

The Gardner River Picnic Area at the east side parking area would be enhanced to provide ABA-accessible restroom facilities and ABA-compliant parking. The picnic area will be at an elevation of approximately 5,634 to 5,658 feet and not within the regulatory floodplain.

2.3.5 Sewer Line Alignment

A sewer line would be installed in the project area using primarily open-trenching, but also pipe-bursting, and cured-in-place pipe techniques in some locations. Excavation would likely occur within a trench box and installation would require excavation to an average depth of 6 by 15 feet and width of 10 to 35 feet. The preferred sewer alignment will be from lower Mammoth to Upper Mammoth, then follow the OGR which will eliminate the need for lift stations in the roadway project corridor. All sewer line structures will be buried.

Retaining walls would be used to minimize impacts on resources including wetlands, riparian zones, and archeological sites as well as to reduce the need to remove hundreds of feet of hillside. Approximately six retaining walls are anticipated for the project, ranging from approximately 150 feet to 1,200 feet long. The heights would vary as the terrain varies. The walls would be faced with natural stone or gabion rock face and are not within the regulatory floodplain.

2.3.6 Drainage Structures

New drainage structures requiring flood risk evaluation under PM 77-2 are anticipated to be constructed at three locations (Figure 1), with two crossings of the new alignment and one crossing of the OGR multi-use trail. All three structures have been designed as reinforced concrete box culverts with wingwalls. Each of these culverts were designed as Reinforced Concrete Box (RCB) culverts instead of open bottom structures to provide grade control and mitigate risks associated with steep (12 to 17% slope) channels. RCB with sediment retention sills are proposed at both sites upstream of Slide Lake to improve the crossings by incorporating the recommendations found in *Stream Simulation: An Ecological Approach for Providing Passage for Aquatic Organisms at Road Stream Crossings* (USFS 2008), setting culvert invert below the natural stream bottom, and mitigating risks associated with headcut migration from lowering culvert invert along steep channel.

- The drainage structure crossing the new road alignment upstream from Slide Lake would consist of two box culverts: a 9-foot by 9-foot box culvert with a length of 83 linear feet, and a 6-foot by 8-foot box culvert with a length of 90 linear feet. Rock weirs and sediment retention sills are proposed to serve as grade controls that help retain streambed sediment in pipe through the steep crossing. Proposed pipes are oversized to reduce fill, and facilitate wildlife passage, and pass flows greater than the 100-year event for Slide Lake. Riprap protection will also be placed at the inlet and outlet as shown in Figure 3 and Figure 5.
- A second drainage structure on the new alignment would be south of Slide Lake, where a small wetland drainage would be crossed by the alignment. This structure would consist of a 4-foot by 4-foot box culvert with a length of 66 linear feet. The culvert will convey flows and maintain hydraulic connectivity for a wetland complex through a low spot in

the existing terrain. The culvert will be installed at grade, to provide grade control and reduce the potential for upstream channel degradation and oversized to facilitate wildlife passage, pass flows greater than the 100-year event and improve resilience. Riprap will be placed at the outlet as shown in Figure 6.

- The concrete box culvert at the OGR multi-use trail would be located upstream from Slide Lake and would be 9-foot by 9-foot. The box culverts are oversized to accommodate wildlife passage and flows greater than the 100-year event. An existing pipe at this location will be removed. A new box culvert with sediment retention sills, and grade control weirs, is proposed to provide natural stream bottom, and reduce cost, risk and impact compared to an open bottom structure.

All culverts were designed to comply with FHWA WFLHD guidelines including Chapter 7 of the Project Design and Development Manual (PDDM) and the WFLHD Chapter 7 Supplement (FHWA 2024). See Figure 2 through Figure 6 for culvert and riprap details.

2.3.7 Bridge Elements

Both new bridges would have steel girders spanning the piers and abutments. The bridge decks would be reinforced concrete.

2.3.7.1 Boiling River Bridge

The new Boiling River Bridge would have both of its abutments constructed from cast-in-place concrete, which would be constructed on-site. Use of vertical abutments, with deep foundations, would help to minimize bridge length and structure thickness. Both abutments would be set above the ordinary high water mark (OHWM) of the Gardner River. Wingwalls would be constructed for both abutments. Both abutments and wingwalls would be faced with stone masonry.

The Boiling River Bridge would be a single-span plate girder structure 260 feet long (Figure 7 and Figure 8). A pedestrian underpass to be located before the bridge would provide access to the west side of the road from the east side parking area. The new bridge would replace an existing bridge with a 150-foot span at this location. The bridge would be designed without piers in the channel due to potential for woody debris and sediment. The existing embankment would be graded to match the existing overbank, removing fill that was placed in the floodplain when the road and bridge were originally constructed. Excavating this fill material would provide additional floodplain capacity during high flow.

The new bridge would be designed to pass the 100-year and 500-year floods with a lower chord elevation of 5,634.84 feet to provide 5 feet of freeboard above the 100-year water surface for woody debris and ice passage (modeled elevation of 100-year flood = 5626.7 and 500-year flood = 5627.00; see model results, Section 3). The abutments and wingwalls of the new bridge would be outside the NPS Regulatory Floodplain, as modeled (FHWA 2025). The bridge abutments would be protected by buried Class 4 riprap, as shown in Figure 7 and Figure 8.

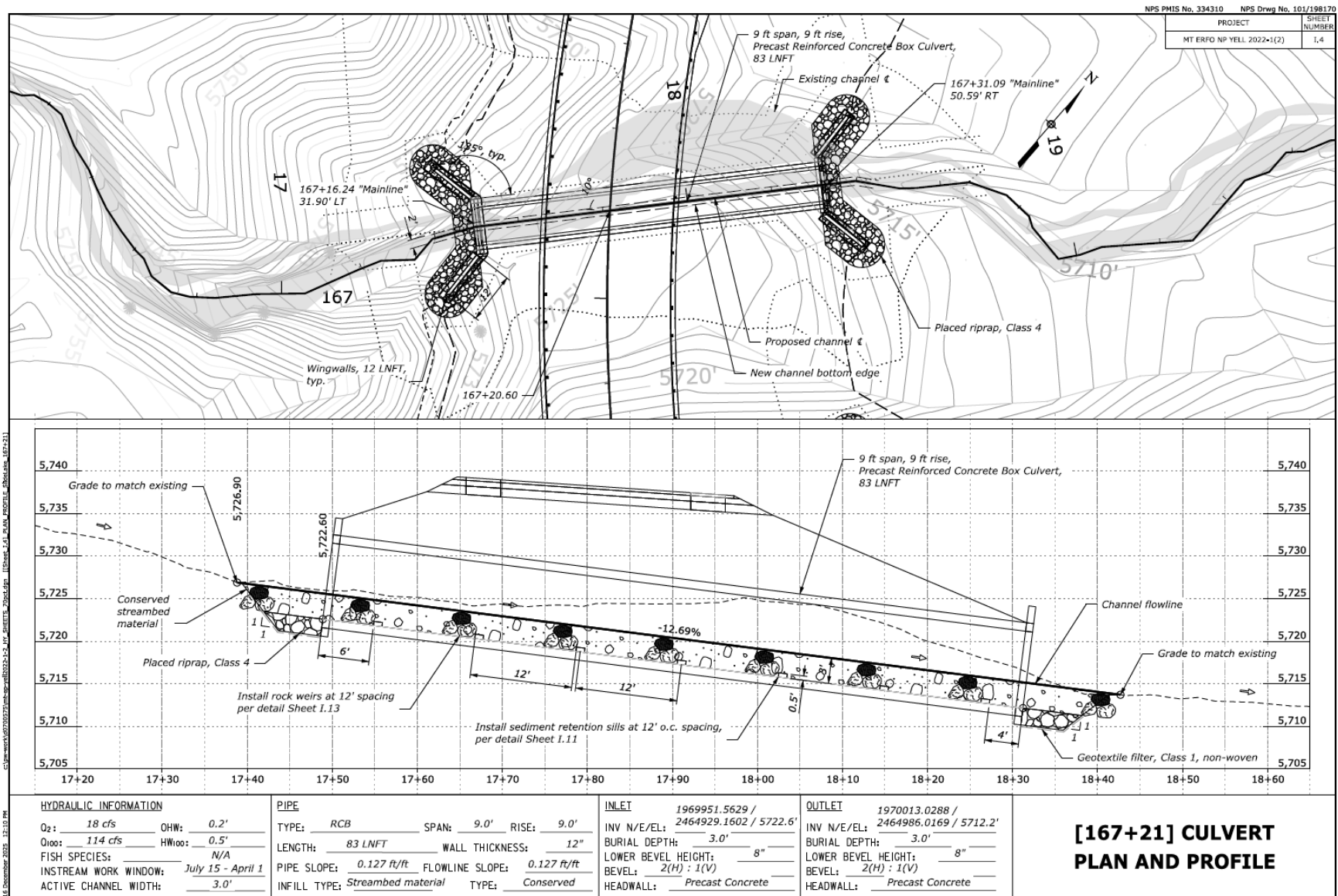


FIGURE 2. SLIDE LAKE 9-FOOT BY 9-FOOT CULVERT

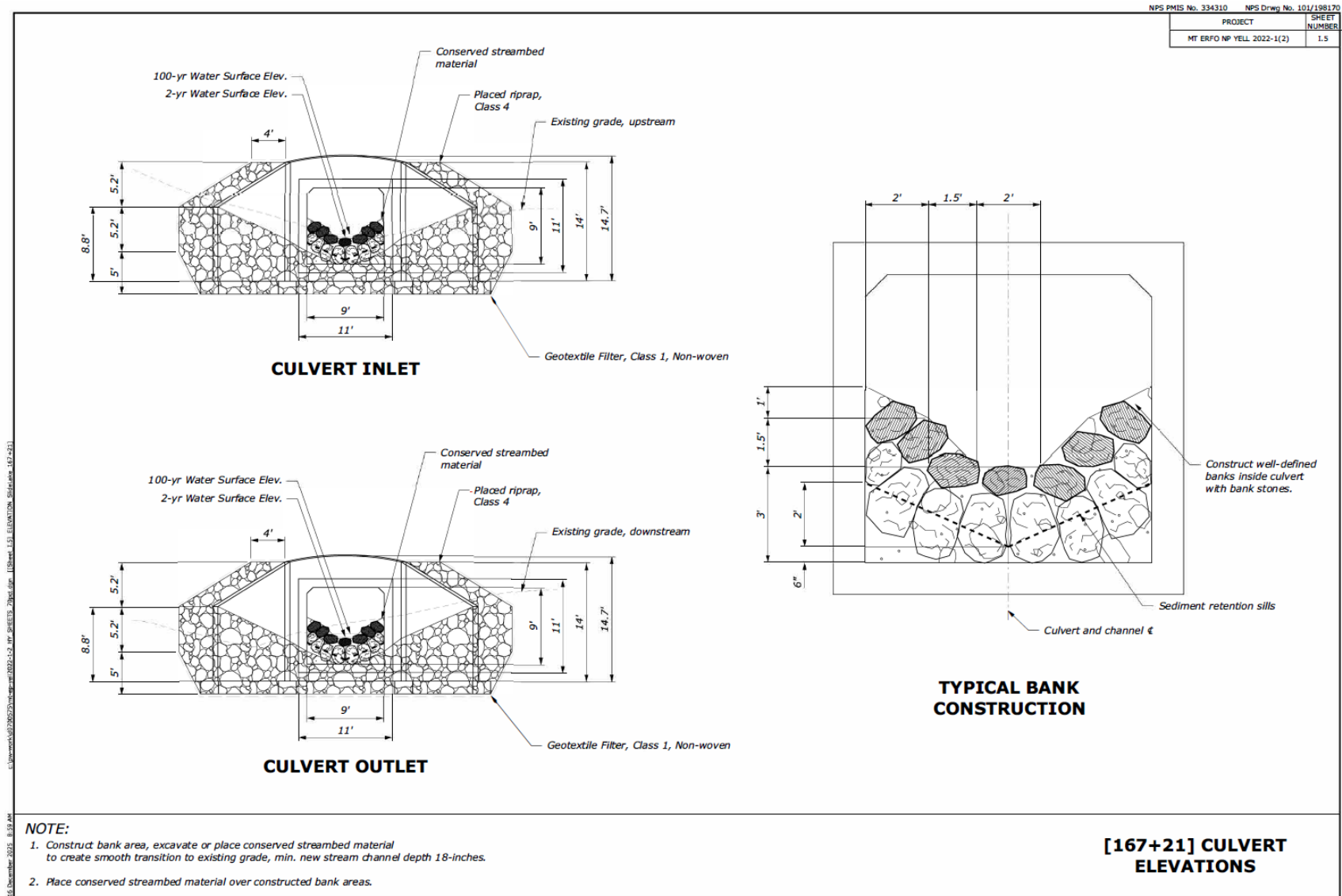


FIGURE 3. SLIDE LAKE 9-FOOT BY 9-FOOT CULVERT INLET/OUTLET PROTECTION

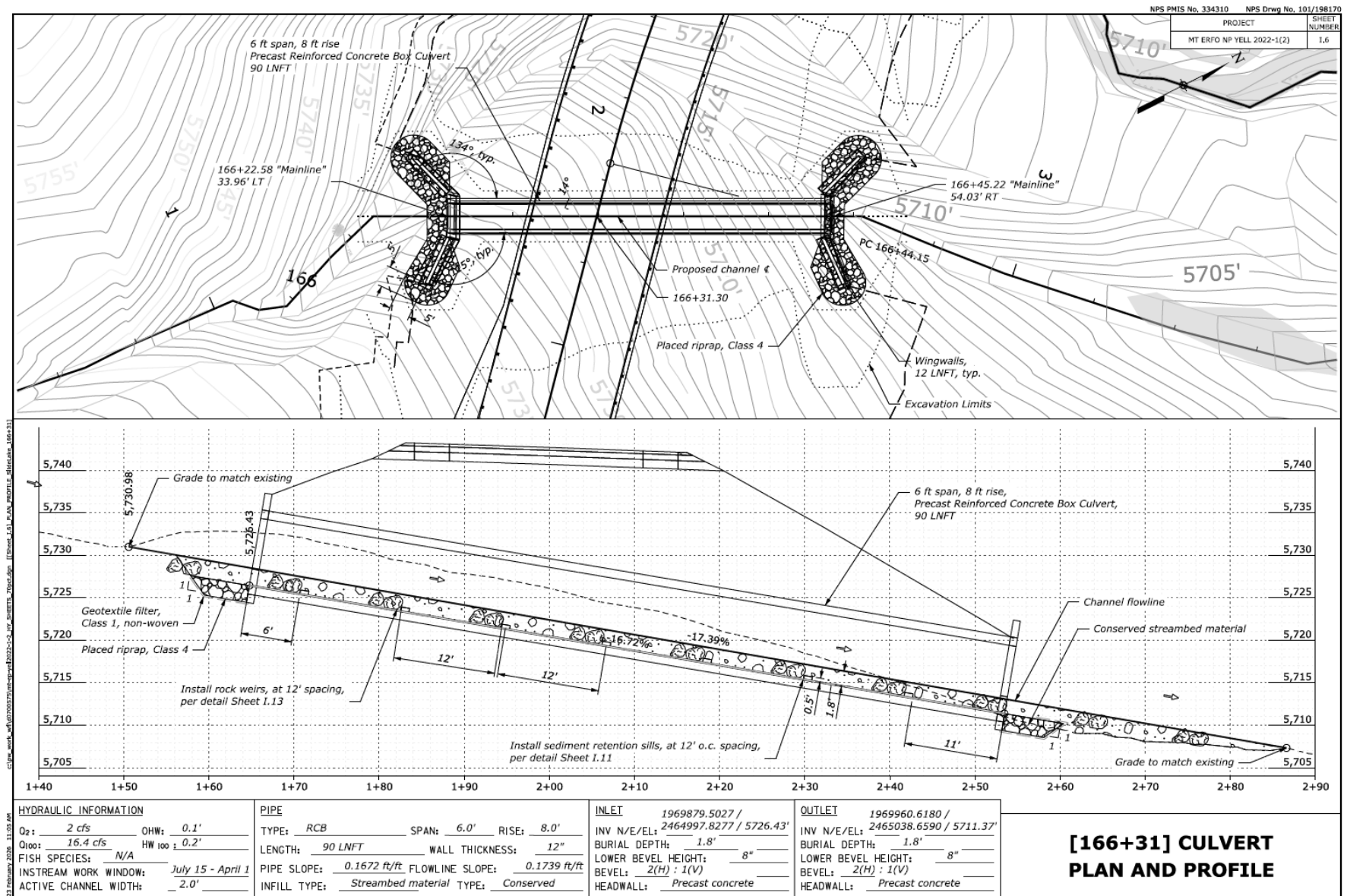


FIGURE 4. SLIDE LAKE 6-FOOT BY 8-FOOT CULVERT

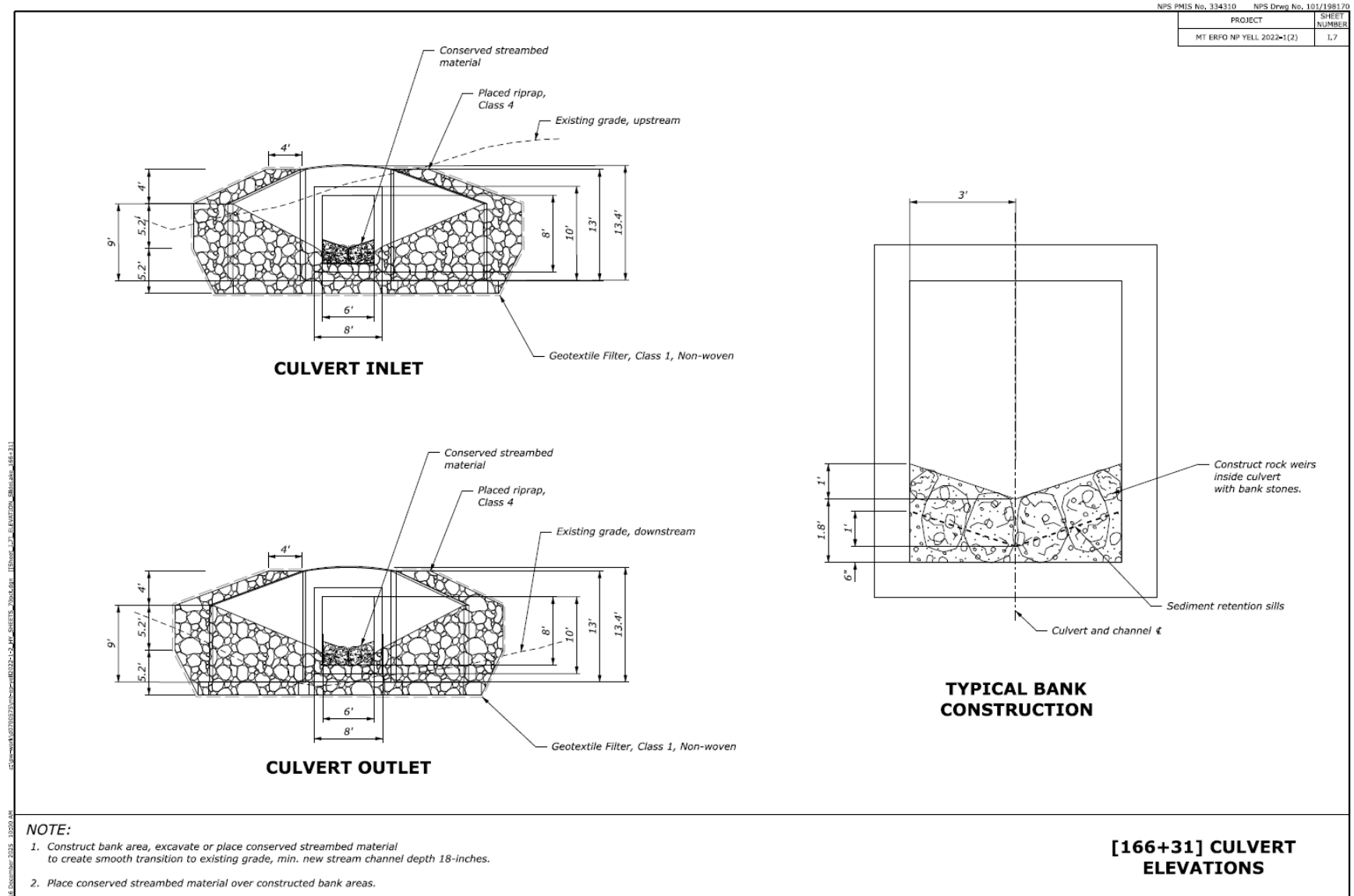


FIGURE 5. SLIDE LAKE 6-FOOT BY 8-FOOT CULVERT INLET/OUTLET PROTECTION

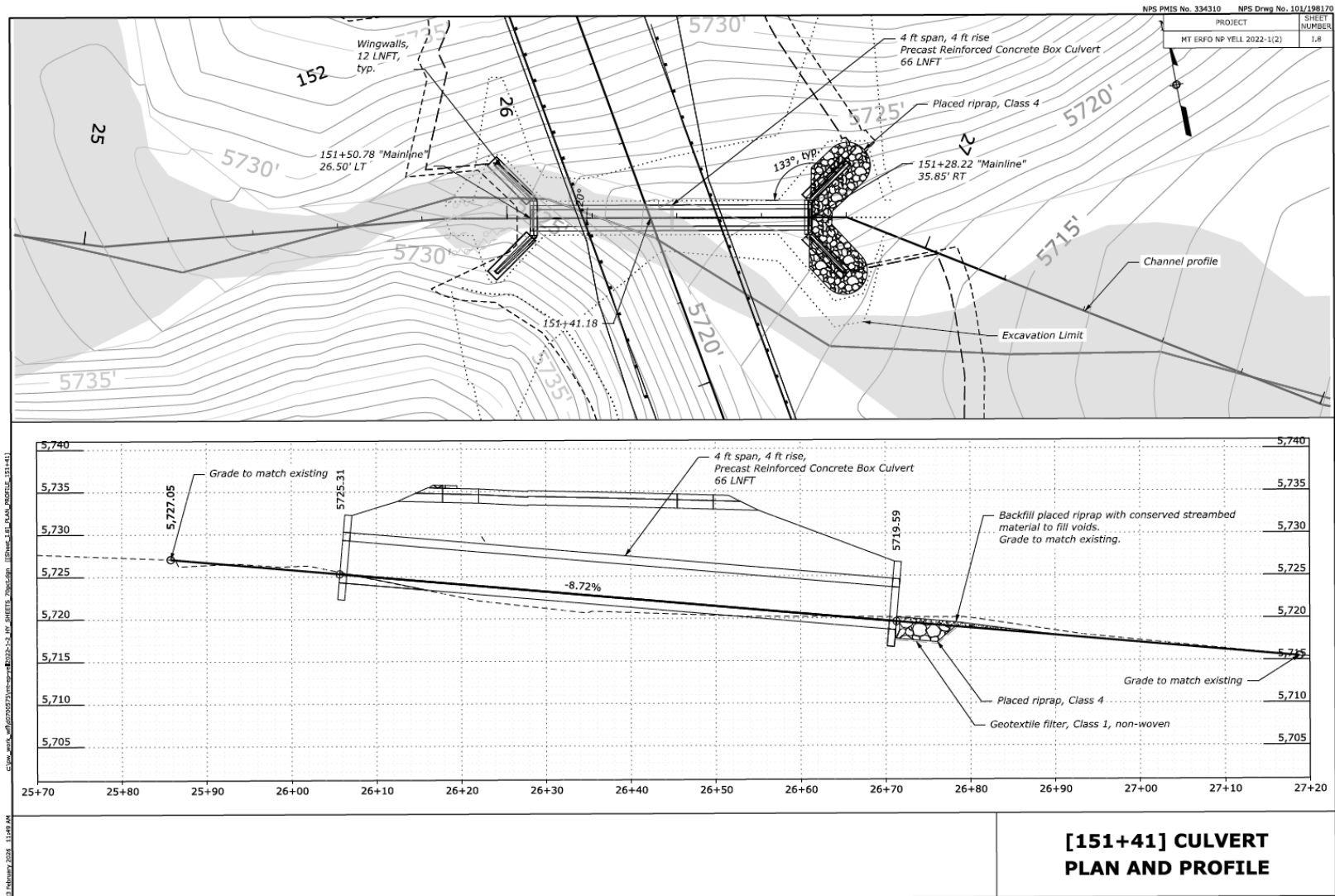


FIGURE 6. SOUTH OF SLIDE LAKE 4-FOOT BY 4-FOOT CULVERT

18

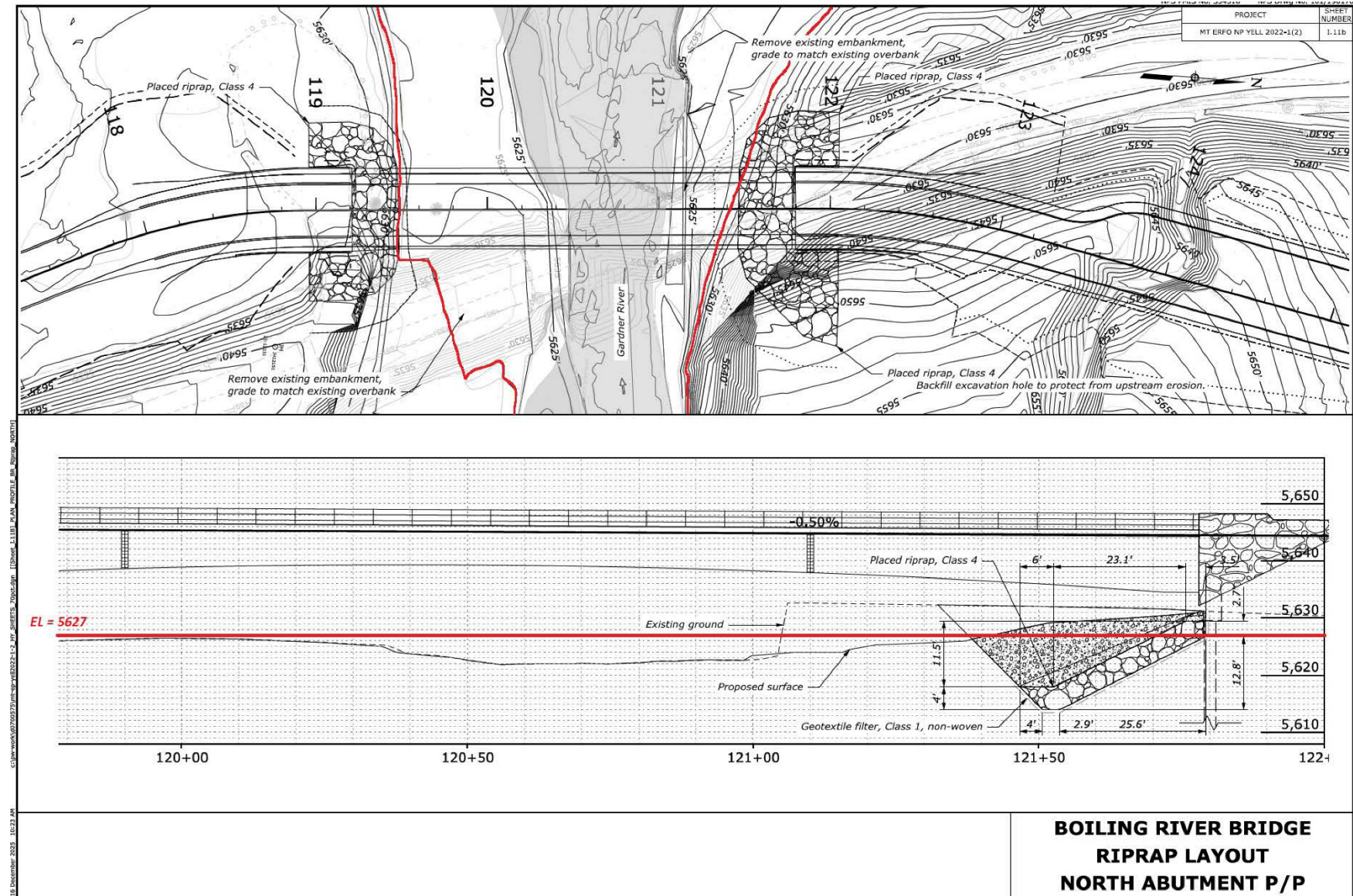


FIGURE 8. BOILING RIVER BRIDGE PLAN AND ELEVATION NORTH ABUTMENT (500-YEAR FLOODPLAIN ELEVATION: 5,627.0 FEET, SHOWN IN RED)

2.3.7.2 The Gardens Bridge

The new Gardens Bridge would have mechanically stabilized earth abutments with stone masonry facing at its west and east ends (Figure 9). Use of vertical abutments with deep foundations within the abutment footprint would help to minimize bridge length and structure thickness. Mechanically stabilized earth walls will contain the fill on all sides of the bridge landings.

The new Gardens Bridge would be a 715-foot three-span, steel plate girder structure (Figure 9). The bridge would have two piers located 215 feet from the abutments and a center span of 285 feet. The two piers would be constructed from reinforced concrete. The piers would be 12 feet in diameter or less. The use of single column piers would limit debris accumulation potential along the skewed alignment. Both piers would require foundations. One of the piers would be constructed in the floodplain of the Gardner River, adjacent to the active channel. In-water work to construct this pier would be timed to have the least impact on fish and other aquatic organisms. Construction of this pier would require isolating the pier from the active river channel, which would be done using a cofferdam – a watertight steel and concrete temporary structure that is built surrounding the pier location. Pumps would be used to dewater the area inside the cofferdam, allowing the pier to be constructed safely. The other pier would be located away from the active channel.

The Gardens Bridge would be designed to pass the 100-year (elevation=5608.1) and 500-year (elevation=5,608.2 feet) floods. The abutments of the new bridge would be outside the 100-year and 500-year floodplains, as modeled (FHWA 2025). The bridge would have a low chord elevation of 5,634.74 feet and would have a minimum of 5 feet of vertical clearance above the 100-year floodplain elevation to allow for the passage of woody debris and ice.

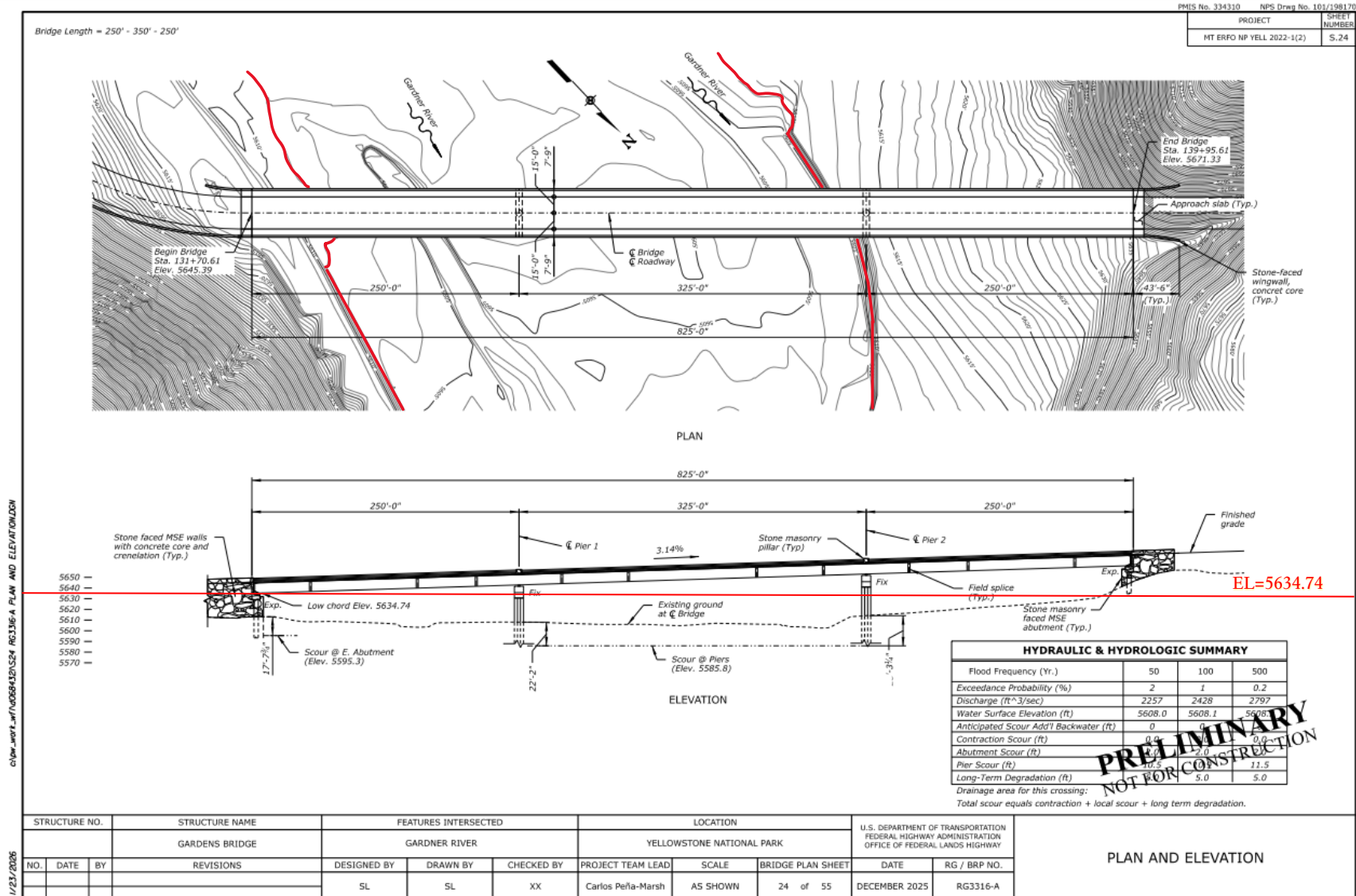


FIGURE 9. THE GARDENS BRIDGE PLAN AND ELEVATION (500-YEAR FLOODPLAIN ELEVATION: 5608.2 FEET, SHOWN IN RED).

2.4 SITE DESCRIPTION

The project area is between Mammoth, Wyoming and Gardiner, Montana in the Yellowstone Headwaters (10070001) Hydrologic Unit Code (HUC) watershed. The project area is in the Lower Gardner River sub-watershed (12-digit HUC 100700010906) (USGS 2025).

The Gardner River is in the northwestern corner of the Park (Figure 1). The Gardner River is listed in the Nationwide Rivers Inventory and is believed to possess one or more "outstandingly remarkable" natural or cultural values. The river is approximately 25 miles long and forms below Cache Lake near Electric Peak, one of the Park's highest peaks. The Gardner River is a tributary of the Yellowstone River and originates in the northwest corner of the Park, initially flowing southward. After merging with Panther Creek, Indian Creek, and Obsidian Creek, the Gardner River then turns north and flows through a steep canyon at Sheepeater Cliffs. Below Sheepeater Cliffs, Glen Creek and Lava Creek join the Gardner River near Mammoth Hot Springs. In the project area, the Gardner River flows to the north through Gardner River Canyon and empties into the Yellowstone River near Gardiner, Montana. Hydrothermal water from Mammoth Hot Springs flows into the Gardner River, primarily from the Boiling River south of the project area.

The Gardner River crosses the damaged (pre-flood) North Entrance Road multiple times and, during the catastrophic 2022 flood, washed out portions of the North Entrance Road. The Gardner River is approximately 25 to 60 feet wide in the project area with a water depth of several inches to several feet, as observed during the 2023 site visit (NPS 2023). The substrate of the Gardner River is sand, gravel, cobble, and boulders with limited areas of exposed bedrock (see the *Gardner River (GAMA001s)* section for further discussion). The U.S. Geological Survey (USGS) monitors the Gardner River near Mammoth at station 06191000 (USGS 2024). At the Gardner River near Mammoth, an average gage height of approximately 2 feet is typically recorded with flows increasing from May through July associated with spring runoff. Median daily flows during spring runoff range from approximately 200 to 800 cubic feet per second (cfs) with flows averaging approximately 100 cfs from August through April. Over the last 10 years of monitoring, the highest recorded discharge was 2,540 cfs, measured on June 13, 2022, which was associated with a rain-on-snow event.

2.4.1 Floodplain Delineation and Characterization

The Federal Emergency Management Agency (FEMA) National Flood Hazard Layer data was reviewed for the project area (FEMA 2025). The Gardner River and surrounding areas are shown on FEMA mapping as *Zone D: Areas with possible but undetermined flood hazards*, indicating that no flood hazard analysis has been conducted.

The existing floodplain in the project area was mapped along the Gardner River by the FHWA, Western Federal Lands Highway Division (FHWA 2025). The modeled 500-year floodplains in the project area are shown on Figure 10 through Figure 12. The project requires work within the 100-year and 500-year floodplains.

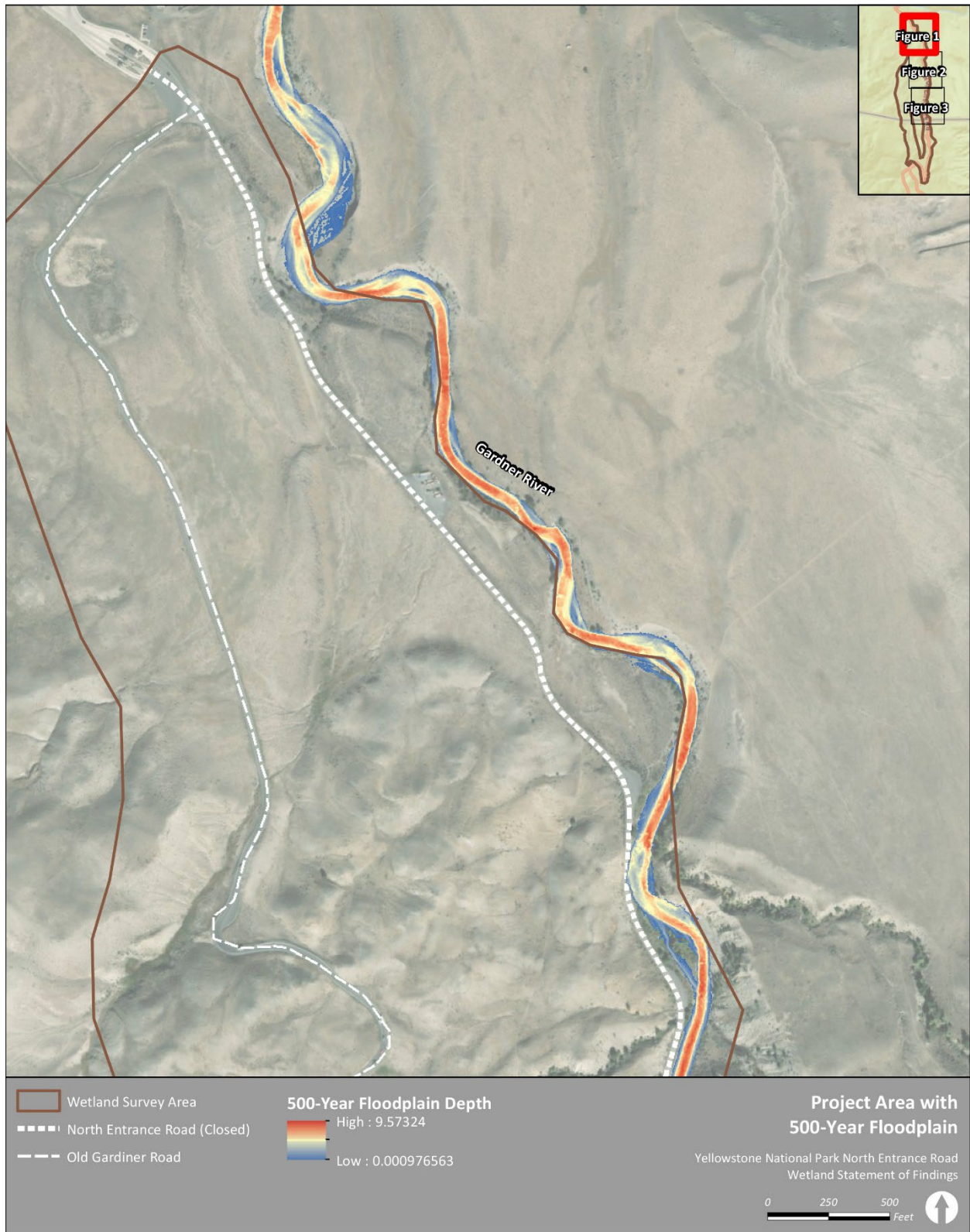


FIGURE 10. PROJECT AREA WITH 500-YEAR FLOODPLAIN

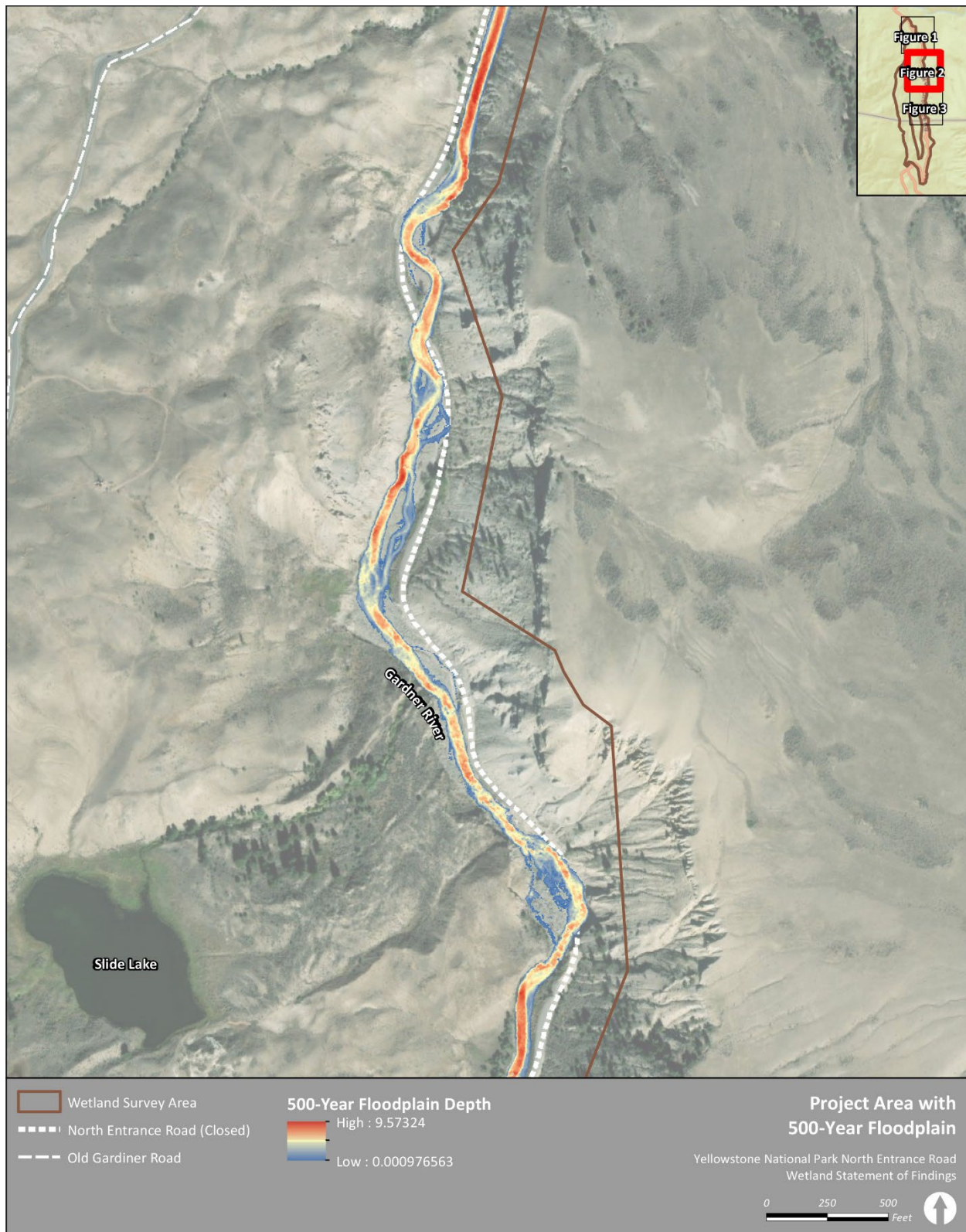


FIGURE 11. PROJECT AREA WITH 500-YEAR FLOODPLAIN

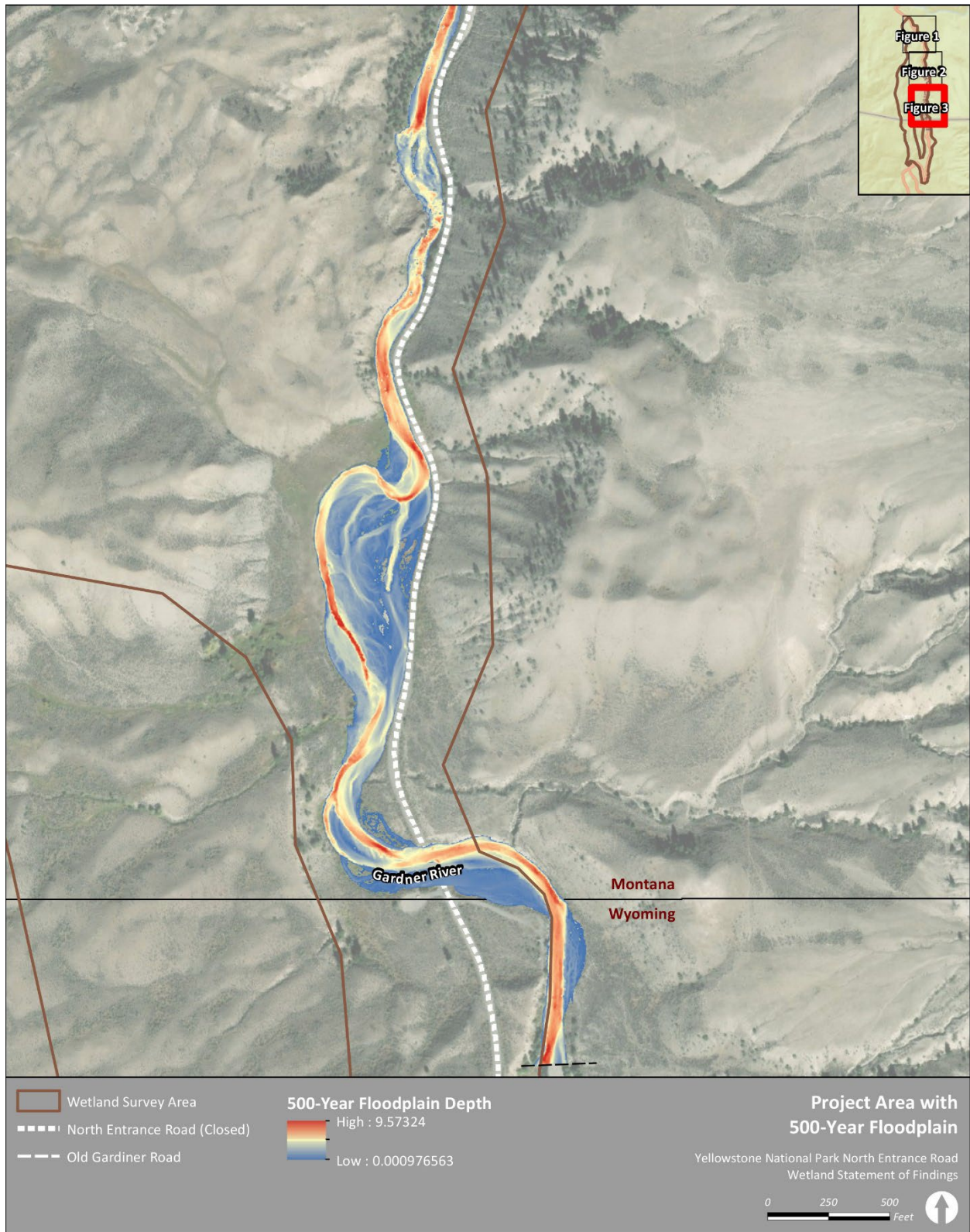


FIGURE 12. PROJECT AREA WITH 500-YEAR FLOODPLAIN

2.4.1.1 Floodplain and Riverine Wetlands Functions and Values

Floodplain values in the project area are associated with the Gardner River and include the ability of the floodplain to absorb increased water flows, recharge groundwater, and provide floodplain habitat. Floodplains in the project area provide wildlife habitat for wetland and riparian species, allow for flood storage, and facilitate conveyance. The Gardner River and its abutting wetlands were evaluated for functions and values using the Montana Wetland Assessment Method (MWAM), which determined that the Gardner River provides fish habitat and is highly functioning for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support (NPS 2023). Functions and values for wetlands in the project area are described in greater detail in the *Wetland Delineation Results* section and in the *Wetland Mapping* section (NPS 2023).

2.4.1.2 Flood Risk in the Project Area

Flood risk in the Gardner River Canyon includes risk associated with flash floods and debris flows. The Gardner River is a non-alluvial bedrock, cobble, and boulder channel with high sediment loads. The channel bottom is covered by sediment at low stages and is exposed by scour during floods. Past flooding events in the project area are described in the *Preliminary Line-and-Grade Hydraulics Report* (FHWA 2023).

Flash floods are sudden, intense, localized events that occur in response to rainfall that often accompanies thunderstorms. The most significant risk of flash flooding along the Gardner River results from rain-on-snow events, when heavy rainfall coincides with melting snowpack. The flood risk in the project area is further exacerbated by the Gardner River's narrow canyon with steep walls, which concentrates floodwater. As previously described, the Park experienced flooding events on June 12 and 13, 2022 that resulted in damage to the North Entrance Road. On the morning of June 13, Yellowstone experienced a 500-year flood event with the northern portions of the Park receiving up to 9.5 inches of rain and snowmelt in a 24-hour period (NPS 2025). Several sections of the North Entrance Road were destroyed in the flood. Wastewater lines in Gardner River Canyon were also severed in the flood. USGS gage data collected for the gage on the Gardner River near the Montana/Wyoming border indicates that peak flows during the 2022 flow were 2,940 cfs (FHWA 2023). For context, the highest flows previously recorded at this gage were 2,000 cfs in 1996 and 2,050 cfs in 1997.

Debris flow hazards were also identified as a consideration in the FHWA report (FHWA 2023). Past mudslides and debris flows have created concerns that the Gardner River channel could be temporarily dammed by channel spanning debris flows, resulting in flooding at the site of the temporary dam. The FHWA report cites concerns of catastrophic temporary dam failure, and a subsequent high discharge flood down the Gardner River Canyon, that poses a safety risk to road users and the downstream town of Gardiner (FHWA 2023).

2.4.2 Wetland Mapping

An aquatic resources inventory was conducted in the project area from July 31 through August 4, 2023 to delineate wetlands and other waters of the U.S. (WOTUS) (NPS 2023). Results of the aquatic resources inventory are presented in the Aquatic Resources Inventory Report and summarized below (NPS 2023).

2.4.2.1 Wetland Delineation Methods

ERO reviewed National Wetlands Inventory maps; USGS topographic maps; U.S. Department of Agriculture, Natural Resources Conservation Service soil mapping; and aerial photographs of the wetland in the project area before conducting fieldwork. During the 2023 site visit, ERO ecologists Moneka Worah, Marie Russo, Jared Watson, and Isabel Mansour visited the wetlands in the project area to map the boundaries of wetlands and other waters. The weather during fieldwork varied from sunny and clear to overcast with rain.

Wetlands were delineated using methods outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, and *NPS Procedural Manual #77-1: Wetland Protection* (Environmental Laboratory 1987; Corps 2010; NPS 2024). Wetlands were determined based on the presence of three wetland indicators: hydrophytic vegetation, wetland hydrology, and hydric soils. Wetland data were collected using a global positioning system (GPS) unit. GPS data were differentially corrected to achieve submeter accuracy. All differential correction was completed using Trimble Pathfinder Office 5.9 software.

2.4.2.2 Wetland Functional Assessment

Wetland functions were evaluated using the MWAM (Berglund and McEldowney 2008). The MWAM uses a classification system that combines the U.S. Fish and Wildlife Service's (USFWS) Cowardin classification system with a hydrogeomorphic (HGM) approach and provides a landscape context to the USFWS classification (Cowardin et al. 1979; Brinson 1993). The MWAM is a rapid functional assessment process designed primarily to address wetland resources associated with linear projects, such as highways and pipelines, although it can be applied to all types of projects. The MWAM is commonly used throughout the western United States and is accepted by the U.S. Army Corps of Engineers (Corps). HGM classes found in Montana and Wyoming are mineral soil flats, organic soil flats, riverine, lacustrine fringe, slope, and depressional.

For each function and value, the MWAM provides a rating of low, moderate, high, exceptional, or not applicable based on observations and responses to questions. For each wetland, the MWAM scores each function or value on a scale of 0.1 (lowest) to 1.0 (highest) functional points. When all functional points are totaled, the maximum number of functional points is 12. Typically, wetlands that are larger and more diverse receive more points. Once the total functional points for wetlands are calculated, each wetland is assigned to one of the following four categories based on total functional points and other criteria described in the MWAM:

- **Category I:** Wetlands of exceptionally high quality that are generally rare. Category I wetlands can provide primary habitat for federally listed threatened or endangered species; represent a high-quality example of a rare wetland type; provide irreplaceable ecological functions (e.g., are not replaceable within a human lifetime, if at all); exhibit exceptionally high flood attenuation capability; or are assigned high ratings for most of the assessed functions and values resulting in total actual functional points greater than 80 percent of the total possible functional points.
- **Category II:** Wetlands that are more common than those in Category I provide habitat for sensitive plants or animals, function at very high levels for wildlife/fish habitat, are

unique in a given area, or are assigned high ratings for many of the assessed functions and values, resulting the total actual functional points greater than 65 percent of the total possible functional points.

- **Category III:** Wetlands that are more common, generally less diverse, and often smaller and more isolated than those in Categories I and II. These wetlands can provide many functions and values, although they may not be assigned high ratings for as many parameters as Category I and II wetlands (30 percent to 65 percent of possible points).
- **Category IV:** Wetlands that are generally small, isolated, and lack vegetative diversity. These wetlands provide little in the way of wildlife habitat and are often directly or indirectly disturbed. Category IV wetlands rate low for uniqueness and production export/food chain support, and the total actual functional points are less than 30 percent of the total possible functional points.

Functional assessments were conducted for wetlands grouped based on location in the project area and either water source or wetland type. Wetlands in each group generally have similar plant communities, have similar hydrology, and provide similar functions on a whole.

2.4.2.3 Wetland Delineation Results

The project area was surveyed for wetlands and other waters as described below. Data were collected from various locations in the project area to document the characteristics of uplands and wetlands and the transition areas between them. Figure 13 through Figure 15 show a summary of the wetlands in the project area. Under NPS DO #77-1, wetlands include both vegetated wetlands and other waters such as lakes, ponds, and streams, which are considered unvegetated wetlands (NPS 2024). Wetlands in the project area that have hydrophytic vegetation, hydric soil, and wetland hydrology are described as vegetated wetlands in this statement of findings. The Gardner River, Slide Lake, and other ponds and streams in the project area are described as unvegetated wetlands. Vegetated wetlands and riverine wetlands in the project area are described below and are shown in detail in Attachment A. The acreage and type of each wetland are provided in Table 1 and Table 2. Approximately 32.71 acres of lakes, ponds, rivers, and streams (unvegetated wetlands) and 18.0 acres of vegetated wetlands occur in the project area (Table 1 and Table 2; Attachment A, Figure 2a through Figure 2n).



FIGURE 13. SURFACE WATERS AND WETLANDS

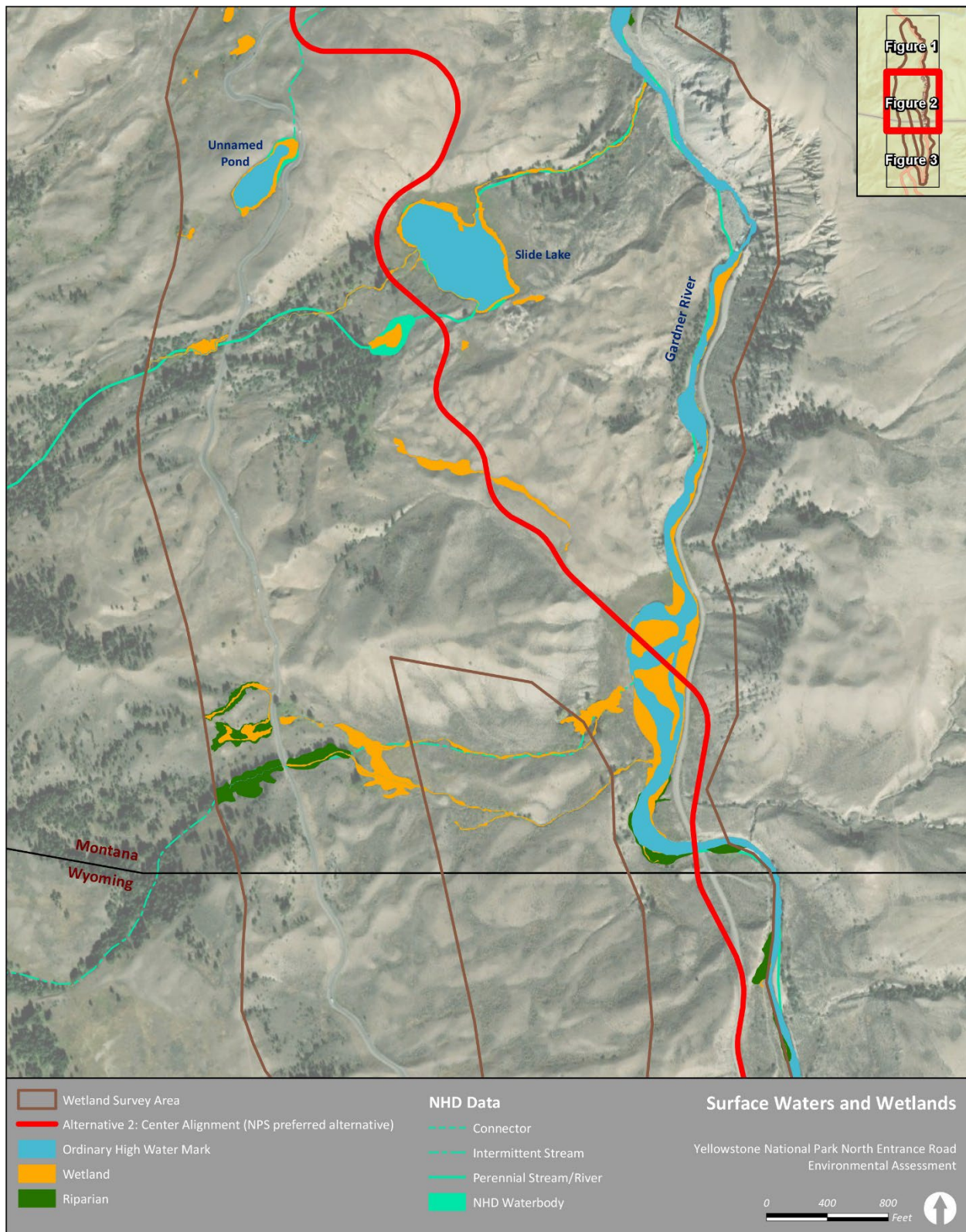


FIGURE 14. SURFACE WATERS AND WETLANDS



FIGURE 15. SURFACE WATERS AND WETLANDS

TABLE 1. SUMMARY OF VEGETATED WETLANDS IN THE PROJECT AREA.

Feature Label	Cowardin Classification ¹	Acres of Wetlands in the Project Area	Longitude	Latitude
GAMA001	PEM1A	0.062	-110.69928797	45.017856054
GAMA002	PEM1A	0.276	-110.7014258	45.015697686
GAMA003	PEM1A	0.002	-110.69289270	45.015970682
GAMA004	PEM1A	0.005	-110.69472613	45.012404093
GAMA005	PEM1A	0.008	-110.70097741	45.009970669
GAMA006	PEM1A	0.241	-110.70198907	45.008702778
GAMA007	PSSA	0.318	-110.70463040	45.008523359
GAMA008	PEM1A	0.263	-110.70452924	45.007767368
GAMA009	PEM1A	0.022	-110.70574146	45.007263978
GAMA010	PEM1A	0.018	-110.70604280	45.0071242943
GAMA011	PEM1A	0.349	-110.69593502	45.005926618
GAMA012	PEM1A	0.611	-110.70382093	45.005484006
GAMA013	PEM1A	1.231	-110.69892607	45.004278860
GAMA014	PEM1A	0.078	-110.70599664	45.004372815
GAMA015	PEM1A	0.007	-110.70096518	45.003732419
GAMA016	PEM1A	0.192	-110.70164528	45.003340899
GAMA017	PEM1A	0.137	-110.69730425	45.003161645
GAMA018	PEM1A	0.513	-110.69245545	45.003243629
GAMA019	PEM1A	0.418	-110.70567372	45.00231385
GAMA020	PEM1A	0.417	-110.7008778	-45.0024735
GAMA021	PEM1A	0.050	-110.6989468	45.0023483
GAMA022	PEM1A	0.006	-110.6930279	45.0079306
GAMA023	PEM1A	0.008	-110.6930431	45.0012658
GAMA024	PEM1A	1.389	-110.6933569	44.9974209
GAMA025	PEM1A	1.117	-110.6987980	45.0000194
GAMA026	PEM1A	0.015	-110.6963750	44.9987042
GAMA027	PSSA	1.541	-110.6943416	44.9953473
GAMA028	PSSA	2.323	-110.6942197	44.9971081
GAMA029	PEM1C	0.880	-110.6956389	44.9957379
GAMA030	PEM1B	0.629	-110.7045633	44.9955949
GAMA031	PSSB	2.662	-110.6963924	44.9951070
GAMA032	PEM1C	0.008	-110.6941218	44.9931943
GAMA033	PEM1B	0.002	-110.6911494	44.9924827
GAMA034	PEM1B	0.009	-110.6911788	44.9920756
GAMA035	PEM1A	0.243	-110.6912499	44.9911347
GAMA036	PEM1B	0.071	-110.6894257	44.9857443
GAMA037	PEM1C	0.202	-110.7408763	44.8918706
GAMA038	PSSC	1.684	-110.7397012	44.8910707
Subtotal of PEM1A wetlands		7.678		
Subtotal of PEM1B wetlands		0.711		
Subtotal of PEM1C wetlands		1.090		
Subtotal of PSSA wetlands		4.182		
Subtotal of PSSB wetlands		2.662		
Subtotal of PSSC wetlands		1.684		
Total		18.007		

¹PEM1A = palustrine emergent persistent, temporarily flooded; PEM1B = palustrine emergent persistent, seasonally saturated; PEM1C = palustrine emergent persistent, seasonally flooded; PSSA = palustrine scrub-shrub temporarily flooded; PSSB = palustrine scrub-shrub, seasonally saturated; PSSC = palustrine scrub-shrub, seasonally flooded.

²Based on topographic position observed in the field and review of aerial photography.

TABLE 2. UNVEGETATED WETLANDS IN THE PROJECT AREA.

Feature Label	Cowardin Classification ¹	Area (acres) ²	Length (feet) ³	Hydrology Source ⁴	Longitude	Latitude
Boiling River (GAMA012s)	R3UBH	0.356	434.8	Spring	-110.6894593	44.9857573
Gardner River (GAMA001s)	R3UBH	23.255	17,733.1	Surface flow/snowmelt	-110.6936458	45.0038699
Slide Lake (GAMA040)	PABG	6.668	834.4	Surface flow/snowmelt	-110.6991045	45.0039776
Unnamed Pond (GAMA039)	PABF	1.493	509.5	Surface flow/snowmelt	-110.7041640	45.0053301
GAMA002s	R4SBC	0.003	109.3	Surface flow/snowmelt	-110.6986401	45.0229188
GAMA003s	R4SBC	0.006	139.9	Surface flow/snowmelt	-110.6989836	45.0180593
GAMA004s	R4SBC	0.159	2,111.3	Surface flow/snowmelt	-110.6961204	45.0138779
GAMA005s	R5UBH	0.003	64.7	Surface flow/snowmelt	-110.6981597	45.0053428
GAMA006s	R4SBC	0.143	2,192.1	Surface flow/snowmelt	-110.7059654	45.0022243
GAMA007s	R4SBC	0.017	211.8	Surface flow/snowmelt	-110.7030414	45.0006674
GAMA008s	R5UBH	0.065	1,686.6	Surface flow/snowmelt	-110.7008301	44.9951069
GAMA009s	R5UBH	0.127	3,680.2	Surface flow/snowmelt	-110.6985426	44.9937273
GAMA010s	R4SBC	0.389	844	Surface flow/snowmelt	-110.7165522	45.0328476
GAMA011s	R5UBH	0.026	423.7	Surface flow/snowmelt	-110.7408801	44.8918706
Total	32.71	30,975.4				

¹R3UBH = riverine upper perennial, unconsolidated bottom, permanently flooded; R4SBC = riverine intermittent, streambed, seasonally flooded; R5UBH riverine unknown perennial, unconsolidated bottom, permanently flooded.

²Area in the wetland in the project area.

³Length in the wetland in the project area.

⁴Based on topographic position observed in the field and review of aerial photography.

2.4.2.3.1 Streams, Lakes, and Ponds (Unvegetated Wetlands)

The project area is in HUC 1007000109 (U.S. Geological Survey 2021). During the 2023 site visit, the following areas of streams/open water were identified in the project area: the Gardner River (GAMA001s); Boiling River (GAMA012s); Slide Lake (GAMA040); an Unnamed Pond (GAMA039); four ephemeral drainages (GAMA002s, GAMA003s, GAMA004s, and GAMA007s); and six intermittent or perennial drainages (GAMA005s, GAMA006s, GAMA008s, GAMA009s, GAMA010s, and GAMA011s). Each of these features is described in more detail in the *Aquatic Resources Inventory Report* (NPS 2023). Only aquatic resources that would be directly affected by the project are described in greater detail below.

2.4.2.3.1.1 Gardner River (GAMA001s)

The Gardner River flows roughly southward to northward along the east side of the project area (Attachment A, Figure 2c through Figure 2n). The river crosses the damaged North Entrance Road multiple times and, during the catastrophic flooding, washed out portions of the North Entrance Road. The Gardner River is approximately 25 to 60 feet wide in the project area with a water depth of several inches to several feet observed during the 2023 site visit. The substrate of the Gardner River is sand, gravel, cobble, and boulders with limited areas of exposed bedrock. Wetlands of variable sizes occur along both banks and are primarily palustrine emergent (PEM)

and riverine. The Gardner River drains into the Yellowstone River approximately 0.40 mile north of the northern terminus of the project area.

2.4.2.3.1.1.1 Functional Assessment

The Gardner River and its abutting wetlands were evaluated using the MWAM. The wetlands along the river consist of emergent and some scrub-shrub communities that provide habitat for wildlife including the federally threatened grizzly bear. The river also provides fish habitat and is highly functioning for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support. The overall MWAM score was 64.5 percent, and, based on this percentage, the wetlands would be classified as Category II with a score of 0.9 or 1 for general wildlife habitat.

2.4.2.3.1.2 GAMA006s

GAMA006s is an unnamed perennial stream that feeds into Slide Lake and connects to the Gardner River in the project area (Attachment A, Figure 2g). GAMA006s is 3 to 6 feet wide in the project area with a more defined channel upstream of Slide Lake. The stream had a depth of less than 1 foot in the project area during the 2023 site visit. The stream bottom consists of unconsolidated cobble-gravel and boulders and would be classified as riverine under Cowardin et al. (1979). GAMA006s has relatively permanent water and flows into the Gardner River.

2.4.2.3.2 Vegetated Wetlands

Approximately 18.0 acres of vegetated wetlands were mapped in the project area (Attachment A, Figure 2a through Figure 2n). A majority of the wetlands are PEM wetlands with some PSS wetlands scattered throughout the project area. Data points were completed at each wetland feature to document wetland/upland boundaries. Data sheets are provided in the *Aquatic Resources Inventory Report* (NPS 2023).

2.4.2.3.2.1 Gardner River Wetlands (GAMA024 and GAMA028)

PEM wetlands are along the Gardner River with limited areas of PSS wetlands (Attachment A, Figure 2h). Due to the dynamic nature of the active stream channel, some wetlands have developed more recently because of flooding, and more wetlands were likely present pre-flooding than are currently in the project area. The primary water source for this wetland community is surface water and subsurface seepage. The dominant species in these wetlands are crack willow (*Salix fragilis* – facultative [FAC]), bluejoint (*Calamagrostis canadensis* – facultative wetland [FACW]), water sedge (*Carex aquatilis* – obligate [OBL]), Baltic rush (*Juncus balticus* – FACW), American licorice (FAC), and redtop (*Agrostis gigantea* – FAC). Hydrology indicators included drift deposits, sediment deposits, oxidized rhizospheres on living roots, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by loamy mucky mineral and redox dark surface.

2.4.2.3.2.1.1 Functional Assessment

The wetlands abutting the Gardner River were evaluated together using the MWAM based on their proximity and common hydrology source. The wetlands are all supported by surface water from the Gardner River. The wetlands consist of emergent and some scrub-shrub communities that provide habitat for wildlife including the federally threatened grizzly bear. The wetlands provide wildlife habitat, fish habitat, and are highly functioning for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support. The overall MWAM score was 64.5 percent, and, based on this score, the wetlands would be classified as Category II with a score of 0.9 or 1 for general wildlife habitat.

2.4.2.3.2.2 Depressional Wetlands (GAMA005, GAMA021, and GAMA025)

Many isolated, depressional PEM wetlands are in the project area, including wetland GAMA005 (Attachment A, Figure 2e). The primary water source for this wetland community is precipitation. The dominant species in this wetland are common spikerush (*Eleocharis palustris* – OBL), Baltic rush (FACW), Nebraska sedge (*Carex nebrascensis* – OBL), foxtail barley (*Hordeum jubatum* – FAC), black creeper sedge (*Carex praegracillis*), hardstem bulrush (*Schoenoplectus acutus* – OBL), and western wheatgrass (*Pascopyrum smithii* – FACU). Hydrology indicators included surface water, a high water table, saturation, algal mat or crust, surface soil cracks, oxidized rhizospheres on living roots, drainage patterns, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by depleted below dark surface, loamy mucky mineral; depleted matrix; redox dark surface; the positive presence of indicators of wetland hydrology; and the dominance of hydrophytic vegetation. The depressional wetlands are isolated and do not have surface connections to the Gardner River.

2.4.2.3.2.2.1 Functional Assessment

The depressional wetlands are supported by subsurface flows and seeps. The wetlands consist of emergent communities that provide important habitat for wildlife. Disturbances in the wetlands are few with most occurring in the Park surrounded by uplands. The wetlands provide shoreline stabilization, groundwater discharge/recharge, and recreation/education potential. The overall MWAM score was 70 percent, and, based on this score, the wetlands would be classified as Category II due to an overall percent score greater than 65 percent.

2.4.2.3.2.3 Wetlands in Slide Lake Drainage (GAMA013, GAMA015, and GAMA016)

Drainages above and below Slide Lake contain PSS and PEM wetlands. The primary water source for this wetland community is surface flow from upgradient beaver ponds, surface water from precipitation, and subsurface seepage. The dominant species in these wetlands are Rocky Mountain juniper (*Juniperus scopulorum* – upland [UPL]), Wolf's willow (*Salix wolfii* – OBL), speckled alder (*Alnus incana* – FACW), red osier dogwood (*Cornus sericea* – FACW), Northwest Territory sedge (OBL), reedtop (*Agrostis stolonifera* – FAC), water hemlock (*Cicuta maculata* – OBL), Baltic rush (FACW), fowl bluegrass (*Poa palustris* – FAC), and sweet clover (*Melilotus officinalis* – facultative upland [FACU]). Wetland hydrology was indicated by surface water, a high water table, saturation, saturation visible on aerial imagery, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by an assumption of hydric soil based on the positive presence of wetland hydrology and the dominance of hydrophytic vegetation. The wetlands upstream and downstream of Slide Lake have surface connections to the Gardner River.

2.4.2.3.2.3.1 Functional Assessment

The wetlands provide habitat for wildlife by offering a water source and wetland vegetation. The wetlands also provide high functions for sediment/shoreline stabilization, groundwater discharge/recharge, and recreational/educational potential. The overall MWAM score was 60 percent with the wetlands rating as Category III.

2.4.2.4 Jurisdictional Status

The proximity and potential surface water connection of wetlands and other waters to known jurisdictional WOTUS was evaluated using aerial photo interpretation. Wetlands or waters that have a surface water connection to the Gardner River or its tributaries and that have relatively permanent flow and are contiguous to one another are potentially considered jurisdictional WOTUS under Corps guidelines. It is important to note that regardless of the jurisdictional

status of wetlands or other waters, the NPS has a “a no net loss of wetlands” goal (NPS 2024), and impacts on wetlands could require mitigation. The potential jurisdictional status of impacted wetlands is shown in Table 3.

TABLE 3. POTENTIAL WETLAND JURISDICTIONAL STATUS.

Wetland ID	Cowardin Classification ¹	NPS Jurisdiction	Corps Jurisdiction	Notes
GAMA001s (Gardner River)	R3UBH	Yes	Yes	Flows into Yellowstone River.
GAMA006s	R4SBC	Yes	Yes	Flows into Gardner River.
GAMA005	PEM1A	Yes	No	Depressional wetland with no surface connection to known WOTUS.
GAMA013	PEM1A	Yes	Yes	Surface connection to Gardner River
GAMA015	PEM1A	Yes	Yes	Surface connection to Gardner River
GAMA016	PEM1A	Yes	Yes	Surface connection to Gardner River
GAMA021	PEM1A	Yes	No	Depressional wetland with no surface connection to known WOTUS.
GAMA024	PEM1A	Yes	Yes	Abuts Gardner River.
GAMA025	PEM1A	Yes	No	Depressional wetland with no surface connection to known WOTUS.
GAMA028	PSSA	Yes	Yes	Abuts Gardner River.

¹R3UBH = riverine upper perennial, unconsolidated bottom, permanently flooded; R4SBC = riverine intermittent, streambed, seasonally flooded; PEM1A = palustrine emergent persistent, temporarily flooded; PSSA = palustrine scrub-shrub temporarily flooded.

3 JUSTIFICATION FOR THE USE OF THE FLOODPLAIN AND WETLANDS

The impacts on floodplains and wetlands are justified because impacts are unavoidable; none of the other proposed options would eliminate impacts on floodplains and wetlands. The preferred alternative and potential alternative alignments are constrained by steep terrain that would require substantial grading and recontouring. Wetland and floodplain impacts have been avoided and minimized to the greatest extent practicable while also considering constructability and road alignment issues. Therefore, it is not feasible to reconstruct the North Entrance Road while completely avoiding wetlands and floodplains.

3.1 EVALUATION OF ALTERNATIVES

If practicable alternative sites are identified, it is NPS policy, as set forth in NPS D.O. #77-2, to give preference to locating, or relocating, the project at an alternative site outside and not affecting the regulatory floodplain. Non-flood-prone sites must be identified and evaluated for all proposed actions when it is determined that the action will occur in a floodplain or wetland.

The EA prepared for the project evaluated three alternatives in addition to the proposed project. The alternatives considered included No Action, the OGR Alignment, and the Gardner River Canyon Alignment.

- Under the No Action alternative, the NPS would not construct the North Entrance Road. The alignment would remain on the temporary entrance road, which is the OGR, with narrow lanes, substandard road geometry, and no frost-free pavement section.
- Under the OGR alignment, the road alignment follows the temporary entrance road from Mammoth Hot Springs to Gardiner, while widening the road template from its current width of approximately 22 feet to a proposed 34 feet. Existing retaining and drainage structures would be replaced or enlarged to fit the wider road template. The

alignment would be fitted with wider curves than the temporary entrance road to improve drivability. This alignment diverges from the temporary entrance road toward the pre-flood North Entrance Road on the approach into Gardiner.

- The Gardner River Canyon Alignment follows the pre-flood North Entrance Road alignment and includes structures through the Gardner River Canyon. The first river crossing coming north out of Mammoth Hot Springs is the location of the existing Boiling River Bridge, which would be replaced with a longer and higher profile structure (260 feet long, single span or two span). At the site of the first major road embankment washout from the 2022 flood, a two-span bridge structure (approximate 590 feet long) is proposed to parallel the river channel while avoiding the eroding east side slope, debris flow chutes, and landslide toe on the west side. The road would transition into a rock shed structure (1,070 feet long) to protect the road from the rockfall hazard along the east bank of the Gardner River before making the final bridge crossing (600 feet long, four span) toward Gardiner. The existing bin wall structure past the final river crossing would be retained and reinforced, and a fascia would be added. A detailed description of the proposed project and alternatives are provided in Chapter 2 of the EA.

While the No Action alternative would not result in new impacts on wetlands and floodplains, the alternative would not meet the purpose and need for the project. Under the No Action alternative, the travel lanes would remain 11 feet wide, which does not comply with the FHWA standards for permanent roads, and additional safety issues with the existing road would not be addressed. The OGR alternative would result in more impacts on wetlands and less impacts to floodplains than the preferred alternative, while the Gardner River Canyon Alignment would result in more impacts on both wetlands and floodplains compared to the preferred alternative.

4 IMPACT AVOIDANCE AND MINIMIZATION

The NPS followed the sequence of avoiding, minimizing, and compensating for wetland and floodplain impacts. Impacts on wetlands would be avoided in selected locations by realigning the road out of wetlands to the greatest extent possible during project design. During the design process, when complete avoidance was not possible, soil and vegetation removal for cut/fill slopes and grading were limited to the smallest area possible. Impacts on existing wetlands outside of the construction area would be avoided by restricting ground disturbance outside of construction limits. No construction materials would be stockpiled in wetland areas. A complete list of resource protection measures is provided in Appendix A of the EA. In addition to the Resource Protection Measures listed in the EA, the NPS would adhere to the conditions of any Clean Water Act Section 404 and Section 401 Permits to minimize potential impacts on streams and wetlands.

5 PROJECT IMPACTS

5.1 FLOODPLAIN IMPACTS

Constructing two new bridges over the Gardner River and its floodplain would result in permanent and temporary impacts on terrestrial and aquatic habitats in the floodplain. Temporary impacts on floodplains would also result from project activities to remove flood-damaged infrastructure in the Gardner River Canyon and regrade the channel banks to a more natural condition. Additional project features such as the multi-use path, parking areas

(new/expansion/relocation), sewer lines, retaining walls, pullouts, vault toilets, and wingwalls would not be within the regulatory floodplain.

Permanent impacts on the floodplain would result from placement of a pier for the Gardens Bridge in the floodplain of the Gardner River. The pier would be up to 12 feet in diameter and would have a permanent footprint in the floodplain of approximately 115 square feet (0.003 acre) in the 500-year and 100-year floodplains. The second pier for the Gardens Bridge would be outside the NPS regulatory floodplain. The bridge abutments for both bridges would also be outside the regulatory floodplain.

The project would also result in temporary impacts on the floodplain. Based on conservative estimates, construction and restoration work in the Gardner River Canyon would temporarily impact approximately 1.2 acres of floodplains. Installation of the pier in the active channel would require containment to separate the work area for pier construction from the channel. The pier would be isolated from the river using a cofferdam, a watertight steel and concrete temporary structure that is built surrounding the pier location. Pumps would be used to dewater the area inside the cofferdam, allowing the pier to be constructed safely. Addition of buried riprap to protect the abutments at the Boiling River Bridge would also encroach a few feet into the 500-year floodplain as shown in Figure 7 and Figure 8. Riprap would be buried and would not have adverse effects on floodplain values or function.

Construction of both bridges would require temporary work bridges. These temporary bridges would be constructed with two rows of temporary piles installed in the channel for the length of the temporary crossing. The temporary work bridges would be removed once the proposed new Boiling River and Gardens Bridges are constructed. The temporary work bridge for the Boiling River would be in place for two years, and the temporary work bridge for the Gardens Bridge would be in place for three years. Because the work bridges would be in place for multiple years, they would be designed, at a minimum, to pass the 10-year flood event, with additional freeboard of 5 feet to the low chord. Temporary work bridges and other temporary impacts are shown on Figure 16 and Figure 17.

Temporary structures are also being considered for access in the Gardner River Canyon where segments of the old North Entrance Road canyon alignment would be removed along with all other old flood-damaged infrastructure, such as the old sewer line. Temporary access for construction/restoration may include backfilling along existing washouts (northern washouts) and temporary structures (southern washout). The eroded streambanks along the Gardner River would be regraded and recontoured after removal of flood-damaged infrastructure to recreate a more natural condition. No material would be added to the floodplain during removal of the damaged infrastructure.



FIGURE 16. PROPOSED TEMPORARY FLOODPLAIN IMPACTS

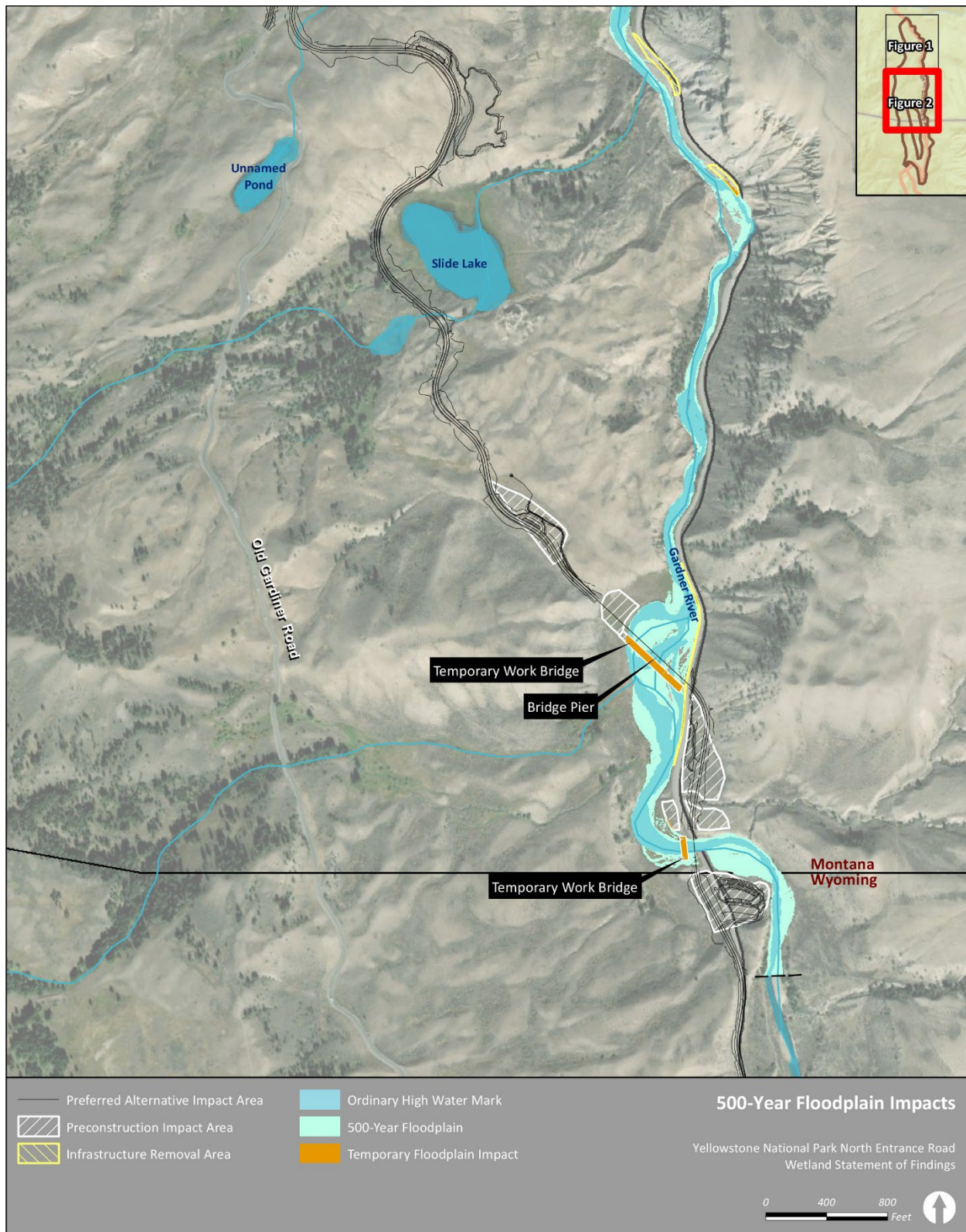


FIGURE 17. PROPOSED TEMPORARY FLOODPLAIN IMPACTS

5.1.1 Determination of Action Class and Regulatory Floodplain

Following Procedural Manual #77-2, three action classes were considered when establishing the regulatory floodplain:

1. Class I Actions (i.e., non-critical actions) include location or construction of administrative, residential, warehouse, and maintenance buildings; non-excepted parking lots; or other man-made features, which by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts on natural floodplain values.
2. Class II Actions (i.e., critical actions) include any activity for which even a slight chance of flooding is too great, such as construction of schools, medical facilities, emergency services, hazardous material storage, and records/collections storage.
3. Class III Actions include any action that involves human occupation or substantial human exposure in high hazard areas, such as drainages subject to flash flooding.

Because the project does not include actions related to schools, medical facilities, or other Class II actions, and does not involve human occupation in high hazard areas, the project meets the definition of a Class I Action.

Proposed actions on NPS lands must comply with Federal Flood Risk Management Standard (FFRMS) for new construction, substantial improvement, or repairing substantial damage. Per departmental guidance, agencies may select one of three approaches to implement flood resiliency measures:

- **Climate-Informed Science Approach (CISA)** – The elevation and flood hazard area that result from using the best available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding, including climate change and other physical processes (e.g., land use change).
- **Freeboard Value Approach (FVA)** – The elevation and flood hazard area that result from adding an additional 2 feet to the base flood elevation (BFE) for non-critical actions and by adding an additional 3 feet to the BFE for critical actions.
- **0.2 Percent Annual-Chance Flood Approach (0.2PFA)** – The area subject to flooding by the 0.2 percent (500-year) annual chance flood.

A 0.2PFA was used to establish the FFRMS flood elevations and the NPS regulatory floodplain for the bridge-stream crossings, while the FVA was used for the box culverts described in Section 2.3.7. The NPS regulatory floodplain elevations for bridge-stream crossings along with their low chord elevation are listed in Table 4.

TABLE 4. PROPOSED ACTIONS AND NPS REGULATORY FLOODPLAIN ELEVATION.

Proposed Action Element	NPS Regulatory Floodplain Elevation (0.2PFA, feet)	Low Chord (feet)
Gardens Bridge	5,608.20	5,634.74
Boiling River Bridge	5,627.00	5,634.84

Based on the floodplain delineation by FHWA (2025), all proposed structural bridge components, except for the Gardens Bridge piers and the riprap at the Boiling River Bridge abutments would be above the 500-year floodplain. Riprap at the Boiling River Bridge abutments will be buried. Temporary structures, including temporary work platforms for the Gardens Bridge and Boiling River Bridge, and temporary structures for infrastructure removal work in Gardner River Canyon would be located in the 500-year and 100-year floodplains. Temporary effects on the floodplain are generally excepted under DO #77-2 and are not discussed further in the floodplain portion of this statement of findings.

The four road-stream crossings with box culverts are inherently in the regulatory floodplain and have been sized for greater-than-100-year events to provide for flood flows and large animal passage. As a significant NPS investment with substantial potential to affect floodplain function, the flood hazards and risks to this infrastructure will be evaluated but their complete removal from the floodplain is not a logical approach to risk mitigation.

5.1.2 Site-Specific Flood Hazard

Hydrology and hydraulics information for the project area is taken from the *Preliminary Line-and-Grade Hydraulics Report* (FHWA 2023). The Gardner River drainage basin has a total drainage area of 200.4 square miles and a mean annual rainfall of 31.71 inches. The drainage basin is mountainous, with an average slope of 20.4 percent. More than 23.1 percent of the basin has slopes greater than 30 percent, and 8.4 percent has slopes greater than 50 percent. Peak flows at the gage on the Gardner River near Mammoth were 2,940 cfs during the 2022 flood. This was approximately 1,000 cfs higher than the highest flows previously recorded at this gage were 2,000 cfs in 1996 and 2,050 cfs in 1997. The *Preliminary Line-and-Grade Hydraulics Report* modeled peak discharge summary for the Gardner River at Gardens Bridge (Table 5).

TABLE 5. PEAK DISCHARGE SUMMARY (CUBIC FEET PER SECOND).

Site	Drainage Area (square miles)	2-Year	10-Year	25-Year	50-Year	100-Year	500-Year
Gardner River – full drainage area	201	1,206	1,812	2,075	2,257	2,428	2,797
Boiling River Bridge	198.6	1,206	1,812	2,075	2,257	2,428	2,797
Gardens Bridge	199.0	1,206	1,812	2,075	2,257	2,428	2,797
Slide Lake Box Culvert	1.8	18.4	50.1	72.8	92.8	114.2	174.2
South of Slide Lake Box Culvert	0.1	1.7	5.98	9.4	12.7	16.4	27.5
OGR Box culvert	1.77	18.3	49.4	71.8	91.4	112.5	171.5

Source: FHWA 2026.

Water surface elevations (WSE) and velocities were also calculated for the proposed Boiling River Bridge and Gardens Bridge location (Table 6 and Table 7).

TABLE 6. WATER SURFACE DEPTH (FEET) DURING APPLICABLE REGULATORY FLOOD EVENTS.

Site	Ground Surface Elevation	100-Year	100-Year + 2'	500-Year
Boiling River Bridge	5,622	N/A	N/A	5.00
Gardens Bridge	5,605	N/A	N/A	5.85
Slide Lake Box Culvert	5,763	0.2	2.2	N/A
South of Slide Lake Box Culvert	6,011	0.2	2.2	N/A
OGR Box Culvert	5,962	0.2	2.2	N/A

Source: FHWA 2026.

TABLE 7. VELOCITY (FEET PER SECOND) AND SHEAR STRESS (POUNDS PER SQUARE FOOT) DURING APPLICABLE REGULATORY FLOOD EVENTS.

Site	Velocity 100-Year	Velocity 500-Year	Shear Stress
Boiling River Bridge	N/A	8.3	N/A
Gardens Bridge	N/A	8.4	N/A
Slide Lake Box	5.5	N/A	0.97
South of Slide Lake Box	14.4	N/A	1.3
OGR Box	5.5	N/A	0.97

Source: FHWA 2023.

5.1.3 Potential Risks to Human Health and Safety

Risks to human health and safety are very low. While the combination of depths and velocities provided in Table 6 and 7 present a significant risk to human life, neither the bridges nor the culverts are infrastructure that support or encourage direct visitor use or interaction. Therefore, the likelihood that visitors and NPS staff will experience flood risk associated with these projects is very low.

5.1.3.1 Time Required for Flooding to Occur

As previously described, flooding in the project area generally results from slow-moving summer thunderstorms or spring rain-on-snow events. Floods from these events can occur within a few minutes to hours of heavy rainfall. The 500-year flood event that occurred in June 2022 developed over several hours.

5.1.3.2 Egress from the Site in the Event of Flooding

The project does not include construction of habitable (human-occupied) structures in the floodplain. The North Entrance Road serves Park visitors and Park staff travelling between Gardiner and Mammoth. Both bridges are designed to pass the 500-year flood event and would provide at least 5 feet of clearance above the water surface during a 100-year flood event. In the event of flooding, motorists traveling along the North Entrance Road would not be within the floodplain of the Gardner River when crossing the Gardens Bridge and Boiling River Bridge. NPS personnel and visitors would use the North Entrance Road to evacuate the area, if necessary.

As previously described, the temporary work bridges would be designed, at a minimum, to pass the 10-year flood event, with additional freeboard of 5 feet to the low chord. The temporary work bridge for the Boiling River would be in place for two years, and the temporary work bridge for the Gardens Bridge would be in place for three years. In the event of a flood during the construction period that exceeds the 10-year event plus 5 feet of freeboard, construction personnel would be able to evacuate the temporary work bridges by moving to the adjacent North Entrance Road.

Additional measures to reduce the potential for adverse effects on floodplains are described below under the *Floodplain Mitigation* section. With the implementation of these measures, the risks to human health and safety from flooding of the proposed project would be negligible.

5.1.4 Potential Risks to Property

The property at risk is primarily the infrastructure itself: the bridges, culverts and associated inlet/outlet protection, and road/trail supported by the bridges and culverts. No existing developments or features are present, either upstream or downstream, that may be affected by the proposed action.

Bridge piers would be placed to reduce risks to NPS property. While the box culverts planned for the three road-stream crossings cannot be removed from the floodplain, the structures have been sized with forethought of major storm events to prepare for future flood conditions and are larger than required by typical engineering guidance. No damage to the bridge pier within the floodplain is expected because the pier would have a deep foundation and be designed to withstand expected flood flows, velocity, and scour (Table 6 and 7). The existing Boiling River bridge will be replaced with a new structure with deep foundations and improved hydraulic capacity. The new crossing will allow the channel to access the low elevation bench along the left bank (looking downstream) for floodplain relief, during high flow. Buried riprap protection will protect the bridge abutment and road embankment from scour.

The Gardens Bridge east abutment wall is designed to provide scour protection and minimize impacts along the Gardner River. The west abutment is set back away from the active channel and riprap protection is not proposed for the Gardens Bridge.

The section of road between the proposed Gardens Bridge and the proposed Boiling River Bridge is currently adjacent to the 500-year floodplain boundary. This section of road would be realigned to the east, further from the floodplain boundary, which would reduce the risk of flood damage to the road.

The temporary work bridges for the Boiling River Bridge and the Gardens Bridge would be constructed to pass the 10-year flood with 5 feet of additional clearance. The temporary bridges would be designed to withstand expected velocity and scour at each location.

Increased flooding upstream of the bridges is not expected to occur because the bridges would be designed to ensure a “no-rise condition” in upstream water surface elevations. In addition, the existing embankment at the Boiling River Bridge would be graded to match the existing overbank, removing fill that was placed within the floodplain when the road and bridge were originally constructed. Excavating this fill material would provide additional floodplain capacity during high flow and reduce the risk of upstream flooding. Risks to property would be

minimized by following FHWA *Design Standards for Highways in National Flood Insurance Program Mapped Floodplains* (FHWA 1986). The installation of the bridges would not cause any potential for increased flood risk to property.

Increased flooding upstream of the new culverts is not expected because they are designed to be oversized to reduce fill and facilitate wildlife passage and will ensure a “no-rise condition” in upstream water surface elevations. The six-foot by six-foot reinforced concrete box embedded pipe culvert proposed at Slide Lake is along an existing ephemeral channel and will convey flows and maintain hydraulic connectivity to Slide Lake and facilitate wildlife passage. Constructed stream elements for this site consist of buried streambed material, graded to form a low flow channel that emulates a more natural condition for stream function and wildlife passage. The proposed crossing is steep, approximately 17.4%, requiring sediment retention sills and buried rock weirs to serve as grade control. Wingwalls are proposed to improve hydraulic efficiency, direct flows, and retain embankment slopes. Riprap protection is proposed to mitigate local scour at the inlet and outlet. The pipe dimensions are oversized to pass greater than 100-year events and reduce fill and facilitate wildlife passage. A 9 ft x 9ft reinforced concrete box embedded pipe culvert is proposed at Slide Lake along the existing perennial channel to convey flows, maintain hydraulic connectivity to Slide Lake and facilitate wildlife passage. Constructed stream elements consist of placing streambed material in pipe, constructing well-defined banks inside culvert with bank stones, and grading to form a low flow channel that emulates a more natural condition for stream function and wildlife passage. The proposed crossing is steep, approximately 12.7%, requiring sediment retention sills and buried rock weirs to serve as grade control. Wingwalls are proposed to improve hydraulic efficiency, direct flows, and retain embankment slopes. Riprap protection is proposed to mitigate local scour at the inlet and outlet. The pipe is oversized to reduce fill and facilitate wildlife passage.

The 4-foot by 4-foot box culvert south of Slide Lake will convey flows and maintain hydraulic connectivity for a wetland complex through a low spot in the existing terrain. The culvert will be installed at grade to provide grade control and reduce the potential for upstream channel degradation and oversized to facilitate wildlife passage. Wingwalls are proposed to improve hydraulic efficiency, direct flows, and retain embankment slopes. Riprap protection is proposed at the outlet to protect from local scour.

The 9-foot by 9-foot box culvert along the OGR will replace an existing undersized culvert along a perennial stream and will be similar in design to the same sized culvert near Slide Lake.

Risks to property would be minimized by following FHWA *Design Standards for Highways in National Flood Insurance Program Mapped Floodplains* (FHWA 1986). The installation of the bridges and culverts would not cause any potential for increased flood risk to property.

5.1.5 Potential Risks to Floodplain Values

The Gardner River Floodplain serves important functions, such as reducing downstream flood risks, by absorbing and storing excess water during flood events, improving water quality by filtering contaminants during flood events, providing habitat for plants and animals, and recharging groundwater aquifers. The small drainages flowing into Slide Lake have high functions for sediment/shoreline stabilization and groundwater discharge/recharge. The floodplain natural values in the project area have been altered by human activities including construction of infrastructure such as bridges, roads, and parking areas. Past construction of the

North Entrance Road through Gardner River Canyon resulted in increased impervious surface adjacent to the floodplain.

Activities during construction of the Boiling River Bridge and Gardens Bridge over the Gardner River and construction of culverts along the drainages flowing into Slide Lake would occur in the regulatory floodplain. Construction activities would temporarily impact natural floodplain values along the river. The floodplain would be negatively impacted during construction due to the presence of the temporary access bridges, construction equipment, and materials in the floodplain and possible erosion from bare soils prior to revegetation. However, construction activities would be monitored, and erosion and sediment control BMPs would be implemented to minimize erosion and sediment movement. Disturbed areas would be revegetated following construction with native species.

Construction of the new alignment will result in a decrease of impervious surface in the watershed. Changes in land cover could alter the hydrology of the project area and increase the volume of runoff. Impervious areas also collect pollutants, which are then mobilized after rainfall and potentially transported to streams or other waters. Decreasing impervious surface in the floodplain would benefit floodplain functions and values by increasing flood storage capacity and the ability of the floodplain to recharge and infiltrate stormwater. To reduce the risk of pollutants entering waterways, fuel storage and hazardous waste storage during construction would be at least 3 feet above the regulatory floodplain elevation.

The new road would be outside the regulatory floodplain and would not be expected to alter the natural flow of water during floods. The Gardens Bridge pier in the floodplain would have a footprint of approximately 115 square feet and would not alter or constrict flood waters. Both new bridges would be designed to pass the 100-year floodplain with 5 feet of additional clearance for woody debris and ice flow and, thus, would not be expected to alter or constrict flood waters. The new culverts along the drainages flowing into Slide Lake would be oversized and would not be expected to alter or constrict floodwaters. In addition, the Gardner River would be less constricted after the removal of the existing bridge at the Boiling River, removal of the existing abutment and associated fill, and construction of a new Boiling River Bridge with a longer span.

Overall, the project would have minimal permanent impacts on floodplain values because the 115 square feet of impacts from the Gardens Bridge pier would not alter or constrict floodwaters. Increasing the span of the new Boiling River Bridge compared to the existing bridge would also reduce the potential for increased flooding. The new culverts would be sized to avoid constricting or altering flood waters. In addition, the project would likely not significantly reduce water infiltration because the total increase in impervious surface near the floodplain would be minor compared to the existing road. The project would not noticeably alter the existing stormwater runoff volumes or patterns.

5.2 WETLAND IMPACTS

Proposed impacts on rivers and streams (unvegetated wetlands) are shown in Table 8. Proposed impacts on vegetated wetlands are shown in Table 9. Proposed impacts are also shown in Figure 18 and Figure 19.

TABLE 8. PROPOSED UNVEGETATED WETLAND IMPACTS.

Wetland ID	Cowardin Classification	Permanent Impacts (Acres)	Temporary Impacts (Acres)	Permanent Impacts (Linear feet)	Temporary Impacts (Linear feet)	Notes
GAMA001s (Gardner River)	R3UBH	0	0.396	0	1,430	Temporary impacts from construction of the Boiling River Bridge, Gardens Bridge, and restoration work in Gardner River Canyon.
GAMA006s	R4SBC	0.0017	0.007	30	90	New road alignment and associated cut and fill.
Total		0.0017	0.403	30	1,520	

¹R3UBH = riverine upper perennial, unconsolidated bottom, permanently flooded; R4SBC = riverine intermittent, streambed, seasonally flooded.

TABLE 9. PROPOSED VEGETATED WETLAND IMPACTS.

Wetland ID	Cowardin Classification	Permanent Impacts (Acres)	Temporary Impacts (Acres)	Notes
GAMA005	PEM1A	0	0.001	New road alignment and associated cut and fill.
GAMA013	PEM1A	0	0.00004	New road alignment and associated cut and fill.
GAMA015	PEM1A	0.006	0.001	New road alignment and associated cut and fill.
GAMA016	PEM1A	0.011	0.022	New road alignment and associated cut and fill.
GAMA021	PEM1A	0	0.013	New road alignment and associated cut and fill.
GAMA024	PEM1A	0	0.062	Temporary impacts from construction of the Gardens Bridge.
GAMA025	PEM1A	0.011	0.030	New road alignment and associated cut and fill.
GAMA028	PSSA	0.003	0.201	Permanent impacts from the bridge pier (115 square feet). Temporary impacts from construction of the Gardens Bridge.
Total		0.031	0.330	

¹PEM1A = palustrine emergent persistent, temporarily flooded; PSSA = palustrine scrub-shrub temporarily flooded.



FIGURE 18. PROPOSED WETLAND IMPACTS

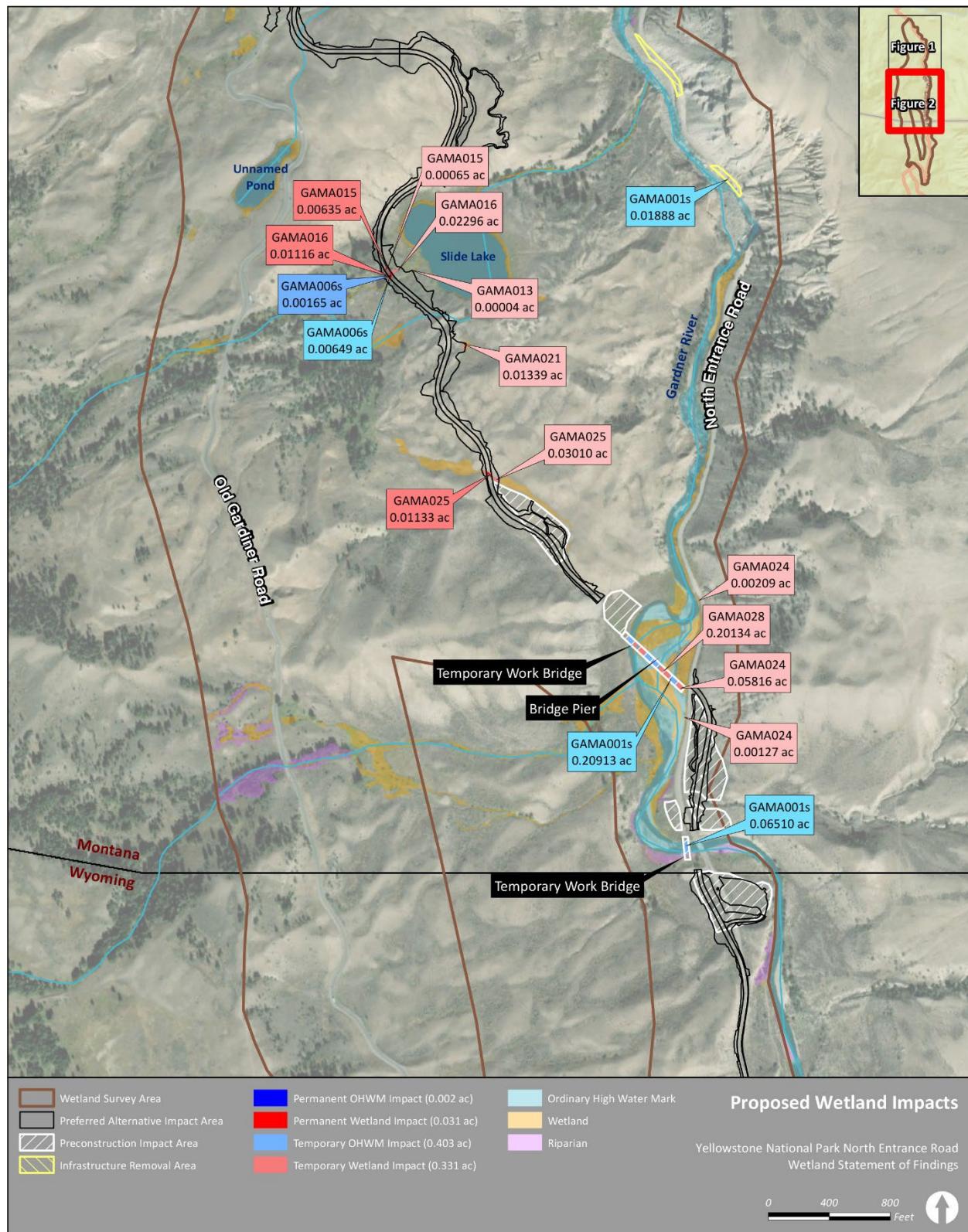


FIGURE 19. PROPOSED WETLAND IMPACTS

5.2.1 Permanent Wetland Impacts

Permanent impacts on vegetated PEM wetlands (GAMA015, GAMA016, and GAMA025) would occur from cut and fill to construct the new road, from placement of a pier for the construction of the Gardens Bridge (GAMA028) and would total 0.031 acre. Permanent impacts on streams (unvegetated wetlands) would also occur from cut and fill associated with the new road alignment (GAMA006s) and would total approximately 0.0017 acre and approximately 30 linear feet. Table 8 and Table 9 provide a summary of permanent impacts on wetlands.

5.2.2 Temporary Wetland Impacts

Construction of the Boiling River Bridge and Gardens Bridge would result in 0.403 acre of temporary impacts on the Gardner River (GAMA001s) and an unnamed tributary (GAMA006s). The length of temporary streambed impacts would be approximately 1,520 feet. Table 8 and Table 9 provide a summary of temporary impacts on wetlands.

Temporary impacts on vegetated wetlands would total approximately 0.33 acre. Temporary impacts on PEM wetlands would occur from the construction of the Gardens Bridge (GAMA024). Temporary impacts on vegetated PEM wetlands (GAMA05, GAMA013, GAMA015, GAMA016, GAMA021, and GAMA025) would also occur from cut and fill to construct the new road. Temporary impacts on PSS wetlands would also occur from the construction of the Gardens Bridge (GAMA028). Temporary impacts would generally be restored in less than one year and would be monitored as required under Corps permits.

As described above under *Floodplain Impacts* section, construction of both bridges would require temporary work bridges, which would be constructed with two rows of temporary piles installed in the channel for the length of the temporary crossing. The temporary work bridge for the Boiling River Bridge construction would be in place for approximately two years. The temporary work bridge for the Gardens Bridge would be in place for approximately three years. The temporary work bridges would be removed once the proposed new Boiling River Bridge and Gardens Bridge are constructed. Temporary structures are also being considered for access in Garner River Canyon where restoration work will include obliteration of existing paved surfaces and grading to restore natural bank and slopes along the canyon.

5.2.3 Impacts on Wetland Functions and Values

As previously described, wetland functions and values were evaluated using the MWAM and are summarized below. The following functions and values were evaluated: groundwater recharge/discharge, sediment/nutrient/toxicant retention, production export/food chain support, sediment/shoreline stabilization, fish habitat, wildlife habitat, endangered species habitat, recreation/education potential, and uniqueness. Wetland functions and values and impacts on functions and values are presented in Table 10.

TABLE 10. IMPACTS ON WETLAND FUNCTIONS AND VALUES.

Wetland Function or Value	Description	Summary of Impacts
Groundwater Recharge/Discharge	Groundwater recharge is the movement of surface water (usually downward), whereas groundwater discharge is defined as the movement of groundwater into surface water (usually laterally or upward). Evaluation of this function includes observations of springs and seeps and the presence of inlets and outlets. Groundwater discharge and recharge occurs in the Gardner River and in seep-supported wetlands in the project area, one of which would be affected by the project (GAMA006). Wetlands in the project area were rated moderate to high for this function (NPS 2023).	The permanent loss of 30 linear feet of streambed and 0.031 acre of vegetated wetlands would have an adverse effect on groundwater recharge and discharge, but this impact would be mitigated by restoring and enhancing wetlands and implementing the additional mitigation measures as described below in the <i>Wetland Mitigation</i> section.
Sediment/Toxicant/Nutrient Retention	Sediment/toxicant/nutrient retention is the ability of an area to retain sediments, and retain and remove toxicants and nutrients. Assessment of this function is based on the site's proximity to sediment/toxicant/nutrient sources, transport potential of these constituents to the area via surface water, potential for the site to detain the constituents to the area via surface water, and the potential of the site to filter and/or process (uptake) the constituents. Wetlands in the project area have the potential to retain sediment and toxicants in runoff from nearby roads. Wetlands in the project area were rated high for this function (NPS 2023).	The permanent loss of 30 linear feet of streambed and 0.031 acre of vegetated wetlands would have an adverse effect on this function, but this impact would be mitigated by restoring and enhancing wetlands and implementing the additional mitigation measures as described below in the <i>Wetland Mitigation</i> section.
Production Export/Food Chain Support	Production export/food chain support is the potential of an area to produce and export food/nutrients for living organisms. Production export typically refers to the flushing of organic material from the wetland to downstream habitats or adjacent deeper waters (Adamus et al. 1991). Wetlands in the project area were rated moderate to high for this function (NPS 2023).	The permanent loss of 30 linear feet of streambed and 0.031 acre of vegetated wetlands would have an adverse effect on this function, but this impact would be mitigated by restoring and enhancing wetlands and implementing the additional mitigation measures as described below in the <i>Wetland Mitigation</i> section.
Sediment/Shoreline Stabilization	Sediment/shoreline stabilization is the ability of an area to dissipate flow or wave energy to reduce shoreline erosion. This function only applies if the area occurs on or in the banks of a river, stream, or other natural or man-made drainage or on the shoreline of a standing water body subject to wave action. Wetlands in the project area were rated high for this function (NPS 2023).	Construction of streambank protection for erosion control as part of the proposed project is likely to have a beneficial effect on this function by reducing the potential for future streambank erosion.
Fish Habitat	This function is assessed based on the effectiveness of seasonal and permanent water bodies associated with the wetland for fish habitat. The Gardner River is known to be occupied by native fish species, and its associated wetlands were rated moderate for this function (NPS 2023).	The permanent loss of 30 linear feet of streambed and 0.031 acre of vegetated wetlands would have an adverse effect on fish habitat, but this impact would be mitigated by restoring and enhancing wetlands and implementing the additional mitigation measures as described below in the <i>Wetland Mitigation</i> section.

Wetland Function or Value	Description	Summary of Impacts
Wildlife Habitat	Wildlife habitat is assessed based on the effectiveness of the wetlands to provide habitat for both resident and migrating wildlife species typically associated with wetlands. Wetland and riparian areas are among the most biologically diverse habitat types. The wetlands and riparian areas in the project area provide habitat to multiple wildlife species and provide a water source for larger mammals. Wetlands in the project area were rated moderate to high for this function (NPS 2023).	The permanent loss of 30 linear feet of streambed and 0.031 acre of vegetated wetlands would have an adverse effect on groundwater recharge and discharge, but this impact would be mitigated by restoring and enhancing wetlands and implementing the additional mitigation measures as described below in the <i>Wetland Mitigation</i> section.
Endangered Species Habitat	Endangered species habitat relates to the effectiveness of the wetland and associated water bodies to support threatened and endangered species. The grizzly bear is the only federal- or state-listed species known to occur in the project area. No designated critical habitat for any federally listed species is present in the project area. Wetlands in the project area were rated low for this function (NPS 2023). Additional information about endangered species habitat is presented in the EA under “Special Status Species.”	The permanent loss of 30 linear feet of streambed and 0.031 acre of vegetated wetlands would not be expected to affect grizzly bears and would be mitigated by implementing the mitigation measures as described below in the <i>Wetland Mitigation</i> section. Potential direct and indirect effects on grizzly bears could result from increased noise and activity during construction or food habituation. Impacts are described in greater detail in the EA under “Special Status Species.” Impacts would be mitigated by implementing food storage restrictions to reduce the risk of grizzly conflicts with humans, as described in the EA.
Uniqueness	Uniqueness is assessed based on the general uniqueness of an area relative to the abundance of similar sites occurring in the same major watershed basin, the replacement potential and habitat diversity of an area, and the degree of human disturbance in the area. Wetlands in the project area were rated low to moderate for this function (NPS 2023).	Because the wetlands in the project area were not rated highly for this uniqueness, this value would not be affected.
Recreation/Educational Potential	Recreation potential is assessed based on the potential of an area to support recreational activities. Educational potential is the potential of an area to support educational activities or scientific research. The wetlands in the project area are not likely to be directly used for recreation; however, wetlands in the project area contribute to the recreational experience of visitors driving along the road. Wetlands in the project area were rated high for this function (NPS 2023).	Construction of the road would improve access to the project area for visitors, which would benefit recreation. Impacts on recreation are described in greater detail in the EA in the “Visitor Use and Experience” section.

6 MITIGATION

6.1 FLOODPLAIN MITIGATION

6.1.1 Measures to Reduce Risk to Human Life, Health, and Safety

- Bridge design places the bridge deck elevation for both new bridges above the level of a 100-year or 500-year flood event.
- Egress to higher ground is readily available for motorists and pedestrians.

6.1.2 Measures to Reduce Risk to NPS Infrastructure and Capital Investment

- The bridge pier within the floodplain would have a deep foundation and be designed to withstand expected flood flows, including the highly erosive effects of sediment and ice. The bridge abutments outside of the regulatory floodplain would be constructed with deep foundations to reduce the risk of flood damage to the bridges.
- The two new bridges would be constructed to pass the 100-year flood with an additional 5 feet of clearance for ice and debris flows. This would reduce the risk of flood damage to the newly constructed bridges.
- The section of road between the proposed Gardens Bridge and the proposed Boiling River Bridge is currently adjacent to the 500-year floodplain boundary. This section of road would be realigned to the east, further from the floodplain boundary, which would reduce the risk of flood damage to the road.
- Culverts are oversized in comparison to standard engineering guidance, resulting in flood-resilient infrastructure
- Structures within the regulatory floodplain would be designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program “Floodplain Management Criteria for Flood-Prone Areas” (44 Code of Federal Regulations [CFR] Part 60.3) and in accordance with any state or county requirements for flood-prone areas.
- All culverts would be designed to comply with FHWA WFLHD guidelines including Chapter 7 of the PDDM and the WFLHD Chapter 7 Supplement (FHWA 2024).
- The proposed culverts were designed to incorporate design recommendations from *Stream Simulation: An Ecological Approach for Providing Passage for Aquatic Organisms at Road Stream Crossings* (USFS 2008) where possible, to emulate natural channel through use of embedded culvert with streambed material.
- Reinforced Concrete Box (RCB) culverts were selected to provide grade control and mitigate risks associated with steep (12 to 17% slope) channels and open bottom structures. Embedded RCB pipes, with sediment retention sills are recommended for steep crossings to hold substrate in place in culverts greater than 6% slope (USFS 2008).
- For the new culverts, wingwalls are proposed to improve hydraulic efficiency, direct flows, and retain embankment slopes. Riprap protection is proposed to mitigate local scour at the inlet and outlet.
- For culvert sites subject to debris flows, or installed along landslide complexes, the project would increase pipe capacity to provide slip-lining opportunities, remove deposited material from the inlet area, and enlarge the inlet area as much as possible.
- Potential risks to property would be mitigated by following the FHWA’s *Design Standards for Highways in National Flood Insurance Program Mapped Floodplains* (FHWA 1986).

6.1.3 Measures to Reduce Risk to Floodplain Values

- Any in-water work needed to protect the piers from potential future flood events would be isolated from the active river flow by using temporary protective measures such as sandbag dams. Work that would be done below the OHWM would occur at times that would have the least effect on fish and other aquatic organisms.

- The flood-damaged road in the Gardner River Canyon (including bridges) between the Gardner River Picnic Area and Rescue Creek parking area would be removed and restored by removing the asphalt and road base materials and recontouring and revegetating the area. Remaining structures, existing utilities, and sewer lines would be removed. The eroded streambanks along the Gardner River would be regraded and recontoured to create a natural condition after removal of flood-damaged infrastructure.
- To mitigate risk to floodplain values (stormwater storage capacity and infiltration), elevation of fuel storage and hazardous materials or waste storage above the 500-year floodplain would reduce the risk of a release that could adversely affect floodplain values.
- To minimize stormwater impacts, NPS would obtain the appropriate National Pollutant Discharge Elimination System Permit for Discharges of Stormwater Associated with Construction Activities and would develop a site-specific stormwater pollution prevention plan.
- The project would not alter flood elevations, would not have permanent effects on floodplain functions, and would have negligible effects on floodplain values.

6.2 WETLAND MITIGATION

Approximately 0.403 acre or 1,520 linear feet of streambed and 0.33 acre of vegetated wetlands would be temporarily disturbed by construction. This temporary impact would be mitigated in place by removing temporary fill (such as the temporary work bridges) and restoring preconstruction contours after construction is complete. Restored wetland functions would include sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support. Temporarily disturbed areas would be monitored to determine success of restoration and corrective actions taken if needed. Monitoring and restoration standards would be developed as described below.

Approximately 0.0017 acre or 30 linear feet of streambed and 0.031 acre of vegetated wetlands would be permanently filled by road reconstruction, road realignment, and bridge construction. Compensatory mitigation is required for permanent impacts on wetlands, in accordance with NPS DO #77-1.

Compensation for permanent impacts on wetlands would be accomplished by enhancing or restoring existing wetlands (Table 11). A *Conceptual Restoration Plan* has been prepared, which shows four areas that are available for restoration or enhancement (Jacobs 2024). The four areas available for restoration or enhancement are described below. Additional information on wetland compensation is provided in the *Conceptual Restoration Plan* (Jacobs 2024, Attachment B). Location maps of the proposed compensation sites are provided in Attachment B.

TABLE 11. WETLAND COMPENSATION SITE DESCRIPTIONS.

Site	Habitat Type	Mitigation Type	Activity	Ratio	Potential Credit (Acres)
Landslide Creek Cattail Marsh	Spring- and surface water-fed vegetated wetland (PEM) and riverine (Landslide Creek)	Enhancement	Enhance up to 1.44 acres of marsh by establishing riparian shrubs along wetland margins, controlling noxious weeds, and replacing the existing culvert with a pedestrian bridge to improve hydrologic connectivity across an abandoned railroad bed.	2:1	0.72
OGR	Two small streams with fringe wetlands (PEM/PSS) and riparian vegetation	Enhancement	Enhance up to 0.10 acre of wetland by installing an additional culvert under the OGR to mimic natural flow patterns, installing a one-rock dam at the proposed culvert outlet to slow and spread out the water flow to reduce erosion while wetting a larger area and establishing a riparian buffer with shrub plantings.	2:1	0.05
Gardner River Canyon	Unvegetated riverine wetland (Gardner River) with scattered riparian areas and fringe wetlands (PEM/PSS)	Enhancement	Enhance up to 23.26 acres of the Gardner River and 6.02 acres of existing fringe wetlands along the river by establishing riparian plantings.	2:1	14.64
Gardner River Canyon	Unvegetated riverine wetland (Gardner River) with scattered riparian habitat	Restoration	Remove the existing road embankment to allow natural processes to reshape the riverbed and bank.	1:1	1.01
Total					16.42

PEM – palustrine emergent, PSS – palustrine scrub-shrub.

The NPS has identified up to 16.42 acres of potential wetland compensation (Table 11), compared with 0.0017 acre of unvegetated wetlands/streambed and 0.031 acre of vegetated wetlands, that would be permanently filled. Adequate mitigation sites are available to provide compensation for impacts on both vegetated and unvegetated wetlands. The NPS, with coordination and input from the Corps, will identify selected areas for compensation at the 70% design stage.

6.3 PERFORMANCE STANDARDS AND MONITORING

Ecological performance standards based on the MWAM (Berglund and McEldowney 2008) would be used to track the success of wetland compensation. Depending on the wetland compensation site or sites selected, the restored or enhanced functions would include habitat for threatened and endangered species, general fish and wildlife habitat, flood attenuation, and surface water storage. Performance standards and monitoring will be developed in detail in cooperation with Park staff, the NPS Wetlands Program, FHWA and the Corps later in the design and permitting process.

Annual monitoring of the mitigation areas would be completed by a qualified wetland biologist. Mitigation sites would be monitored and corrective action will be taken when appropriate. Post-construction and monitoring will follow requirements established during the permitting process with the Corps, typically over a five-year period. Vegetative monitoring plots would be used to identify invasive species and evaluate their presence and extent. If it is determined through the monitoring plots the vegetative cover contains more than 5 percent noxious invasive species, then corrective actions would be required. Additionally, the entire site would be evaluated for invasive species by ocular assessment. If distinct populations of noxious-invasive species are identified, then corrective actions would be required. Individual invasive species identified in the project area would be hand pulled, placed in a plastic trash bag, and disposed of properly. If distinct populations of invasive species have been identified, the individuals would be hand pulled and disposed of properly and the location of the population noted and monitored in subsequent years.

6.3.1 Funding Source for Compensatory Mitigation

The cost of compensatory mitigation has been factored into the construction cost of the project and is consistent with DO #77-1, Section 5.2.3.

7 COMPLIANCE

This document is required to comply with E.O. 11990. The NPS DO #77-1 and *Procedural Manual #77-1* provide policies and procedures to comply with E.O. 11990. Compliance with other agency regulations will be completed as appropriate and separately from this document; however, the mitigation measures set forth herein may be relied upon in fulfilling compliance with other applicable regulatory requirements.

8 CONCLUSIONS

8.1 FLOODPLAINS

The proposed project includes two bridges, the Boiling River Bridge and Gardens Bridge, that would span the floodplain of the Gardner River. Permanent impacts on the floodplain would include placement of a pier for the Gardens Bridge within the regulatory floodplain of the Gardner River. The pier would be up to 12 feet in diameter and would have a permanent footprint in the floodplain of approximately 115 square feet (0.003 acre) in the 500-year and 100-year floodplains. Three new culverts are anticipated to be constructed crossing the new alignment near Slide Lake (culvert 9-foot by 9-foot and 6-foot by 8-foot; and 4-foot by 4-foot) and one crossing of the OGR multi-use trail (9-foot by 9-foot). The culverts will have riprap at the inlets/outlets.

The project would incorporate the impact avoidance and minimization techniques described above to protect human health and safety, minimize risk to property, and preserve floodplain values. By spanning over the floodplain, the two bridges would minimize the disruption to the natural floodplain and help maintain the natural floodplain values. Other avoidance and minimization measures would limit impacts to the degree that overall risks from temporary impacts to floodplains would be minor. The project would not alter the role of periodic floods in maintaining the health and diversity of floodplain ecosystems. Both bridges would be designed to pass the 100-year flood event with an additional 5 feet of clearance for woody debris and ice passage. In addition, the existing embankment at the Boiling River Bridge would be

graded to match the existing overbank, removing fill that was placed within the floodplain when the road and bridge were originally constructed. Excavating this fill material would provide additional floodplain capacity during high flow and reduce the risk of upstream flooding. As a result, the project would have negligible effects on floodplain functions and values.

8.2 WETLANDS

The project would permanently impact 0.031 acre of vegetated wetlands (GAMA15, GAMA16, and GAMA25) from placement of fill for the new road alignment and from construction of a pier for the construction of the Gardens Bridge (GAMA024). Permanent impacts on 0.0017 acre or 30 linear feet of rivers and streambed (unvegetated wetlands) would occur from cut and fill associated with the new road alignment (GAMA006s). Temporary impacts on 0.33 acre of vegetated wetlands would occur from construction of the Gardens Bridge and from cut and fill for the new alignment. Construction of the Boiling River Bridge and Gardens Bridge would also result in temporary impacts on 0.403 acre or 1,520 linear feet of streambed.

The total acreage of permanent wetland impacts would be offset through compensatory mitigation by enhancing and restoring wetlands, as described in the *Conceptual Restoration Plan* (Jacobs 2024; Attachment B). Up to 16.42 acres of potential mitigation credit has been identified in the Conceptual Restoration Plan.

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ATTACHMENT A DELINEATED WETLANDS AND STREAMS

Aquatic Resources Inventory
North Entrance – Gardiner to Mammoth
YELL 326069B
Yellowstone National Park, Montana/Wyoming

Prepared for—

National Park Service
Department of the Interior

Prepared by—

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ERO Project #23-171

November 28, 2023

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**Aquatic Resources Inventory
North Entrance – Gardiner to Mammoth
YELL 326069B
Yellowstone National Park, Montana/Wyoming**

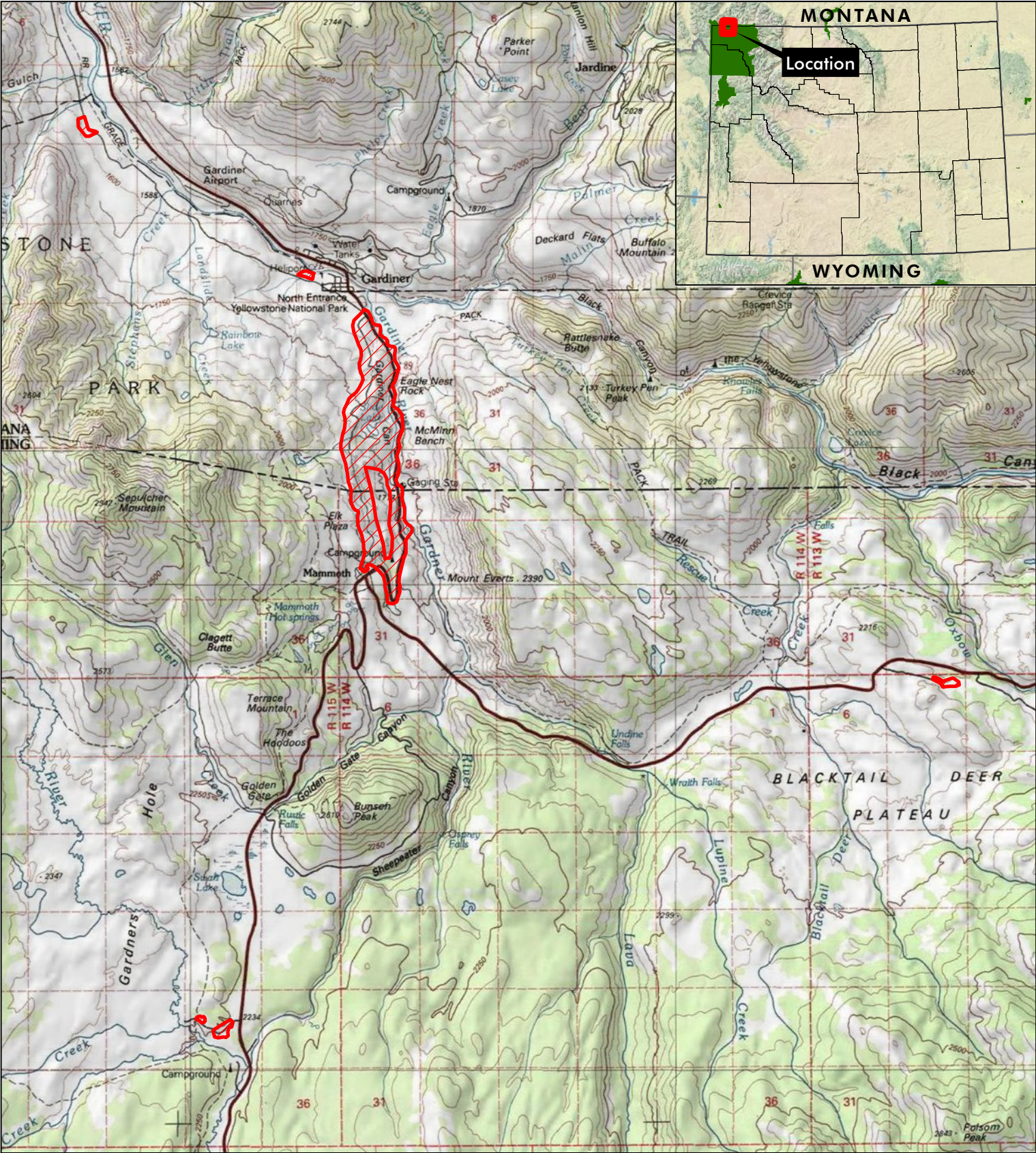
November 28, 2023

Introduction

ERO Resources Corporation (ERO), under contract to the National Park Service (NPS), conducted an aquatic resources inventory (wetland delineation) in support of the North Entrance Road Project (project) in Yellowstone National Park (Park), Montana/Wyoming (Figure 1; project area) from July 31 through August 4, 2023 (2023 site visit). On June 12 and 13, 2022, the Park experienced record-breaking flooding events in several locations, primarily along the Yellowstone River, Gardner River, and tributaries in Park County, Montana and Park County, Wyoming. Devastating flooding impacts occurred in the Park on multiple sections of the North Entrance Road between Gardiner, Montana and Mammoth, Wyoming – one of only two Park entrances open year-round. During the summer and fall of 2022, the Federal Highway Administration (FHWA) improved Old Gardiner Road to serve as the temporary North Entrance Road. The NPS, in cooperation with FHWA, Western Federal Lands (WFL), is proposing permanent reconstruction of a north entrance road in the Park. The purpose of the action is to restore reliable long-term access from the north entrance of the Park that is resilient to future flooding events and other natural hazards while protecting natural and cultural resources. As part of compliance for the proposed project, wetland functions were assessed to help evaluate the project's potential impacts on wetlands and to determine appropriate mitigation for unavoidable wetland impacts as required by the U.S. Army Corps of Engineers (Corps) for Section 404 permits and by the NPS for compliance with Director's Order #77-1 (DO 77-1): *Wetland Protection* (NPS 2016b).

A jurisdictional wetland delineation was conducted using criteria established in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). Potential wetlands delineated were characterized by a dominance of hydrophytic vegetation, the presence of hydric soil indicators, and the evidence or presence of wetland hydrology. Wetlands were also classified under the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979) following NPS guidelines.

Figure 1. Vicinity Map



Yellowstone National Park North Entrance Road Environmental Assessment

Sections 8 and 23, T9S, R8E; Sections PB43, PB44, PB53, and PB54, T9S, R8E; Montana Meridian
Sections 19, 30, and 31, T58N, R114W; Section 26, T57N, R115W; Section 5, T57N, R113W; 6th PM
UTM NAD 83: Zone 12N; 523856mE, 4982803mN
Longitude, Latitude: 110.697323°W, 44.998276°N
Electric Peak and Gardiner, MT and Mammoth and Blacktail Deer Creek, WY Quadrangles
Park County, Wyoming and Yellowstone Park County, Montana

 Project Area



Project Area Location

The project area is directly south of the North Entrance Station in Gardiner, Montana between the Gardner River and just west of the newly constructed North Entrance Road/U.S. Highway 89 (US-89) (Figures 1 and 2). Additional borrow areas that are part of the project area are scattered, with two sites northwest of Gardiner, Montana; one site south of Grand Loop Road in the Park; and one site west of US-89 in the Park (wetland survey area; Figure 1). The wetland survey area is approximately 1,100 acres.

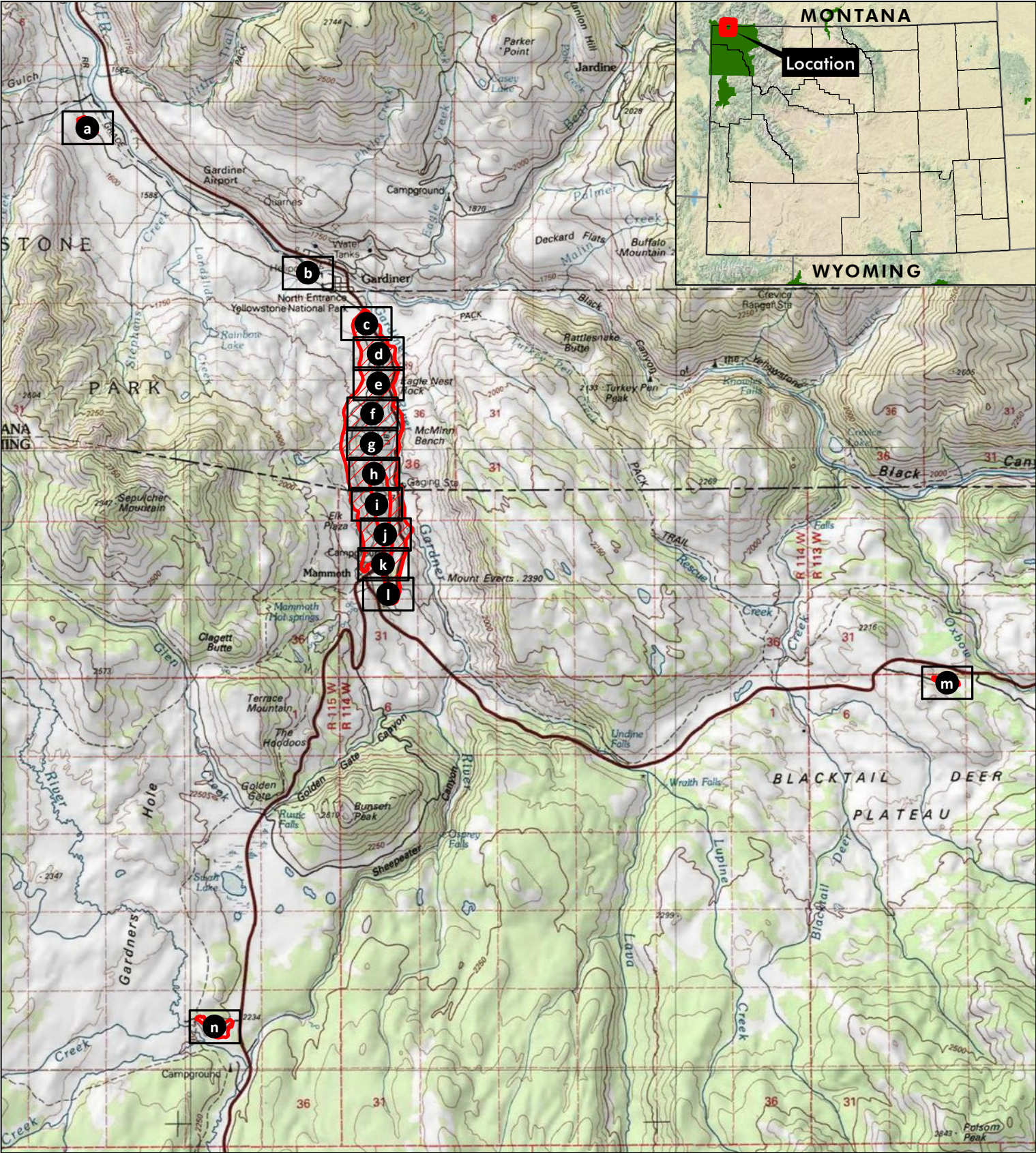
The project area is in Sections 8 and 23, Township 9 South, Range 8 East; and Sections PB43, PB44, PB53, and PB54, Township 9 South, Range 8 East of the Montana Meridian; Section 5, Township 57 North, Range 113 West; Sections 19, 30, and 31, Township 58 North, Range 114 West; and Section 26, Township 57 North, Range 115 West of the 6th Principal Meridian in Park County, Wyoming and Yellowstone Park County, Montana (Figure 1). The UTM coordinates of the approximate center of the project area are NAD 83 523856mE, 4982803mN, Zone 12N. The longitude/latitude of the project area is 110.697323°W/44.998276°N. The elevation of the project area ranges from 5,275 to 6,300 feet above sea level. Appendix A includes photos of the project area.

Background

Ecological Setting

The U.S. Department of Agriculture (USDA) has mapped the project area within the Central Rocky Mountains Major Land Resource Area (MLRA), which contains numerous national forests and lakes (U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) 2006). The climate of the area typically consists of dry summers, except for brief but intense convective thunderstorms that occur during most afternoons in the mountains. Most of the precipitation during fall, winter, and spring is snow (USDA, NRCS 2006). The average annual precipitation is between 25 and 60 inches, but can be as much as 121 inches at higher elevations (USDA, NRCS 2006). At the time of the 2023 site visit, the project area had received 7.81 inches of precipitation (Walking Shadow Ecology 2023).

Additionally, the natural surface water hydrology of the area consists of several water bodies and features in the Yellowstone River-Gardner River watershed that are all tributaries to the Yellowstone River to the north. The surface water features include several perennial and intermittent streams, wetland complexes, and ponds. The area is characterized by a continental climate with long cold winters and a short growing season, typically May to mid-September. More than half of the precipitation occurs as snow that accumulates in a seasonal snowpack between October and April.



Yellowstone National Park North Entrance Road Environmental Assessment

Sections 8 and 23, T9S, R8E; Sections PB43, PB44, PB53, and PB54, T9S, R8E; Montana Meridian
Sections 19, 30, and 31, T58N, R114W; Section 26, T57N, R115W; Section 5, T57N, R113W; 6th PM
UTM NAD 83: Zone 12N; 523856mE, 4982803mN
Longitude, Latitude: 110.697323°W, 44.998276°N
Electric Peak and Gardiner, MT and Mammoth and Blacktail Deer Creek, WY Quadrangles
Park County, Wyoming and Yellowstone Park County, Montana

Map Index Page

Project Area

012 Miles

Project Area Description

The topography of the project area generally slopes downward from the west side of US-89 eastward to the Gardner River and its floodplain (Figures 1 and 2). Soils observed during the 2023 site visit consisted primarily of loams, clay loams, sandy loams, and silty clay loams, which is consistent with the NRCS mapping of the project area (USDA, NRCS 2023; Appendix D). Soils in the valley floor along the Gardner River that comprise the lower elevations of the Park generally developed from alluvium of sedimentary rock or rhyolite. The USDA, NRCS mapped several primary soil series types (with multiple subseries) in the project area (USDA, NRCS 2023). The largest soil series mapped as occurring in the project area includes Lepner-Gladlow-Beartooth families complex. This families complex has well-drained soils that formed in earthflow deposits derived from sedimentary rock; the Bolack subseries is mapped in the project area and is listed on the national hydric soils list (USDA, NRCS 2023).

Montane forb-grassland communities were the dominant vegetation community observed in the project area during the 2023 site visit. Sagebrush shrub steppe occurs throughout the project area in lower occurrences. Limited mixed-conifer woodlands occur along several of the drainages in the project area. A brief description of the observed vegetation communities is provided below. Many streams and wetlands occur in the project area. A list of plant species identified in the project area is provided in Appendix B.

Montane Forb-Grassland

Montane grassland is present throughout the majority of the project area (GAMAupland_77_pp and GAMAupland_314_pp). Vegetation in this community is dominated by crested wheatgrass (*Agropyron cristatum*), western wheatgrass (*Pascopyrum smithii*), Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*Poa compressa*), redtop (*Agrostis gigantea*), Timothy (*Phleum pratense*), basin wildrye (*Leymus cinerius*), and smooth brome (*Bromus inermis*). Common forbs in this community included American licorice (*Glycyrrhiza lepidota*), common yarrow (*Achillea millefolium*), annual sunflower (*Helianthus annuus*), dogbane (*Apocynum cannabinum*), prickly pear (*Opuntia polyacantha*), and Rocky Mountain beeplant (*Cleome serrulata*).

Sagebrush Shrub Steppe

Sagebrush shrub steppe predominantly occur on hillslope terraces throughout the project area (GAMA031_285_pp). Vegetation in this community was dominated by mountain big sagebrush (*Artemisia tridentata*) with other species such as western snowberry (*Symphoricarpos occidentalis*), prickly rose (*Rosa acicularis* or *Rosa acicularis spp. sayi*), rubber rabbitbrush (*Ericameria nauseosa*), fourwing saltbrush (*Atriplex canescens*), and golden currant (*Ribes aureum*). Dominant grass species included Kentucky bluegrass, Canada bluegrass, redtop, Timothy, basin wildrye, and smooth brome. Common forbs in this community included curlycup gumweed (*Grindelia squarrosa*), false goldenaster (*Heterotheca villosa*), American licorice, and common yarrow.

Mixed-Conifer Woodland

Mixed-conifer woodlands are limited to locations along or near drainages in the project area or higher along the hillslopes in the western section of the project area (GAMA009s_75_pp). Tree species included quaking aspen (*Populus tremuloides*), Douglas fir (*Pseudotsuga menzeii*), western juniper (*Juniperus occidentalis*), and lodgepole pine (*Pinus contorta*). Understory shrubs in the woodlands included, but were not limited to, red osier dogwood (*Cornus sericea* or *Cornus alba*), western snowberry, rose, grouseberry (*Vaccinium scoparium*), buckthorn (*Rhamnus cathartica*), and common juniper (*Juniperus communis*). Common herbaceous and forb species included Kentucky bluegrass, redtop, smooth brome, common yarrow, harebell (*Campanula rotundifolia*), and aster (*Symphyotrichum* spp.).

Riparian

Riparian areas are concentrated along the Gardner River and the Slide Lake drainages in the project area (Figure 2c and Figure 2j). These areas are interspersed with dominant upland vegetation such as conifers and montane grasses outlining creeks and drainages, and on steep hillslopes. Riparian vegetation in the project area is dominated by red osier dogwood, Canada goldenrod (*Solidago canadensis*), and American licorice. Other shrubs observed included snowberry (*Symphoricarpos* spp.), chokecherry (*Prunus virginiana*), huckleberry, and prickly rose.

The riparian community above the Gardner River and Slide Lake contains riparian woodland and riparian shrublands. In the upstream Gardner River and Slide Lake drainage, mixed conifers including lodgepole pine and Engelmann spruce (*Picea engelmannii*) dominate the overstory along ordinary high water mark (OHWM) GAMA008s and GAMA009s (GAMA030_upland01 and GAMA009s_upland01). Red osier dogwood, speckled alder (*Alnus incarna*), water birch (*Betula occidentalis*), and buckthorn are the primary shrubs with some rubber rabbitbrush and mountain big sagebrush typically found along the outer edge (GAMA030_200_pp and GAMA030_260_pp). Herbaceous species include native and nonnative grasses such as smooth brome, redtop, Timothy, and western wheatgrass. Forbs such as yarrow, Canada goldenrod, and American licorice are common.

The riparian community along the Gardner River occurs as a mosaic of multiple communities that are tree-dominated with a diverse shrub component. Douglas fir, lodgepole pine, and Rocky Mountain juniper (*Juniperus scopulorum*) were present in drier areas along the Gardner River (GAMA035_upland, GAMA003_dp, and GAMA003_upland). Limited occurrences of plains cottonwood (*Populus deltoides*) were observed during the 2023 site visit. More commonly observed shrubs included narrowleaf willow (*Salix exigua*), red osier dogwood, common juniper, rose, common snowberry (*Symphoricarpos albus*), and rubber rabbitbrush. The herbaceous understory had native forbs such as yarrow, Canada goldenrod, American licorice, and sawtooth sunflower (*Helianthus nuttallii*). Native and nonnative grasses observed included western wheatgrass, smooth brome, redtop, Timothy, western wheatgrass, and bluejoint (*Calamagrostis canadensis*) (GAMAupland_258_pp).

Noxious Weeds

During the 2023 site visit, ERO observed a few noxious weed species in the project area; however, a detailed survey was not conducted at that time. Species observed included diffuse knapweed (*Centaurea diffusa*), cheatgrass (*Bromus tectorum*), Dalmatian toadflax (*Linaria dalmatica*), field bindweed (*Convolvulus arvensis*), and Canada thistle (*Cirsium arvense*). These species were more commonly observed near areas of disturbance such as road edges and trails.

Methods

Wetland Survey Area Description

ERO delineated wetlands and other waters in the project area that was provided by the NPS. The project area is shown on Figure 1 and Figures 2a through 2n. Photo points of the project area are shown on Figures 2a through 2n and the photo log is in Appendix A. The wetland delineation data sheets are provided in Appendix C.

Wetland Delineation

ERO reviewed National Wetland Inventory maps, U.S. Geological Survey topographic maps, USDA, NRCS soil mapping, and aerial photographs of the wetland survey area before conducting fieldwork. During the 2023 site visit, ERO ecologists Moneka Worah, Marie Russo, Jared Watson, and Isabel Mansour visited the wetland survey area to map the boundaries of wetlands and other waters. The weather during fieldwork varied from sunny and clear to overcast with rain.

Wetlands were delineated using methods outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, and *NPS Procedural Manual #77-1: Wetland Protection* (Environmental Laboratory 1987; Corps 2010; NPS 2016b). Wetlands were determined based on the presence of three wetland indicators: hydrophytic vegetation, wetland hydrology, and hydric soils.

Figure 2a. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 2b. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 2c. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area

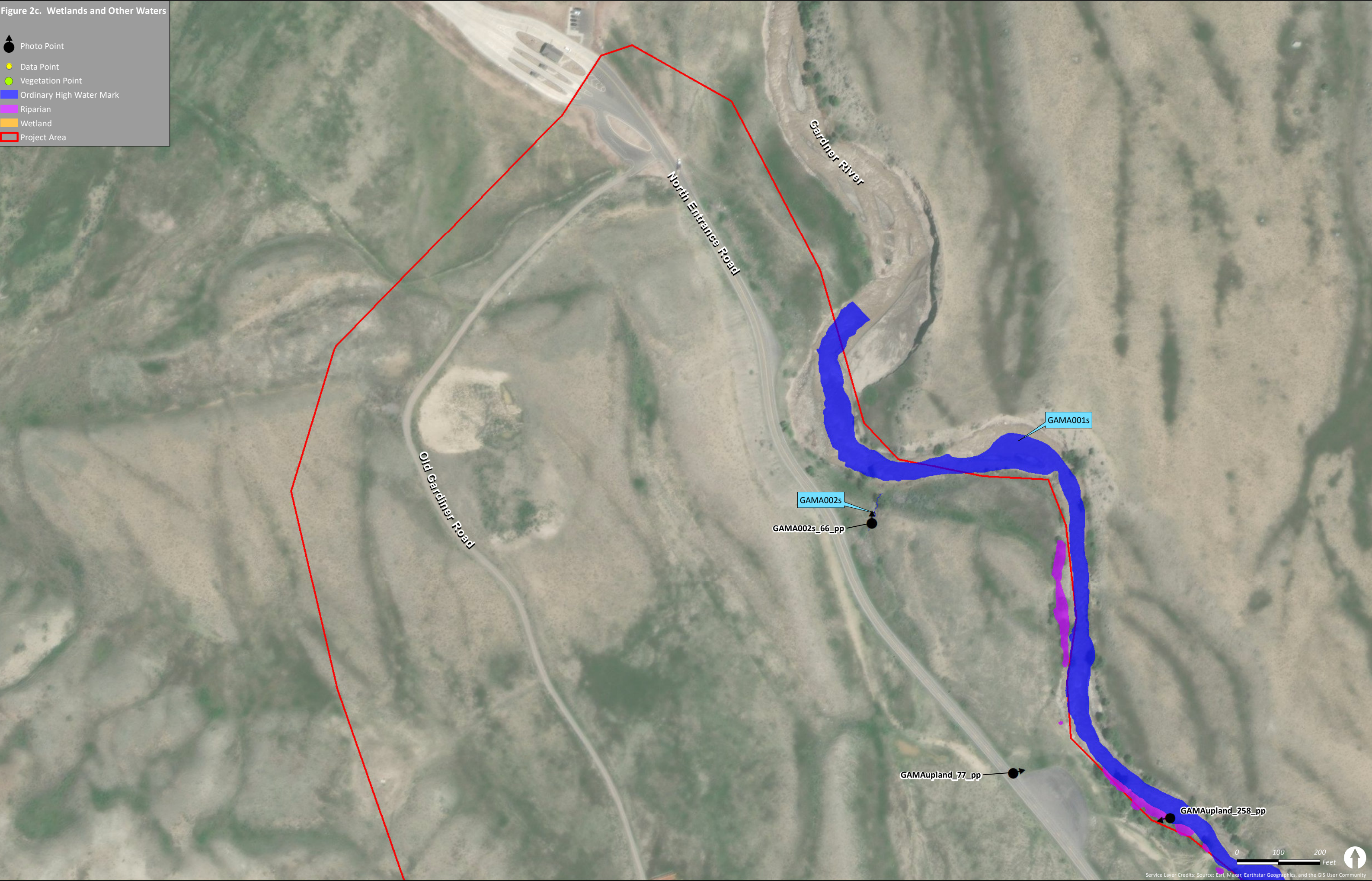


Figure 2d. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 2e. Wetlands and Other Waters

▲

Photo Point

●

Data Point

●

Vegetation Point

■

Ordinary High Water Mark

■

Riparian

■

Wetland

■

Project Area



Figure 2f. Wetlands and Other Waters

▲

Photo Point

●

Data Point

●

Vegetation Point

■

Ordinary High Water Mark

■

Riparian

■

Wetland

■

Project Area



Figure 2g. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 2h. Wetlands and Other Waters

 Photo Point



 Data Point



 Vegetation Point



 Ordinary High Water Mark



 Riparian



 Wetland



 Project Area

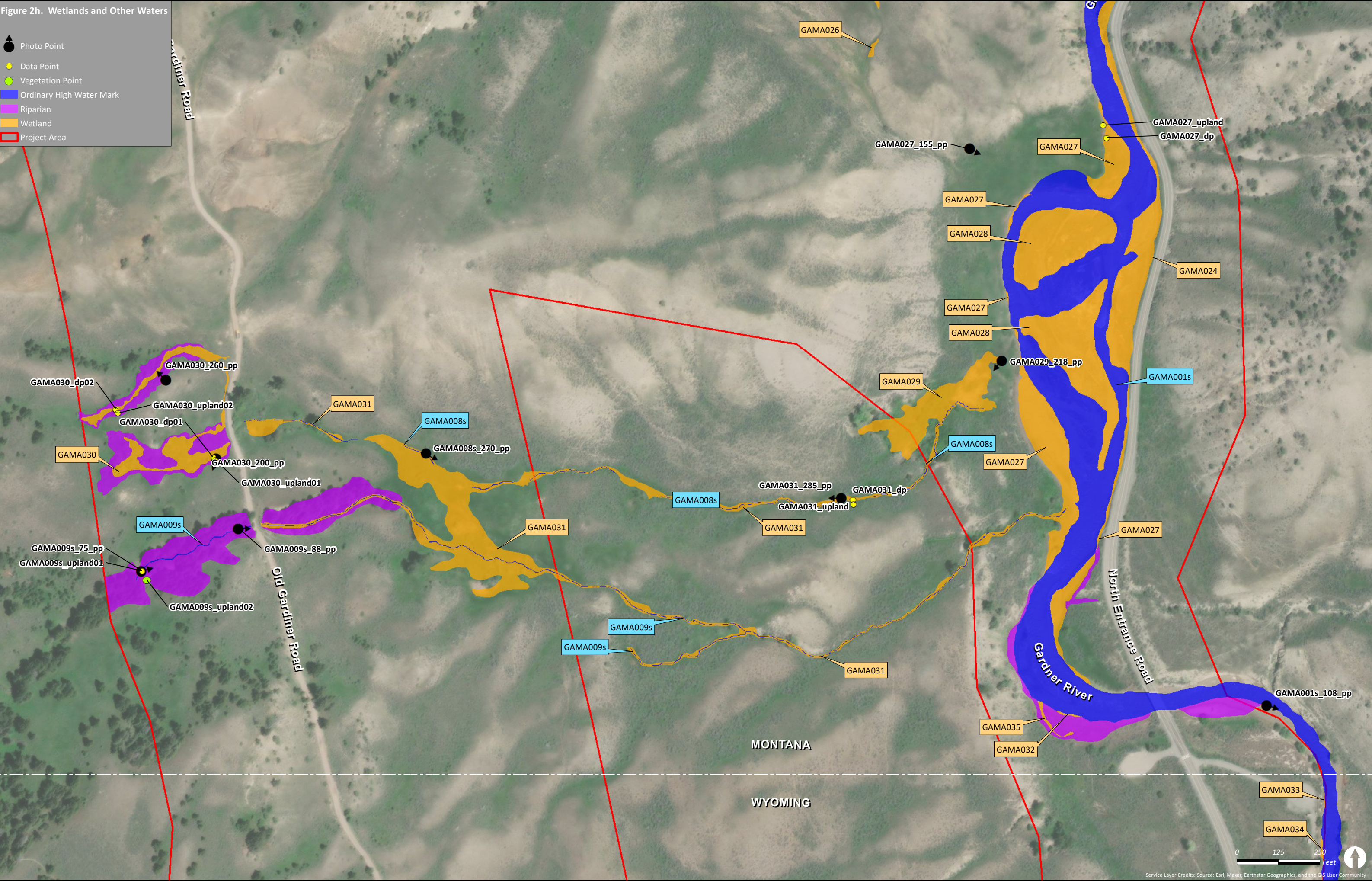


Figure 2i. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area

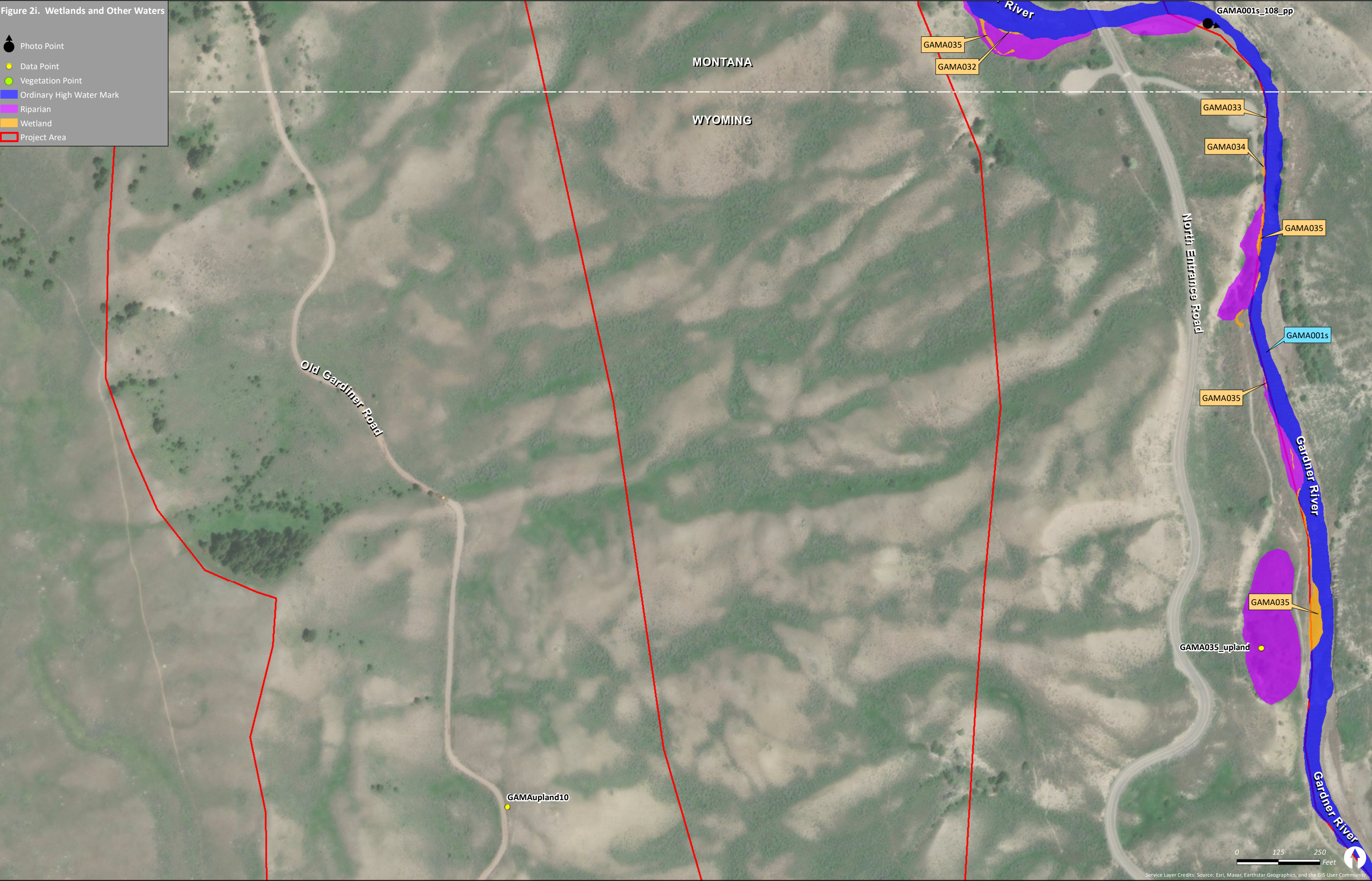


Figure 2j. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 2k. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 21. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 2m. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Figure 2n. Wetlands and Other Waters

 Photo Point

 Data Point

 Vegetation Point

 Ordinary High Water Mark

 Riparian

 Wetland

 Project Area



Wetland indicator status for vegetation (Appendix B) was based on the most current National Wetland Plant List (Corps 2020). The authority for nomenclature for plant species was taken from *The PLANTS Database* (USDA, NRCS 2023a). Soil data were collected at representative observation points for each vegetation community. A Munsell soil color chart was used to determine soil color (*Munsell Soil-Color Charts: With Genuine Munsell Color Chips*, n.d.).

Wetland determination data forms were completed at 56 data points (Appendix C). The global positioning system (GPS) data were differentially corrected to achieve submeter accuracy. All differential correction was completed using Trimble Pathfinder Office 5.9 software. All GPS information was recorded as NAD 1983 UTM Zone 12 North coordinates. The GPS data were incorporated onto aerial photography at a scale of 1 inch equals 200 feet. Photos of the project area are in Appendix A.

Cowardin Classification

Classification of wetland or deep-water system, subsystem, class, and subclass were based on Cowardin et al. (1979). The Cowardin classification uses a hierarchical structure of systems, subsystems, and classes to classify both wetlands and deepwater habitats. Wetlands with persistent vegetation are classified in the Cowardin system as palustrine, which typically includes wetlands referred to as marshes, fens, wet meadows, and sloughs. The palustrine system also includes small, shallow, permanent, or intermittent water bodies such as ponds. Palustrine wetlands may be situated shoreward of lakes and river channels, on river floodplains, in isolated catchments, or on slopes (Cowardin et al. 1979). Under the palustrine system, wetlands are classified as emergent (erect, rooted, herbaceous, and usually perennial hydrophytes that remain standing until at least the next growing season); scrub-shrub (woody vegetation less than 20 feet tall); or forested (woody vegetation 20 feet or taller).

The riverine system includes wetlands and deepwater habitats contained within a channel, with the exception of wetlands dominated by trees, shrubs, and emergent vegetation. The riverine system usually contains flowing water and is bounded on the landward side by uplands, channel banks, or other wetlands. Within the riverine system, wetlands are divided into the tidal, lower perennial (low gradient and slow water), upper perennial (high gradient and fast water), and intermittent subsystems. Within these subsystems, riverine wetlands are further classified as unconsolidated bottom, aquatic bed, streambed, rocky shore, unconsolidated shore, and emergent wetland (nonpersistent).

The lacustrine system includes wetlands and deepwater habitats that are situated in a topographic depression or a dammed river channel; lack trees, shrubs, persistent emergents, emergent mosses, or lichens with greater than 30% areal coverage; and have a total area exceeding 20 acres. Wetland and deepwater habitats totaling less than 20 acres are also included in the lacustrine system if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 6.6 feet at low water.

Wetland Functional Assessment

ERO evaluated wetland functions using the Montana Wetland Assessment Method (MWAM) (Berglund and McEldowney 2008). The MWAM uses a classification system that combines the U.S. Fish and Wildlife Service's (USFWS) Cowardin classification system with a hydrogeomorphic (HGM) approach and provides a landscape context to the USFWS classification (Cowardin et al. 1979; Brinson 1993). The MWAM is a rapid functional assessment process designed primarily to address wetland resources associated with linear projects such as highways and pipelines, although it can be applied to all types of projects. The MWAM is commonly used throughout the western United States and is accepted by the Corps. HGM classes found in Montana and Wyoming are mineral soil flats, organic soil flats, riverine, lacustrine fringe, slope, and depressional. The Cowardin classification is discussed above.

For each function and value, the MWAM provides a rating of low, moderate, high, exceptional, or not applicable based on observations and responses to questions. For each wetland, the MWAM scores each function or value on a scale of 0.1 (lowest) to 1.0 (highest) functional points. When all functional points are totaled, the maximum number of functional points is 12. Typically, wetlands that are larger and more diverse receive more points. Once the total functional points for wetlands are calculated, each wetland is assigned to one of the following four categories based on total functional points and other criteria described in the MWAM:

- **Category I:** Wetlands of exceptionally high quality that are generally rare. Category I wetlands can provide primary habitat for federally listed threatened or endangered species; represent a high-quality example of a rare wetland type; provide irreplaceable ecological functions (e.g., are not replaceable within a human lifetime, if at all); exhibit exceptionally high flood attenuation capability; or are assigned high ratings for most of the assessed functions and values resulting in the total actual functional points greater than 80% of the total possible functional points.
- **Category II:** Wetlands that are more common than those in Category I, provide habitat for sensitive plants or animals, function at very high levels for wildlife/fish habitat, are unique in a given area, or are assigned high ratings for many of the assessed functions and values resulting in the total actual functional points greater than 65% of the total possible functional points.
- **Category III:** Wetlands that are more common, generally less diverse, and often smaller and more isolated than those in Categories I and II. These wetlands can provide many functions and values, although they may not be assigned high ratings for as many parameters as Category I and II wetlands (30% to 65% of possible points).
- **Category IV:** Wetlands that are generally small, isolated, and lack vegetative diversity. These wetlands provide little in the way of wildlife habitat and are often directly or indirectly disturbed. Category IV wetlands rate low for uniqueness, production export/food chain support, and the total actual functional points are less than 30% of the total possible functional points.

Functional assessments were conducted for wetlands grouped based on location in the project area and either water source or wetland type. Wetlands in each group generally have similar plant communities, have similar hydrology, and provide similar functions on a whole. The following groupings were used for the MWAM assessments in the wetland survey area: (1) Gardner River and Boiling River and abutting

wetlands (GAMA001s, GAMA012s, GAMA003, GAMA018, GAMA022-GAMA024, GAMA027, GAMA028, and GAMA032-GAMA038; (2) Slide Lake and Unnamed Lake (GAMA012, GAMA013, GAMA039, and GAMA040); (3) Slide Lake Tributary – wetlands and streams upstream and downstream of Slide Lake (GAMA005s, GAMA006s, GAMA011, GAMA015, GAMA016, and GAMA019); (4) Seep Supported Wetlands – wetlands in the project area associated with seeps/springs (GAMA001, GAMA002, GAMA006, GAMA008, and GAMA029-GAMA031); and (5) Depressional Wetlands (GAMA005, GAMA005, GAMA007, GAMA009, GAMA010, GAMA014, GAMA017, GAMA020, GAMA021, GAMA025, and GAMA026). Functional assessment data forms are in Appendix E.

Assessment of Potential Jurisdictional Status

On August 29, 2023, the U.S. Environmental Protection Agency (EPA) and Corps announced a final rule amending the 2023 definition of “waters of the U.S.” to conform with the United States Supreme Court (Supreme Court) ruling under *Sackett v. Environmental Protection Agency*, No. 21-454. The amended rule reduces the jurisdiction of the Clean Water Act over wetlands adjacent to bodies of water that do not have a continuous surface connection to other known waters of the U.S., as well as streams that do not have continuous flowing or relatively permanent water. The amended rule removes the “significant nexus” standard that was created under *Rapanos v. United States*, removes interstate wetlands from the definition of waters of the U.S., and revises the definition of “adjacent” to mean “having a continuous surface connection.” Wetlands that do not have a contiguous surface connection to a jurisdictional traditionally navigable water or tributary are no longer jurisdictional, as well as ephemeral streams that do not have relatively permanent water.

ERO reviewed the proximity and potential surface water connection of wetlands and other waters to known jurisdictional waters of the U.S. using aerial photo interpretation. The volume, duration, and frequency of flow in the wetlands and streams were not determined during the 2023 site visit. Wetlands or waters that have a surface water connection to the Gardner River or its tributaries and that have relatively permanent flow and are contiguous to one another are potential jurisdictional waters. It is important to note that regardless of the jurisdictional status of wetlands or other waters, the NPS has a “a no net loss of wetlands” goal (NPS 2016a) and impacts to wetlands could require mitigation.

Survey Results

ERO assessed the project area for wetlands and other waters as described below. Data were collected from various locations in the project area to document the characteristics of uplands and wetlands and the transition areas between them. Wetlands and other waters in the project area are described below and are shown on Figures 2a through 2n. Commonly occurring plant species in the project area are shown in Appendix B. Wetland delineation data sheets are provided in Appendix C, and representative site images are provided in Appendix A. The acreage and type of each wetland and other water are provided in Table 1 and Table 2. Approximately 32.71 acres of OHWM and 18.0 acres of wetlands occur in the project area (Table 1; Figures 2a through 2n).

Aquatic Resources Inventory
North Entrance – Gardiner to Mammoth-YELL 326069B
Yellowstone National Park, Montana/Wyoming

Table 1. Summary of vegetated wetlands in the project area.

Feature Label	Cowardin Classification ¹	Acres in Wetland Survey Area	Longitude	Latitude
GAMA001	PEM1A	0.062	-110.69928797	45.017856054
GAMA002	PEM1A	0.276	-110.7014258	45.015697686
GAMA003	PEM1A	0.002	-110.69289270	45.015970682
GAMA004	PEM1A	0.005	-110.69472613	45.012404093
GAMA005	PEM1A	0.008	-110.70097741	45.009970669
GAMA006	PEM1A	0.241	-110.70198907	45.008702778
GAMA007	PSSA	0.318	-110.70463040	45.008523359
GAMA008	PEM1A	0.263	-110.70452924	45.007767368
GAMA009	PEM1A	0.022	-110.70574146	45.007263978
GAMA010	PEM1A	0.018	-110.70604280	45.0071242943
GAMA011	PEM1A	0.349	-110.69593502	45.005926618
GAMA012	PEM1A	0.611	-110.70382093	45.005484006
GAMA013	PEM1A	1.231	-110.69892607	45.004278860
GAMA014	PEM1A	0.078	-110.70599664	45.004372815
GAMA015	PEM1A	0.007	-110.70096518	45.003732419
GAMA016	PEM1A	0.192	-110.70164528	45.003340899
GAMA017	PEM1A	0.137	-110.69730425	45.003161645
GAMA018	PEM1A	0.513	-110.69245545	45.003243629
GAMA019	PEM1A	0.418	-110.70567372	45.00231385
GAMA020	PEM1A	0.417	-110.7008778	-45.0024735
GAMA021	PEM1A	0.050	-110.6989468	45.0023483
GAMA022	PEM1A	0.006	-110.6930279	45.0079306
GAMA023	PEM1A	0.008	-110.6930431	45.0012658
GAMA024	PEM1A	1.389	-110.6933569	44.9974209
GAMA025	PEM1A	1.117	-110.6987980	45.0000194
GAMA026	PEM1A	0.015	-110.6963750	44.9987042
GAMA027	PSSA	1.541	-110.6943416	44.9953473
GAMA028	PSSA	2.323	-110.6942197	44.9971081
GAMA029	PEM1C	0.880	-110.6956389	44.9957379
GAMA030	PEM1B	0.629	-110.7045633	44.9955949
GAMA031	PSSB	2.662	-110.6963924	44.9951070
GAMA032	PEM1C	0.008	-110.6941218	44.9931943
GAMA033	PEM1B	0.002	-110.6911494	44.9924827
GAMA034	PEM1B	0.009	-110.6911788	44.9920756
GAMA035	PEM1A	0.243	-110.6912499	44.9911347
GAMA036	PEM1B	0.071	-110.6894257	44.9857443
GAMA037	PEM1C	0.202	-110.7408763	44.8918706
GAMA038	PSSC	1.684	-110.7397012	44.8910707
PEM1A subtotal	7.678			
PEM1B subtotal	0.711			
PEM1C subtotal	1.090			
PSSA subtotal	4.182			
PSSB subtotal	2.662			
PSSC subtotal	1.684			
Total	18.007			

¹PEM1A = palustrine emergent persistent, temporarily flooded; PEM1B = palustrine emergent persistent, seasonally saturated; PEM1C = palustrine emergent persistent, seasonally flooded; PSSA = palustrine scrub-shrub temporarily flooded; PSSB = palustrine scrub-shrub, seasonally saturated; PSSC = palustrine scrub-shrub, seasonally flooded.

²Based on topographic position observed in the field and review of aerial photography.

Aquatic Resources Inventory
North Entrance – Gardiner to Mammoth-YELL 326069B
Yellowstone National Park, Montana/Wyoming

Table 2. Ordinary high water marks in the project area.

Feature Label	Cowardin Classification ¹	Area (acres) ²	Length (feet) ³	Hydrology Source ⁴	Longitude	Latitude
Boiling River (GAMA012s)	R3UBH	0.356	434.8	Spring	-110.6894593	44.9857573
Gardner River (GAMA001s)	R3UBH	23.255	17,733.1	Surface flow/snowmelt	-110.6936458	45.0038699
Slide Lake (GAMA040)	PABG	6.668	834.4	Surface flow/snowmelt	-110.6991045	45.0039776
Unnamed Pond (GAMA039)	PABF	1.493	509.5	Surface flow/snowmelt	-110.7041640	45.0053301
GAMA002s	R4SBC	0.003	109.3	Surface flow/snowmelt	-110.6986401	45.0229188
GAMA003s	R4SBC	0.006	139.9	Surface flow/snowmelt	-110.6989836	45.0180593
GAMA004s	R4SBC	0.159	2,111.3	Surface flow/snowmelt	-110.6961204	45.0138779
GAMA005s	R5UBH	0.003	64.7	Surface flow/snowmelt	-110.6981597	45.0053428
GAMA006s	R4SBC	0.143	2,192.1	Surface flow/snowmelt	-110.7059654	45.0022243
GAMA007s	R4SBC	0.017	211.8	Surface flow/snowmelt	-110.7030414	45.0006674
GAMA008s	R5UBH	0.065	1,686.6	Surface flow/snowmelt	-110.7008301	44.9951069
GAMA009s	R5UBH	0.127	3,680.2	Surface flow/snowmelt	-110.6985426	44.9937273
GAMA010s	R4SBC	0.389	844	Surface flow/snowmelt	-110.7165522	45.0328476
GAMA011s	R5UBH	0.026	423.7	Surface flow/snowmelt	-110.7408801	44.8918706
Total		32.71	30,975.4			

¹PABF = palustrine, aquatic bed, semipermanently flooded; PABG = palustrine, aquatic bed, intermittently exposed; R3UBH = riverine upper perennial, unconsolidated bottom, permanently flooded; R4SBC riverine intermittent, streambed, seasonally flooded; R5UBH riverine unknown perennial, unconsolidated bottom, permanently flooded.

²Area in the wetland survey area.

³Length in the wetland survey area.

⁴Based on topographic position observed in the field and review of aerial photography.

Uplands

Uplands dominate the project area and include montane forb-grasslands and shrub steppe, with mixed-conifer woodlands limited to high terraces above creeks and drainages, and on steep hillslopes. Soil samples were not taken at data points that lacked hydrophytic vegetation and indicators of wetland hydrology. These points were used to characterize the upland community or taken to determine a wetland boundary (GAMA002_upland, GAMA003_upland, GAMA005_upland01, GAMA005_upland02, GAMA006_upland, GAMA007_upland, GAMA008_upland, GAMA009s_upland01, GAMA009s_upland02, GAMA010s_upland, GAMA011_upland, GAMA013_upland, GAMA014_upland, GAMA015_upland, GAMA019_upland, GAMA020_upland, GAMA022_upland, GAMA027_upland, GAMA030_upland01, GAMA030_upland02, GAMA031_upland, GAMA035_upland, GAMA037_upland, GAMAupland01, GAMAupland02, GAMAupland03, GAMAupland04, GAMAupland05, GAMAupland06, GAMAupland07, GAMAupland08, GAMAupland09, and GAMAupland10). Upland vegetation in the project area is described above in the Montane Forb-Grassland, Sagebrush Shrub Steppe, and Mixed-Conifer Woodland sections.

Streams and Open Water

The project area is in Hydrologic Unit 1007000109 (U.S. Geological Survey 2021). During the 2023 site visit, the following areas of streams/open water were identified in the project area: the Gardner River (GAMA001s); Boiling River (GAMA012s); Slide Lake (GAMA040); an Unnamed Pond (GAMA039); four ephemeral drainages (GAMA002s, GAMA003s, GAMA004s, and GAMA007s); and six intermittent or

perennial drainages (GAMA005s, GAMA006s, GAMA008s, GAMA009s, GAMA010s, and GAMA011s). Each of these features is described in more detail below.

Gardner River (GAMA001s)

The Gardner River flows roughly southward to northward along the east side of the project area (Figures 2c through 2n, GAMA001s_108_pp, GAMA001s_135_pp, and GAMA027_155_pp). It crosses the damaged North Entrance Road multiple times and, during the catastrophic flooding, washed out portions of the North Entrance Road. It is approximately 25 to 60 feet wide in the project area with a water depth of several inches to several feet observed during the 2023 site visit. The substrate of the Gardner River is sand, gravel, cobble, and boulders with limited areas of exposed bedrock. Wetlands of variable sizes occur along both banks and are primarily palustrine emergent (PEM) and riverine.

Jurisdictional Status

The Gardner River drains into the Yellowstone River approximately 0.40 mile north of the northern terminus of the project area. Because the Gardner River is a relatively permanent water, it would be considered jurisdictional.

Functional Assessment

The Gardner River and its abutting wetlands were evaluated using the MWAM. The wetlands along the river consist of emergent and some scrub-shrub communities that provide habitat for wildlife, including the federally threatened grizzly bear. The river also provides fish habitat and is highly functioning for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support. The overall percent of possible score was 64.5% and based on the percent of possible score, the wetlands would be classified as category II because of a score of 0.9 or 1 for general wildlife habitat.

Boiling River (GAMA012s)

The Boiling River flows into the Gardner River in the southeast corner of the project (Figure 2j, GAMA036_20_pp). It is approximately 6 to 15 feet wide in the project area with a water depth of several inches to several feet observed during the 2023 site visit. The substrate of the Boiling River is sand, gravel, and cobble with limited areas of exposed bedrock. Wetlands of variable sizes occur along both banks and are primarily PEM and riverine.

Jurisdictional Status

The Boiling River drains into the Gardner River in the project area. Because the Boiling River is a relatively permanent water, it would be considered jurisdictional.

Functional Assessment

The Boiling River and its abutting wetlands were evaluated using the MWAM and were combined with the Gardner River wetland evaluation due to their similar communities, hydrology, and location. The wetlands along the Boiling River consist of emergent communities that provide habitat for wildlife, including the federally threatened grizzly bear. The river also provides fish habitat and is highly

functioning for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support. The overall percent of possible score was 64.5% and based on the percent of possible score, the wetlands would be classified as category II because of a score of 0.9 or 1 for general wildlife habitat.

Slide Lake (GAMA040)

Slide Lake is a perennial lake located in the central portion of the project area (Figures 2f and 2g, GAMA040_81_pp). It appeared to have a depth of greater than 2 feet during the 2023 site visit. Due to the depth of the water, the bottom substrate of Slide Lake is unknown. A PEM wetland fringe is present around the lake and is discussed in more detail below in the Pond/Fringe Wetlands section. Slide Lake appears to receive runoff from upstream to the west and drains eastward to the Gardner River.

Jurisdictional Status

Because Slide Lake has a connection to the Gardner River and is a relatively permanent water, it is likely the lake would be considered jurisdictional.

Functional Assessment

Slide Lake was combined with the Unnamed Pond (GAMA039) due to their similar classifications as ponds/lakes and were evaluated jointly using the MWAM. The lakes provide habitat for wildlife by offering a water source and wetland vegetation. The lakes also provide high functions for short- and long-term surface water storage, sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge. The overall percent of possible score was 67.5%, with the wetlands rating as category II due to a score above 65%.

Unnamed Pond (GAMA039)

An unnamed perennial pond is located on the west side of US-89 (Figures 2f and 2g, GAMA012_126_pp). It appeared to have a depth of greater than 2 feet during the 2023 site visit. Due to the depth of the water, the bottom substrate is unknown but likely contains silt. A PEM wetland fringe is present around the pond and is discussed in more detail below in the Pond/Fringe Wetlands section. The Unnamed Pond appears to receive runoff from upstream to the southwest and west. It appears this pond may have drained to the northeast during high-flow events, but the additional development of US-89 appears to have resulted in a disconnect from its historical drainage.

Jurisdictional Status

The Unnamed Pond does not appear to have an outlet. Because it lacks a surface connection to a known water of the U.S. (Gardner River), it is likely nonjurisdictional.

Functional Assessment

The Unnamed Pond was combined with Slide Lake due to their similar classifications as ponds/lakes and were evaluated jointly using the MWAM. The lakes provide habitat for wildlife by offering a water source and wetland vegetation. The lakes also provide high functions for short- and long-term surface water storage, sediment/shoreline stabilization, production export/food chain support, and

groundwater discharge/recharge. The overall percent of possible score was 67.5%, with the wetlands rating as category II due to a score above 65%.

GAMA002s

GAMA002s occurs on the northern end of the project area (Figure 2c, GAMA002s_66_pp). GAMA002s is a 1- to 3-foot-wide ephemeral drainage that dissipates into uplands in a terrace above the Gardner River. The adjacent side slopes are steep and are generally devoid of wetland vegetation; the channel bottom consists of unconsolidated boulders and cobble-gravel.

Jurisdictional Status

Because GAMA002s is an ephemeral drainage that does not have relatively permanent flow, and does not have a direct surface connection to the Gardner River, it is likely nonjurisdictional.

GAMA003s

GAMA003s is an unnamed ephemeral drainage that is supported by seeps west/upslope of the temporary North Entrance Road/US-89 and flows northeast through the project area (Figure 2d, GAMA003s_50_pp). GAMA003s is approximately 1 to 4 feet wide and had intermittent sections of channel vegetated with wetlands during the 2023 site visit (described below in Seep Supported Wetlands). GAMA003s dissipates into uplands northeast of the temporary North Entrance Road and does not appear to continue northeast to connect to the Gardner River. The stream bottom consists of unconsolidated cobble-gravel and sand.

Jurisdictional Status

Because GAMA003s is an ephemeral drainage that does not have relatively permanent flow, and does not have a direct surface connection to the Gardner River, it is likely nonjurisdictional.

GAMA004s

GAMA004s is an unnamed ephemeral drainage that is a tributary to the Gardner River and connects to the Gardner River in the northeast section of the project area (Figure 2e, GAMA004s_245_pp). The upslope/southwestern sections of the drainage near US-89 is an upland vegetated swale with no indicators of OHWM or wetland vegetation (GAMAupland_40_pp). Further downstream, the drainage has a defined OHWM approximately 4 to 8 feet wide; however, no flowing water was present during the 2023 site visit. The adjacent side slopes are steep and generally devoid of wetland vegetation; the channel bottom consists of unconsolidated boulders, cobble-gravel, and sand.

Jurisdictional Status

Because GAMA004s is an ephemeral drainage that does not have relatively permanent flow, it is likely nonjurisdictional.

GAMA005s and GAMA006s

GAMA005s and GAMA006s are unnamed perennial streams that feed into Slide Lake and connect to the Gardner River in the project area (Figures 2f and 2g, GAMA011_260_pp and GAMA006s_92_pp).

GAMA005s and GAMA006s are 3 to 6 feet wide through the project area, with a more defined channel upstream of Slide Lake (GAMA040). Downstream of Slide Lake, the channel is predominantly vegetated with wetland species and was mapped as GAMA011 (described in more detail below), with only one defined section of OHWM (GAMA005s). The stream had a depth of less than 1 foot in the project area during the 2023 site visit. The stream bottom consists of unconsolidated cobble-gravel and boulders and would be classified as riverine under Cowardin et al. (1979).

Jurisdictional Status

Because GAMA005s and GAMA006s have relatively permanent water and flow into the Gardner River, a known water of the U.S., they would likely be considered jurisdictional.

GAMA007s

GAMA007s is a small section of OHWM that is southwest/upslope of Slide Lake (Figure 2g, Photo GAMA007s_270_pp). GAMA007s is 1 to 2 feet wide and is an unnamed ephemeral drainage that appears to dissipate into uplands in the project area. The stream bottom consists of unconsolidated cobble-gravel and sand.

Jurisdictional Status

Because GAMA007s is an ephemeral drainage that does not have relatively permanent flow and does not have a surface connection to a known waters of the U.S., it is likely nonjurisdictional.

GAMA008s

GAMA008s is an unnamed intermittent/perennial drainage that is supported by seeps west/upslope of US-89 (Figure 2h, GAMA008s_270_pp). GAMA008s is surrounded by wetland vegetation on either side and dissipates into a large wetland (GAMA031) just west of the Gardner River in the project area (Figure 2h). GAMA008s had a depth of 1 to 3 feet during the 2023 site visit and the channel bottom consists of unconsolidated boulders and cobble-gravel.

Jurisdictional Status

Because GAMA008s does not appear to directly connect to the Gardner River, it may be considered nonjurisdictional by the Corps.

GAMA009s

GAMA009s is an unnamed intermittent drainage that is a tributary to the Gardner River and connects to the Gardner River in the northeast middle of the project area (Figure 2h, GAMA009s_88_pp). The upslope/western section of the drainage upstream of US-89 is a steep drainage approximately 4 to 6 feet wide in a coniferous forest with fringe wetlands present. Further downstream, the drainage has wetland vegetation abutting it throughout the project area (GAMA031). The channel bottom consists of unconsolidated boulders and cobble-gravel.

Jurisdictional Status

Because GAMA009s has relatively permanent flow and connects to the Gardner River, a known water of the U.S., it is likely jurisdictional.

GAMA010s

GAMA010s is an unnamed ephemeral drainage that is a tributary to the Yellowstone River near the town of Gardiner and connects to the Yellowstone River just north of the project area (Figure 2b, Photo GAMA010s_99_pp). The drainage is 5 to 25 feet wide and the channel bottom consists of unconsolidated cobble-gravel and sand. No wetland vegetation is present along the drainage, with uplands immediately abutting either slope of the drainage in the project area.

Jurisdictional Status

Because GAMA010s is an ephemeral drainage that does not contain relatively permanent water, it is likely nonjurisdictional.

GAMA011s

GAMA011s is an unnamed intermittent/perennial drainage that is a tributary to the Gardner River and connects to the Gardner River just west of the project area (Figure 2n, GAMA037_325_pp). The drainage is 3 to 5 feet wide and the channel bottom consists of unconsolidated cobble-gravel and sand. Herbaceous wetland vegetation is present along the drainage (GAMA037).

Jurisdictional Status

Because GAMA011s is an intermittent/perennial drainage that contains relatively permanent water and connects to the Gardner River, it is likely jurisdictional.

Wetlands

ERO mapped approximately 18.0 acres of wetlands in the project area (Figures 2a through 2n). A majority of the wetlands are PEM wetlands, with some PSS wetlands scattered throughout the project area. As discussed above, ERO completed data points at each wetland feature to document wetland/upland boundaries. Along with the data points in Appendix C, as mentioned above, vegetation points were collected to determine the wetland boundary or to provide additional information about the wetlands in the project area (GAMA001_dp, GAMA002_dp, GAMA003_dp, GAMA005_dp, GAMA006_dp, GAMA007_dp, GAMA008_dp, GAMA011_dp, GAMA012_dp, GAMA013_dp01, GAMA013_dp02, GAMA014_dp, GAMA015_dp, GAMA017_dp, GAMA019_dp01, GAMA019_dp02, GAMA020_dp, GAMA021_dp, GAMA027_dp, GAMA030_dp01, GAMA030_dp02, GAMA031_dp, and GAMA037_dp).

Gardner River Wetlands (GAMA003, GAMA018, GAMA022-GAMA024, GAMA027, GAMA028, GAMA032-GAMA035, GAMA037, and GAMA038)

Along the Gardner River are PEM wetlands with limited areas of PSS wetlands (GAMA003, GAMA018, GAMA022-GAMA024, GAMA027, GAMA028, GAMA032-GAMA035, GAMA037, and GAMA038, Figures

2c through 2n). Due to the dynamic nature of the active stream channel, some wetlands have developed more recently as a result of flooding, and it is likely more wetlands were present pre-flooding than what are currently in the project area (GAMA027_155_pp). The primary water source to this wetland community is surface water and subsurface seepage. The dominant species in these wetlands are crack willow (facultative (FAC)), bluejoint (facultative wetland (FACW)), water sedge (*Carex aquatilis* – obligate (OBL)), Baltic rush (*Juncus balticus* – FACW), American licorice (FAC), and redtop (FAC) (see GAMA027_dp and GAMA003_dp). Hydrology indicators included drift deposits, sediment deposits, oxidized rhizospheres on living roots, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by loamy mucky mineral and redox dark surface.

Included in this wetland group is a wet meadow complex that is located in the southernmost borrow area (Wetlands 37 and 38, Figure 2n, Photo GAMA037_325_pp). The primary water source to this wetland is surface water, subsurface seepage, and groundwater upwelling. In this wetland, the dominant species are water sedge (OBL), Wolf's willow (*Salix wolfii* – OBL), and shrubby cinquefoil (*Potentilla fruticosa* – FAC) (GAMA037_dp). Hydrology indicators included oxidized rhizospheres on living roots, saturation visible on aerial imagery, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by redox dark surface.

Jurisdictional Status

Because the wetlands are abutting the Gardner River, a known water of the U.S., they would likely be considered jurisdictional.

Functional Assessment

The wetlands abutting the Gardner River were evaluated together using the MWAM based on their proximity and common hydrology source. The wetlands are all supported by surface water from the Gardner River. The wetlands consist of emergent and some scrub-shrub communities that provide habitat for wildlife, including the federally threatened grizzly bear. The wetlands provide wildlife habitat, fish habitat, and are highly functioning for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support. The overall percent of possible score was 64.5% and based on the percent of possible score, the wetlands would be classified as category II because of a score of 0.9 or 1 for general wildlife habitat.

Seep Supported Wetlands (GAMA001, GAMA002, GAMA006, GAMA008, and GAMA029-GAMA031)

Seep supported wetlands are predominantly PEM wetlands that occur throughout the project area (Figures 2d, 2e, 2f, and 2h, Photos GAMA002_55_pp, GAMA030_260_pp, and GAMA029_218_pp). The primary water source is groundwater upwelling. The dominant species in the wetlands include softstem bulrush (*Schoenoplectus tabernaemontani* – OBL), Northwest Territory sedge (*Carex utriculata* – OBL), water sedge (OBL), redtop (FAC), seep monkeyflower (*Mimulus guttatus* – OBL), and Nebraska sedge (*Carex nebrascensis* – OBL) (Appendix C, GAMA002_dp, GAMA030_dp02, and GAMA031_dp). Wetland hydrology indicators in this wetland type include surface water, a high water table, saturation,

geomorphic position, and a positive FAC-neutral test. Hydric soil indicators observed included redox dark surface and an assumption of hydric soil based on the positive presence of inundation and OBL dominant vegetation.

Jurisdictional Status

GAMA001, GAMA002, GAMA006, and GAMA008 do not appear to have surface connections to known waters of the U.S. and end in uplands before a possible connection to the Gardner River. Due to the lack of surface connections, and because the wetlands are not abutting a relatively permanent water, it is likely GAMA001, GAMA002, GAMA006, and GAMA008 are nonjurisdictional. GAMA029, GAMA030, and GAMA031 have surface connections to the Gardner River, with GAMA031 directly abutting the Gardner River. Due to their connections to the river, it is likely GAMA029, GAMA030, and GAMA031 would be considered jurisdictional.

Functional Assessment

The seep supported wetlands were evaluated together using the MWAM based on their proximity and hydrology source. These wetlands provide wildlife habitat and habitat for sensitive listed species. Disturbances in the wetland survey area are primarily associated with the temporary North Entrance Road, but overall has limited disturbances. These wetlands provide some functions including production export/food chain support, groundwater discharge/recharge, and overall uniqueness. The overall percent of possible score was 51% and based on the percent of possible score, the wetlands would be classified as category III.

Unnamed Pond/Fringe Wetlands (GAMA012 and GAMA013)

Slide Lake (GAMA040) and an Unnamed Pond (GAMA039) are located in the central portion of the project area (Figures 2f and 2g, GAMA012_126_pp and GAMA040_81_pp). Fringe PEM wetlands surround these open waters (GAMA012 and GAMA013). The primary water source to the fringe wetlands is surface water and subsurface seepage. The dominant species in the fringe wetlands include softstem bulrush (OBL), redtop (FAC), Northwest Territory sedge (OBL), and broadleaf cattail (*Typha latifolia* – OBL) (Appendix C, GAMA012_dp, GAMA013_dp01, and GAMA013_dp02). Wetland hydrology was indicated by surface water, a high water table, saturation, saturation visible on aerial imagery, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by depleted below dark surface, depleted matrix, redox dark surface, and an assumption of hydric soil based on the positive presence of inundation and OBL dominant vegetation.

Jurisdictional Status

Because Slide Lake has a connection to the Gardner River and is a relatively permanent water, it is likely the wetlands abutting Slide Lake would be considered jurisdictional. The Unnamed Pond does not appear to have a surface connection to any known waters of the U.S. and appears to be isolated. Because of the lack of a connection to a known water of the U.S., it is likely the Unnamed Pond and associated wetlands are nonjurisdictional.

Functional Assessment

Slide Lake was combined with the Unnamed Pond due to their similar classifications as ponds/lakes and were evaluated jointly using the MWAM. The lakes provide habitat for wildlife by offering a water source and wetland vegetation. The lakes also provide high functions for short- and long-term surface water storage, sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge. The overall percent of possible score was 67.5%, with the wetlands rating as category II due to a score above 65%.

Slide Lake Drainage Wetlands (GAMA011, GAMA015, GAMA016, and GAMA019)

Drainages above and below Slide Lake contain scrub-shrub (PSS) and PEM wetlands (GAMA011, GAMA015, GAMA016, and GAMA019) (GAMA011_260_pp). The primary water source to this wetland community is surface flow from upgradient beaver ponds, surface water from precipitation, and subsurface seepage. The dominant species in these wetlands are Rocky Mountain juniper (upland [UPL]), Wolf's willow (OBL), speckled alder (FACW), red osier dogwood (FACW), golden currant (FAC), Northwest Territory sedge (OBL), spreading bent (*Agrostis stolonifera* – FAC), water hemlock (*Cicuta maculata* – OBL), Baltic rush (FACW), fowl bluegrass (*Poa palustris* – FAC), redtop (FAC), and sweet clover (*Melilotus officinalis* – facultative upland [FACU]) (Appendix C, GAMA015_dp and GAMA019_dp01). Wetland hydrology was indicated by surface water, a high water table, saturation, saturation visible on aerial imagery, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by an assumption of hydric soil based on the positive presence of wetland hydrology and the dominance of hydrophytic vegetation.

Jurisdictional Status

Because the wetlands upstream and downstream of Slide Lake have surface connections to the Gardner River and abut a relatively permanent water, they would likely be considered jurisdictional.

Functional Assessment

The wetlands along the tributary upstream and downstream of Slide Lake were combined due to their hydrology source and location and were evaluated jointly using the MWAM. The wetlands provide habitat for wildlife by offering a water source and wetland vegetation. The wetlands also provide high functions for sediment/shoreline stabilization, groundwater discharge/recharge, and recreational/educational potential. The overall percent of possible score was 60% with the wetlands rating as category III.

Depressional Wetlands (GAMA004, GAMA005, GAMA007, GAMA009, GAMA010, GAMA014, GAMA017, GAMA020, GAMA021, GAMA025, and GAMA026)

Many isolated, depressional PEM wetlands are located in the project area (GAMA004, GAMA005, GAMA007, GAMA009, GAMA010, GAMA014, GAMA017, GAMA020, GAMA021, GAMA025, and GAMA026; Figures 2e, 2f, 2g, and 2h). Several of these wetlands appear to be located in dry pond depressions (Photos GAMA007_180_pp, GAMA010_20_pp, GAMA017_285_pp, and GAMA025_106_pp). The primary water source to this wetland community is precipitation. The

dominant species in these wetlands are common spikerush (*Eleocharis palustris* – OBL), Baltic rush (FACW), Nebraska sedge (OBL), foxtail barley (*Hordeum jubatum* – FAC), softstem bulrush (OBL), and western wheatgrass (FACU) (Appendix C, GAMA005_dp, GAMA007_dp, GAMA014_dp, GAMA017_dp, GAMA020_dp, and GAMA021_dp). Hydrology indicators included surface water, a high water table, saturation, algal mat or crust, surface soil cracks, oxidized rhizospheres on living roots, drainage patterns, geomorphic position, and a positive FAC-neutral test. Hydric soil was indicated by depleted below dark surface, loamy mucky mineral, depleted matrix, redox dark surface, the positive presence of indicators of wetland hydrology, and the dominance of hydrophytic vegetation.

Jurisdictional Status

Because all of the depressional wetlands are isolated and do not have surface connections to a known water of the U.S., including the Gardner River, they would likely be considered nonjurisdictional.

Functional Assessment

The depressional wetlands are supported by subsurface flows and seeps. The wetlands consist of emergent communities that provide important habitat for wildlife. Disturbances in the wetlands are few, with most occurring in the Park surrounded by uplands. The wetlands provide shoreline stabilization, groundwater discharge/recharge, and recreation/education potential. The overall percent of possible score was 70% and based on the percent of possible score, the wetlands would be classified as category II due to an overall percent score greater than 65%.

Conclusions and Recommendations

During the 2023 site visit, ERO delineated 18.0 acres of wetlands, 32.7 acres of OHWM, and 30,975 linear feet of stream channel (Figures 2a through 2n). A total of 56 data points were evaluated in the project area (Appendix C). The majority of the wetlands in the project area are classified as PEM wetlands, with some scattering of PSS wetlands. The majority of the wetlands in the project area were categorized as category III using the MWAM. The depressional wetlands scored as category II based on the relative rating of multiple functions including shoreline stabilization, groundwater discharge/recharge, and recreational/educational potential. The Gardner River and abutting wetlands, the Boiling River and abutting wetlands, Slide Lake and abutting wetlands, the tributary to Slide Lake and its abutting wetlands, GAMA009s, GAMA011s, and GAMA029-GAMA031 are likely jurisdictional because they are relatively permanent waters or have a direct/abutting connection to a relatively permanent water. All other wetlands and waters in the project area may not be jurisdictional waters of the U.S. because they are not relatively permanent waters or do not connect to a relatively permanent water.

The proposed North Entrance Road project is anticipated to cause direct and permanent impacts on wetlands in the wetland survey area. Due to the nature of the project, which may include road widening, realignment, and rehabilitation, and the proximity of the existing road corridor aquatic resources, efforts to avoid impacts on wetlands may not be possible. ERO recommends that where possible, road widening and realignment should be implemented in nonwetland habitats. In areas where widening or realignment is needed and would result in wetland impacts, ERO recommends that the project design

integrate infrastructure to allow hydrological connectivity between adjacent wetland features, which could include placement of drainage culverts or bridge crossings.

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Appendix A Photo Log

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMAUpland_77_pp – Montane grasslands in the project area. View is to the northeast.



GAMAUpland_314_pp – Montane grasslands in the project area. View is to the northwest.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA031_285_pp – Sagebrush shrublands in the project area. View is to the west.



GAMA009s_75_pp – Mixed conifer woodlands in the project area. View is to the east.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA030_200_pp – Riparian vegetation adjacent to seep wetlands. View is to the southwest.



GAMA030_260_pp – Riparian vegetation adjacent to seep wetland. View is to the northwest.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMAUpland_258_pp – Riparian vegetation along Gardner River (GAMA001s). View is to the west.



GAMA001s_108_pp – Gardner River (GAMA001s) in the project area. View is to the southeast.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA001s_135_pp – Road damage along Gardner River (GAMA001s). View is to the southeast.



GAMA027_155_pp – Gardner River (GAMA001s) and GAMA027 in the project area. View is to the southeast.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA036_20_pp – Boiling River (GAMA012s) abutting Gardner River (GAMA001s). View is to the northeast.



GAMA040_81_pp – Slide Lake (GAMA040) in the project area. View is to the east.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA012_126_pp – Unnamed pond (GAMA039) and GAMA012 in the project area. View is to the southeast.



GAMA002s_66_pp – GAMA002s in the northern section of the project area. View is to the north.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA003s_50_pp – GAMA003s in the project area. View is to the northeast.



GAMA004s_245_pp – GAMA004s in the project area. View is to the southwest.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMAUpland_40_pp – Upland vegetated swale southwest of GAMA004s. View is to the northeast.



GAMA011_260_pp – GAMA005s and GAMA011 in the project area. View is to the west.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA006s_92_pp – GAMA006s and Slide Lake tributary. View is to the northeast.



GAMA007s_270_pp – GAMA007s in the project area. View is to the southwest.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA008s_270_pp – GAMA008s in the project area. View is to the southwest.



GAMA009s_88_pp – GAMA009s in the project area. View is to the east.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA010s_99_pp – GAMA010s in the project area. View is to the southeast.



GAMA037_325_pp – GAMA011s and GAMA037 in the project area. View is to the west.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA002_55_pp – GAMA002 in the northern section of the project area. View is to the northeast.



GAMA029_218_pp – GAMA029 in the project area. View is to the southwest.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA007_180_pp – GAMA007 in the project area. View is to the south.



GAMA017_285_pp – GAMA017 just south of Slide Lake (GAMA040). View is to the southwest.

PHOTO LOG
AQUATIC RESOURCES INVENTORY
NORTH ENTRANCE – GARDINER TO MAMMOTH
YELLOWSTONE NATIONAL PARK, MONTANA/WYOMING
JULY 31 AND AUGUST 1, 2, 3, AND 4, 2023



GAMA010_20_pp – GAMA009 and GAMA010 in the project area. View is to the northeast.



GAMA025_106_pp – GAMA025 in the project area. View is to the east.

Aquatic Resources Inventory
North Entrance – Gardiner to Mammoth-YELL 326069B
Yellowstone National Park, Montana/Wyoming

Appendix B Plant Species List

Scientific Name	Common Name	Life Form*	Status	Wetland Indicator**
<i>Achillea millefolium</i>	Common yarrow	F	Native	FACU
<i>Actaea rubra</i>	Red baneberry	F	Native	FACU
<i>Antennaria rosea</i>	Rosy pussytoes	F	Native	UPL
<i>Apocynum cannabinum</i>	Clasping-leaf dogbane	F	Native	FAC
<i>Atriplex canescens</i>	Four-wing saltbush	F	Native	UPL
<i>Campanula rotundifolia</i>	American harebell	F	Native	FACU
<i>Chenopodium album</i>	White goosefoot	F	Introduced	FACU
<i>Centaurea diffusa</i>	Diffuse knapweed	F	Introduced	UPL
<i>Cicuta maculata</i>	Spotted water hemlock	F	Native	OBL
<i>Cirsium arvense</i>	Canada thistle	F	Introduced	FAC
<i>Conium maculatum</i>	Poison-hemlock	F	Introduced	FAC
<i>Convolvulus arvensis</i>	Field bindweed	F	Introduced	UPL
<i>Epilobium angustifolium</i>	Fireweed	F	Native	FACU
<i>Epilobium ciliatum</i>	Fringed willowherb	F	Native	FACW
<i>Eriogonum heracleoides</i>	Parsnip-flower buckwheat	F	Native	UPL
<i>Fragaria virginiana</i>	Virginia strawberry	F	Native	FACU
<i>Gentiana affinis</i>	Prairie gentian	F	Native	FACU
<i>Geum aleppicum</i>	Yellow avens	F	Native	FACW
<i>Glycyrrhiza lepidota</i>	Wild licorice	F	Native	FAC
<i>Grindelia squarrosa</i>	Curlycup gumweed	F	Native	FACU
<i>Helianthus annuus</i>	Common sunflower	F	Native	FACU
<i>Helianthus nuttallii</i>	Nuttall's Sunflower	F	Native	FACW
<i>Iris missouriensis</i>	Western blue iris	F	Native	FACW
<i>Lactuca serriola</i>	Prickly lettuce	F	Introduced	FACU
<i>Lemna minor</i>	Lesser duckweed	F	Native	OBL
<i>Linaria dalmatica</i>	Dalmation toadflax	F	Introduced	UPL
<i>Lupinus argenteus</i>	Silvery lupine	F	Native	UPL
<i>Lycopus americanus</i>	American bugleweed	F	Native	OBL
<i>Medicago sativa</i>	Yellow alfalfa	F	Introduced	UPL
<i>Melilotus officinalis</i>	Sweetclover	F	Introduced	FACU
<i>Mentha arvensis</i>	Wild mint	F	Native	FACW
<i>Mimulus guttatus</i>	Common large monkeyflower	F	Native	OBL
<i>Nasturtium officinale</i>	Watercress	F	Introduced	OBL
<i>Opuntia polyacantha</i>	Plains pricklypear	F	Native	UPL
<i>Polygonum aviculare</i>	Knotweed	F	Introduced	FAC
<i>Polygonum bistortoides</i>	American Bistort	F	Native	FACW
<i>Potentilla anserina</i>	Silverweed cinquefoil	F	Native	OBL
<i>Potentilla pensylvanica</i>	Pennsylvania cinquefoil	F	Native	FACU
<i>Rumex crispus</i>	Curly dock	F	Introduced	FAC
<i>Sisymbrium altissimum</i>	Tall tumble-mustard	F	Introduced	FACU
<i>Solidago canadensis</i>	Canada goldenrod	F	Native	FACU
<i>Solidago gigantea</i>	Giant goldenrod	F	Native	FACW
<i>Sonchus arvensis</i>	Field sowthistle	F	Introduced	FACU
<i>Symphyotrichum spathulatum</i>	Western mountain aster	F	Native	FAC
<i>Taraxacum officinale</i>	Common dandelion	F	Introduced	FACU
<i>Trifolium hybridum</i>	Alsike clover	F	Introduced	FAC
<i>Trifolium pratense</i>	Red clover	F	Introduced	FACU
<i>Urtica dioica</i>	Stinging Nettle	F	Native	FAC
<i>Veronica anagallis-aquatica</i>	Brook-pimpernell	F	Introduced	OBL
<i>Agropyron cristatum</i>	Crested wheatgrass	G	Introduced	UPL
<i>Agrostis gigantea</i>	Redtop	G	Introduced	FAC
<i>Agrostis stolonifera</i>	Creeping bentgrass	G	Introduced	NI
<i>Beckmannia syzigachne</i>	American sloughgrass	G	Native	OBL
<i>Bromus arvensis</i>	Bromus arvensis	G	Introduced	UPL
<i>Bromus inermis</i>	Smooth brome	G	Introduced	UPL
<i>Bromus tectorum</i>	Cheatgrass	G	Introduced	UPL

Aquatic Resources Inventory
North Entrance – Gardiner to Mammoth-YELL 326069B
Yellowstone National Park, Montana/Wyoming

Scientific Name	Common Name	Life Form*	Status	Wetland Indicator**
<i>Calamagrostis canadensis</i>	Blue-joint reedgrass	G	Native	FACW
<i>Calamagrostis stricta</i>	Slimstem reedgrass	G	Native	FACW
<i>Carex aquatilis</i>	Water sedge	G	Native	OBL
<i>Carex bebbii</i>	Bebb's sedge	G	Native	OBL
<i>Carex microptera</i>	Small-wing sedge	G	Native	FACU
<i>Carex nebrascensis</i>	Nebraska Sedge	G	Native	OBL
<i>Carex utriculata</i>	Common beaked sedge	G	Native	OBL
<i>Eleocharis palustris</i>	Creeping spikerush	G	Native	OBL
<i>Elymus lanceolatus</i>	Thickspike wheatgrass	G	Native	FACU
<i>Equisetum arvense</i>	Common horsetail	G	Native	FAC
<i>Equisetum hyemale</i>	Rough horsetail	G	Native	FACW
<i>Festuca idahoensis</i>	Idaho fescue	G	Native	FACU
<i>Glyceria grandis</i>	American managrass	G	Native	OBL
<i>Hordeum jubatum</i>	Foxtail barley	G	Native	FAC
<i>Juncus articulatus</i>	Jointed rush	G	Native	OBL
<i>Juncus balticus</i>	Baltic Rush	G	Native	FACW
<i>Koeleria macrantha</i>	Junegrass	G	Native	UPL
<i>Leymus cinereus</i>	Basin wildrye	G	Native	FAC
<i>Pascopyrum smithii</i>	Western wheatgrass	G	Native	FACU
<i>Phleum pratense</i>	Timothy	G	Introduced	FAC
<i>Poa compressa</i>	Canada bluegrass	G	Introduced	FACU
<i>Poa pratensis</i>	Kentucky bluegrass	G	Introduced	FAC
<i>Polypogon monspeliensis</i>	Rabbit's-foot grass	G	Introduced	FACW
<i>Schoenoplectus americanus</i>	Three-square bulrush	G	Native	OBL
<i>Schoenoplectus tabernaemontani</i>	Softstem bulrush	G	Native	OBL
<i>Stipa nelsonii</i>	Nelson's needlegrass	G	Native	UPL
<i>Stipa viridula</i>	Green needlegrass	G	Native	UPL
<i>Typha latifolia</i>	Broadleaf cattail	G	Native	OBL
<i>Typha X glauca</i>	Cattail hybrid	G	Native	OBL
<i>Vulpia octoflora</i>	Six-week fescue	G	Native	UPL
<i>Artemisia frigida</i>	Prairie sagewort	F/S	Native	UPL
<i>Artemisia tridentata</i>	Big sagebrush	S	Native	UPL
<i>Betula occidentalis</i>	Spring birch	S	Native	FACW
<i>Cornus sericea/Cornus alba</i>	Redosier dogwood	S	Native	UPL
<i>Dasiphora fruticosa</i>	Shrubby cinquefoil	S	Native	FAC
<i>Ericameria nauseosa</i>	Rubber rabbitbrush	S	Native	UPL
<i>Juniperus occidentalis</i>	Western juniper	S/T	Native	UPL
<i>Lonicera utahensis</i>	Utah honeysuckle	S	Native	FAC
<i>Prunus virginiana</i>	Chokecherry	S	Native	FACU
<i>Rhamnus cathartica</i>	Common buckthorn	S	Introduced	UPL
<i>Ribes aureum</i>	Golden currant	S	Native	FAC
<i>Rosa acicularis</i>	Prickly rose	S	Native	FACU
<i>Salix bebbiana</i>	Bebb's willow	S	Native	FACW
<i>Salix exigua</i>	Narrowleaf willow	S	Native	FACW
<i>Salix wolfii</i>	Wolf willow	S	Native	OBL
<i>Symphoricarpos albus</i>	Common snowberry	S	Native	FACU
<i>Symphoricarpos occidentalis</i>	Western snowberry	S	Native	FAC
<i>Vaccinium scoparium</i>	Grouseberry	S	Native	FACU
<i>Alnus incana</i>	Speckled alder	T	Native	FACW
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	T	Native	UPL
<i>Populus tremuloides</i>	Quaking aspen	T	Native	FACU
<i>Pseudotsuga menziesii</i>	Douglas-fir	T	Native	FACU
<i>Pinus contorta</i>	Lodgepole pine	T	Native	FAC

*F-Forb; G-Graminoid; S-Shrub; T-Tree.

**Facultative Wetland (FACW)—Estimated 67%–99% probability of occurrence in wetlands; Facultative (FAC)—Equally likely to occur in wetlands and nonwetlands (34%–66% probability); Facultative Upland (FACU)—67%–99% probability in nonwetlands, 1%–33% in wetlands; Upland (UPL)—>99% probability in nonwetlands in this region; NI—No Indicator or no information available.

Source: U.S. Army Corps of Engineers 2020.

Appendix C Wetland Delineation Data Sheets

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA001_dp
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: Protracted Block 44 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0178420162 Long: -110.699314458 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: Wetland pocket along ephemeral swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1.					Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)																
2.																					
3.																					
4.																					
=Total Cover																					
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>25</u></td> <td>x 1 = <u>25</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>35</u></td> <td>x 4 = <u>140</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>165</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.75</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>25</u>	x 1 = <u>25</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>35</u>	x 4 = <u>140</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>60</u> (A)	<u>165</u> (B)	Prevalence Index = B/A = <u>2.75</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>25</u>	x 1 = <u>25</u>																				
FACW species <u>0</u>	x 2 = <u>0</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>35</u>	x 4 = <u>140</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>60</u> (A)	<u>165</u> (B)																				
Prevalence Index = B/A = <u>2.75</u>																					
1.																					
2.																					
3.																					
4.																					
5.																					
=Total Cover																					
Herb Stratum (Plot size: <u>5 ft.</u>)					Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1.	<u>Schoenoplectus tabernaemontani</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>																	
2.	<u>Pascopyrum smithii</u>	<u>35</u>	<u>Yes</u>	<u>FACU</u>																	
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
11.																					
60 =Total Cover																					
Woody Vine Stratum (Plot size: <u> </u>)					Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
1.																					
2.																					
=Total Cover																					
% Bare Ground in Herb Stratum <u>40</u>																					

Remarks:

SOIL

Sampling Point: GAMA001_dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☒ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☒ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Project/Site: <u>Yellowstone National Park North Entrance Road</u>	City/County: <u>Gardiner/Park</u>	Sampling Date: <u>8/1/23</u>
Applicant/Owner: <u>National Park Service</u>	State: <u>MT</u>	Sampling Point: <u>GAMA002_dp</u>
Investigator(s): <u>Moneka Worah, Isabel Mansour</u>	Section, Township, Range: <u>Protracted Block 44 T9S, R8E; Montana Meridian</u>	
Landform (hillside, terrace, etc.): <u>wetland hillslope, seep</u>	Local relief (concave, convex, none): <u>concave</u>	Slope (%): <u>2</u>
Subregion (LRR): <u>LRR E</u>	Lat: <u>45.0154873462</u>	Long: <u>-110.701602759</u>
Datum: <u>NAD83</u>		
Soil Map Unit Name: <u>Lepner-Gladlow-Beartooth families, complex</u>		NWI classification: <u>R5UBH</u>

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

Hydrophytic Vegetation Present?	Yes <u> X </u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> X </u>	No <u> </u>
Hydric Soil Present?	Yes <u> X </u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u> X </u>	No <u> </u>			
Remarks: Wetland seep along hillside.					

Tree Stratum	(Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					
2.					
3.					
4.					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: 15 ft.)				
1.					
2.					
3.					
4.					
5.					
			=Total Cover		
Herb Stratum	(Plot size: 5 ft.)				
1.	<i>Pascopyrum smithii</i>	5	No	FACU	
2.	<i>Carex nebrascensis</i>	10	No	OBL	
3.	<i>Schoenoplectus tabernaemontani</i>	70	Yes	OBL	
4.	<i>Juncus balticus</i>	5	No	FACW	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
		90	=Total Cover		
Woody Vine Stratum	(Plot size:)				
1.					
2.					
			=Total Cover		
% Bare Ground in Herb Stratum		10			

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

 X 1 - Rapid Test for Hydrophytic Vegetation

 2 - Dominance Test is >50%

 3 - Prevalence Index is $\leq 3.0^1$

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 5 - Wetland Non-Vascular Plants¹

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes X No

Remarks:

SOIL

Sampling Point: GAMA002 dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	0.5
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA002_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: Protracted Block 44 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR): LRR E Lat: 45.0154734305 Long: -110.701589429 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Rosa acicularis</u>		5	Yes	FACU	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		5	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Phleum pratense</u>		10	No	FAC	
2. <u>Achillea millefolium</u>		10	No	FACU	
3. <u>Glycyrrhiza lepidota</u>		15	Yes	FAC	
4. <u>Bromus inermis</u>		5	No	UPL	
5. <u>Poa compressa</u>		20	Yes	FACU	
6. <u>Cirsium arvense</u>		2	No	FAC	
7. <u>Koeleria macrantha</u>		15	Yes	UPL	
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		77	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
			=Total Cover		
% Bare Ground in Herb Stratum		<u>23</u>			

Remarks:

SOIL

Sampling Point: GAMA002 upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒ X	Depth (inches):	
Water Table Present?	Yes ☐ No ☒ X	Depth (inches):	
Saturation Present?	Yes ☐ No ☒ X	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒ X	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA003_dp
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: Protracted Block 43 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0159733261 Long: -110.692894904 Datum: NAD83
 Soil Map Unit Name: Pesowyo family-Rock outcrop-Kadygulch family, complex NWI classification: R3UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Wetland abutting Gardiner River on sediment deposit.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u>Salix sp.</u>		<u>15</u>	<u>Yes</u>	<u>FAC*</u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		<u>15</u>	<u>=Total Cover</u>		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
			<u>=Total Cover</u>		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex aquatilis</u>		<u>20</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Juncus balticus</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Pascopyrum smithii</u>		<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Equisetum hyemale</u>		<u>5</u>	<u>No</u>	<u>FACW</u>	
5. <u>Poa compressa</u>		<u>15</u>	<u>No</u>	<u>FACU</u>	
6. <u>Calamagrostis canadensis</u>		<u>15</u>	<u>No</u>	<u>FACW</u>	
7. <u>Glycyrrhiza lepidota</u>		<u>25</u>	<u>Yes</u>	<u>FAC</u>	
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		<u>110</u>	<u>=Total Cover</u>		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>					
2. <u> </u>					
			<u>=Total Cover</u>		
% Bare Ground in Herb Stratum <u>0</u>					

Remarks: *The majority of Salix species have indicators of at least facultative in the Western Mountains, Valleys, and Coast Region.

SOIL

Sampling Point: GAMA003_dp

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/2						Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6) ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Redox Depressions (F8) ☐ Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☒ Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
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Remarks:
Along sediment deposit abutting river. Likely recent deposition from flooding.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)			
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)			
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)			
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)			
☒ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)			
☒ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)			
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)			
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)			
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)			
☐ Inundation Visible on Aerial Imagery (B7)					
☐ Sparsely Vegetated Concave Surface (B8)					

Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☒ No ☐ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA003_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: Protracted Block 43 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): sediment deposit Local relief (concave, convex, none): convex Slope (%): 0
 Subregion (LRR): LRR E Lat: 45.0159550135 Long: -110.692920105 Datum: NAD83
 Soil Map Unit Name: Pesowyo family-Rock outcrop-Kadygulch family, complex NWI classification: R3UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Mesic area along sediment deposit.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40.0%</u> (A/B)
1. <u>Salix sp.</u>		<u>20</u>	<u>Yes</u>	<u>FAC*</u>	
2. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
		<u>20</u>	=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Symphoricarpos albus</u>		<u>10</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Rosa acicularis</u>		<u>5</u>	<u>Yes</u>	<u>FACU</u>	
3. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
		<u>15</u>	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Pascopyrum smithii</u>		<u>15</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Melilotus officinalis</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
3. <u>Glycyrrhiza lepidota</u>		<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
5. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
6. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
7. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
8. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
9. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
10. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
		<u>40</u>	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>		<u> </u>	<u> </u>	<u> </u>	
		<u> </u>	=Total Cover		
% Bare Ground in Herb Stratum <u>60</u>					

Remarks: *The majority of Salix species have indicators of at least facultative in the Western Mountains, Valleys and Coast Region.

SOIL

Sampling Point: GAMA003 upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indicators observed.			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA005_dp
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0099535074 Long: -110.70098836 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Wetlands within swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Juncus balticus</u>		50	Yes	FACW	
2. <u>Hordeum jubatum</u>		25	Yes	FAC	
3. <u>Iris missouriensis</u>		5	No	FACW	
4. <u>Carex bebbii</u>		15	No	OBL	
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		95	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>5</u>					

SOIL

Sampling Point: GAMA005 dp

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 2/1	100					Loamy/Clayey	high organic material
4-12	10YR 2/1	98	7.5YR 3/4	2	C	M	Loamy/Clayey	Prominent redox concentrations
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)							Indicators for Problematic Hydric Soils³:	
☐ Histosol (A1)			☐ Sandy Redox (S5)				☐ 2 cm Muck (A10)	
☐ Histic Epipedon (A2)			☐ Stripped Matrix (S6)				☐ Red Parent Material (F21)	
☐ Black Histic (A3)			☐ Loamy Mucky Mineral (F1) (except MLRA 1)				☐ Very Shallow Dark Surface (F22)	
☐ Hydrogen Sulfide (A4)			☐ Loamy Gleyed Matrix (F2)				☐ Other (Explain in Remarks)	
☐ Depleted Below Dark Surface (A11)			☐ Depleted Matrix (F3)				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
☐ Thick Dark Surface (A12)			☒ Redox Dark Surface (F6)					
☐ Sandy Mucky Mineral (S1)			☐ Depleted Dark Surface (F7)					
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)			☐ Redox Depressions (F8)					
☐ Sandy Gleyed Matrix (S4)								
Restrictive Layer (if observed):								
Type: _____						Hydric Soil Present? Yes ☒ No ☐		
Depth (inches): _____								
Remarks: _____								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

U.S. Army Corps of Engineers

Western Mountains, Valleys, and Coast – Version 2

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA005_upland01
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0099937489 Long: -110.703024394 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Mesic swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum	(Plot size: <u>5 ft.</u>)				
1. <u>Phleum pratense</u>		15	Yes	FAC	
2. <u>Pascopyrum smithii</u>		10	No	FACU	
3. <u>Juncus balticus</u>		20	Yes	FACW	
4. <u>Trifolium hybridum</u>		10	No	FAC	
5. <u>Carex bebbii</u>		25	Yes	OBL	
6. <u>Poa pratensis</u>		10	No	FAC	
7. <u>Conium maculatum</u>		10	No	FAC	
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		100 =Total Cover			Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
Woody Vine Stratum	(Plot size: <u> </u>)				
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>0</u>					

Remarks:

SOIL

Sampling Point: GAMA005_upland01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/1	100					Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No	X
Type: _____ Depth (inches): _____				

Remarks:
No indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	X	No
Surface Water Present?	Yes	No	X	Depth (inches):			
Water Table Present?	Yes	No	X	Depth (inches):			
Saturation Present?	Yes	No	X	Depth (inches):			
(includes capillary fringe)							

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

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA005_upland02
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.0094520 Long: -110.7013780 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Upland swale	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
=Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Rosa acicularis</u>		<u>5</u>	<u>Yes</u>	<u>FACU</u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
=Total Cover					
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Juncus balticus</u>		<u>35</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Pascopyrum smithii</u>		<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Phleum pratense</u>		<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Chenopodium album</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Poa pratensis</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
=Total Cover					
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
=Total Cover					
% Bare Ground in Herb Stratum <u>25</u>					

Remarks:

SOIL

Sampling Point: GAMA005_upland02

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Project/Site:	<u>Yellowstone National Park North Entrance Road</u>	City/County:	<u>Gardiner/Park</u>	Sampling Date:	<u>8/1/23</u>
Applicant/Owner:	<u>National Park Service</u>	State:	<u>MT</u>	Sampling Point:	<u>GAMA006_dp</u>
Investigator(s):	<u>Moneka Worah, Isabel Mansour</u>	Section, Township, Range:	<u>PB 53, T9S, R8E; Montana Meridian</u>		
Landform (hillside, terrace, etc.):	<u>swale</u>	Local relief (concave, convex, none):	<u>concave</u>	Slope (%):	<u>2</u>
Subregion (LRR):	<u>LRR E</u>	Lat:	<u>45.0085824</u>	Long:	<u>-110.702088299</u>
		Datum:	<u>NAD83</u>		
Soil Map Unit Name:	<u>Lepner-Gladlow-Beartooth families, complex</u>		NW1 classification: <u>PEM1A</u>		

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

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

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

Hydrophytic Vegetation Present?	Yes <u> X </u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> X </u>	No <u> </u>
Hydric Soil Present?	Yes <u> X </u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u> X </u>	No <u> </u>			
Remarks: Wetlands along swale.					

<u>Tree Stratum</u>	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____		_____	_____	_____
2. _____		_____	_____	_____
3. _____		_____	_____	_____
4. _____		_____	_____	_____
		_____ =Total Cover		
<u>Sapling/Shrub Stratum</u>	(Plot size: <u>15 ft.</u>)			
1. _____		_____	_____	_____
2. _____		_____	_____	_____
3. _____		_____	_____	_____
4. _____		_____	_____	_____
5. _____		_____	_____	_____
		_____ =Total Cover		
<u>Herb Stratum</u>	(Plot size: <u>5 ft.</u>)			
1. <u>Juncus balticus</u>		50	Yes	FACW
2. <u>Carex nebrascensis</u>		20	Yes	OBL
3. <u>Calamagrostis stricta</u>		10	No	FACW
4. <u>Iris missouriensis</u>		3	No	FACW
5. <u>Pascopyrum smithii</u>		5	No	FACU
6. <u>Typha latifolia</u>		5	No	OBL
7. <u>Lycopus americanus</u>		5	No	OBL
8. _____		_____	_____	_____
9. _____		_____	_____	_____
10. _____		_____	_____	_____
11. _____		_____	_____	_____
		98 =Total Cover		
<u>Woody Vine Stratum</u>	(Plot size: _____)			
1. _____		_____	_____	_____
2. _____		_____	_____	_____
		_____ =Total Cover		
% Bare Ground in Herb Stratum		<u>2</u>		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is $\leq 3.0^1$

_____ 4 - Morphological Adaptations¹(Provide supporting data in Remarks or on a separate sheet)

_____ 5 - Wetland Non-Vascular Plants¹

_____ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes X No _____

Remarks:

SOIL

Sampling Point: GAMA006_dp

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11	10YR 2/1	100					Mucky Loam/Clay	high organic content
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)							Indicators for Problematic Hydric Soils³:	
☐ Histosol (A1)			☐ Sandy Redox (S5)				☐ 2 cm Muck (A10)	
☐ Histic Epipedon (A2)			☐ Stripped Matrix (S6)				☐ Red Parent Material (F21)	
☐ Black Histic (A3)			☒ Loamy Mucky Mineral (F1) (except MLRA 1)				☐ Very Shallow Dark Surface (F22)	
☐ Hydrogen Sulfide (A4)			☐ Loamy Gleyed Matrix (F2)				☐ Other (Explain in Remarks)	
☐ Depleted Below Dark Surface (A11)			☐ Depleted Matrix (F3)				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
☐ Thick Dark Surface (A12)			☐ Redox Dark Surface (F6)					
☐ Sandy Mucky Mineral (S1)			☐ Depleted Dark Surface (F7)					
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)			☐ Redox Depressions (F8)					
☐ Sandy Gleyed Matrix (S4)								
Restrictive Layer (if observed): Type: _____ Depth (inches): _____						Hydric Soil Present? Yes <u> X </u> No <u> </u>		
Remarks: _____ _____ _____								

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	<u>Secondary Indicators (2 or more required)</u>	
☒ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☒ Saturation (A3)	☐ Salt Crust (B11)	4A, and 4B)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Drainage Patterns (B10)	
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Shallow Aquitard (D3)	
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☒ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Frost-Heave Hummocks (D7)	
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☒ No ☐	Depth (inches):	10
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA006_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.0085679228 Long: -110.702055694 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Ericameria nauseosa</u>		5	Yes	UPL	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		5	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Melilotus officinalis</u>		30	Yes	FACU	
2. <u>Phleum pratense</u>		15	Yes	FAC	
3. <u>Poa pratensis</u>		10	No	FAC	
4. <u>Glycyrrhiza lepidota</u>		3	No	FAC	
5. <u>Pascopyrum smithii</u>		5	No	FACU	
6. <u>Juncus balticus</u>		5	No	FACW	
7. <u>Stipa viridula</u>		5	No	UPL	
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		73	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
			=Total Cover		
% Bare Ground in Herb Stratum <u>27</u>					

Remarks:

SOIL

Sampling Point: GAMA006 upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☐ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	4A, and 4B)	
☐ Saturation (A3)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☐	Depth (inches):	Wetland Hydrology Present? Yes ☐ No ☒
Water Table Present?	Yes ☐ No ☐	Depth (inches):	
Saturation Present?	Yes ☐ No ☐	Depth (inches):	
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA007_dp
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB53, T9S; R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.0087246121 Long: -110.704467446 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Mesic area adjacent to wetland.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Juncus balticus</u>		30	Yes	FACW	
2. <u>Carex nebrascensis</u>		40	Yes	OBL	
3. <u>Agrostis gigantea</u>		10	No	FAC	
4. <u>Hordeum jubatum</u>		2	No	FAC	
5. <u>Poa pratensis</u>		5	No	FAC	
6. <u>Epilobium ciliatum</u>		5	No	FACW	
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		92	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>8</u>					

SOIL

Sampling Point: GAMA007_dp

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	100					Loamy/Clayey	Organic material
3-12	10YR 4/2	85	10YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations
			N 2.5/	10	C	M		Distinct redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☒ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ ? Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA007_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.008780884 Long: -110.704545974 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Mesic area adjacent to wetland.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum	(Plot size: <u>5 ft.</u>)				
1. <u>Pascopyrum smithii</u>		<u>10</u>	<u>No</u>	<u>FACU</u>	
2. <u>Phleum pratense</u>		<u>15</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Hordeum jubatum</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Bromus inermis</u>		<u>5</u>	<u>No</u>	<u>UPL</u>	
5. <u>Juncus balticus</u>		<u>25</u>	<u>Yes</u>	<u>FACW</u>	
6. <u>Carex bebbii</u>		<u>20</u>	<u>Yes</u>	<u>OBL</u>	
7. <u>Lactuca serriola</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
8. <u>Poa pratensis</u>		<u>10</u>	<u>No</u>	<u>FAC</u>	
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		<u>95</u>	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>5</u>					

Remarks:

SOIL

Sampling Point: GAMA007_upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1							
3-12	10YR 3/2		N 2.5/	10	C	PL		Faint redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No	X
Type: _____				
Depth (inches): _____				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	X	No
Surface Water Present?	Yes	No	X	Depth (inches):			
Water Table Present?	Yes	No	X	Depth (inches):			
Saturation Present?	Yes	No	X	Depth (inches):			
(includes capillary fringe)							

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

Remarks:

Project/Site: <u>Yellowstone National Park North Entrance Road</u>	City/County: <u>Gardiner/Park</u>	Sampling Date: <u>7/31/23</u>
Applicant/Owner: <u>National Park Service</u>	State: <u>MT</u>	Sampling Point: <u>GAMA008_dp</u>
Investigator(s): <u>Marie Russo, Jared Watson</u>	Section, Township, Range: <u>PB 53 T9S, R8E; Montana Meridian</u>	
Landform (hillside, terrace, etc.): <u>swale</u>	Local relief (concave, convex, none): <u>concave</u>	Slope (%): <u>1</u>
Subregion (LRR): <u>LRR E</u>	Lat: <u>45.0077393053</u>	Long: <u>-110.704512673</u>
Datum: <u>NAD83</u>		
Soil Map Unit Name: <u>Lepner-Gladlow-Beartooth families, complex</u>		NWI classification: <u>PEM1A</u>

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

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

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

Hydrophytic Vegetation Present?	Yes <u> X </u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> X </u>	No <u> </u>
Hydric Soil Present?	Yes <u> X </u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u> X </u>	No <u> </u>			
Remarks: Wet meadow					

<u>Tree Stratum</u>	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____				
2. _____				
3. _____				
4. _____				
		_____ =Total Cover		
<u>Sapling/Shrub Stratum</u>	(Plot size: <u>15 ft.</u>)			
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
		_____ =Total Cover		
<u>Herb Stratum</u>	(Plot size: <u>5 ft.</u>)			
1. <u>Carex utriculata</u>		90	Yes	OBL
2. <u>Gentiana affinis</u>		5	No	FACU
3. <u>Glycyrrhiza lepidota</u>		5	No	FAC
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
		100 =Total Cover		
<u>Woody Vine Stratum</u>	(Plot size: _____)			
1. _____				
2. _____				
		_____ =Total Cover		
<u>% Bare Ground in Herb Stratum</u>		<u>0</u>		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

 X 1 - Rapid Test for Hydrophytic Vegetation

 2 - Dominance Test is >50%

 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 5 - Wetland Non-Vascular Plants¹

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes <u> X </u>	No <u> </u>
------------------	------------------

~~Western Mountains, Valleys, and Coast – Version 2.0~~

SOIL

Sampling Point: GAMA008 dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA008_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.0079798093 Long: -110.703681747 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Upland swale	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Rosa acicularis</u>		<u>5</u>	<u>Yes</u>	<u>FACU</u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		<u>5</u>	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Juncus balticus</u>		<u>35</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Pascopyrum smithii</u>		<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Phleum pratense</u>		<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Chenopodium album</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Poa pratensis</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		<u>75</u>	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>25</u>					

Remarks:

SOIL

Sampling Point: GAMA008_upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/1	100					Loamy/Clayey	Organic material

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No	X
Type: _____				
Depth (inches): _____				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	No	X
Surface Water Present?	Yes	No	X				
Water Table Present?	Yes	No	X	Depth (inches):			
Saturation Present?	Yes	No	X	Depth (inches):			
(includes capillary fringe)							

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

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA009s_upland01
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9944093404 Long: -110.704911831 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>) <table style="width: 100%;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Populus tremuloides</u></td><td><u>5</u></td><td><u>Yes</u></td><td><u>FACU</u></td></tr> <tr><td>2. <u>Pseudotsuga menziesii</u></td><td><u>20</u></td><td><u>Yes</u></td><td><u>FACU</u></td></tr> <tr><td>3. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>4. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td colspan="2" style="text-align: right;"><u>25</u> =Total Cover</td><td colspan="2"></td></tr> </tbody> </table> Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>) <table style="width: 100%;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Rosa acicularis</u></td><td><u>5</u></td><td><u>Yes</u></td><td><u>FACU</u></td></tr> <tr><td>2. <u>Cornus sericea</u></td><td><u>5</u></td><td><u>Yes</u></td><td><u>FACW</u></td></tr> <tr><td>3. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>4. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>5. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td colspan="2" style="text-align: right;"><u>10</u> =Total Cover</td><td colspan="2"></td></tr> </tbody> </table> Herb Stratum (Plot size: <u>5 ft.</u>) <table style="width: 100%;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Equisetum arvense</u></td><td><u>40</u></td><td><u>Yes</u></td><td><u>FAC</u></td></tr> <tr><td>2. <u>Phleum pratense</u></td><td><u>10</u></td><td><u>Yes</u></td><td><u>FAC</u></td></tr> <tr><td>3. <u>Agrostis gigantea</u></td><td><u>10</u></td><td><u>Yes</u></td><td><u>FAC</u></td></tr> <tr><td>4. <u>Actaea rubra</u></td><td><u>5</u></td><td><u>No</u></td><td><u>FACU</u></td></tr> <tr><td>5. <u>Glyceria grandis</u></td><td><u>5</u></td><td><u>No</u></td><td><u>OBL</u></td></tr> <tr><td>6. <u>Marchantia polymorpha</u></td><td><u>10</u></td><td><u>Yes</u></td><td><u>UPL</u></td></tr> <tr><td>7. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>8. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>9. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>10. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>11. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td colspan="2" style="text-align: right;"><u>80</u> =Total Cover</td><td colspan="2"></td></tr> </tbody> </table> Woody Vine Stratum (Plot size: <u> </u>) <table style="width: 100%;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td>2. <u> </u></td><td><u> </u></td><td><u> </u></td><td><u> </u></td></tr> <tr><td colspan="2" style="text-align: right;"><u> </u> =Total Cover</td><td colspan="2"></td></tr> </tbody> </table> % Bare Ground in Herb Stratum <u>20</u>		Absolute % Cover	Dominant Species?	Indicator Status	1. <u>Populus tremuloides</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	2. <u>Pseudotsuga menziesii</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>25</u> =Total Cover					Absolute % Cover	Dominant Species?	Indicator Status	1. <u>Rosa acicularis</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	2. <u>Cornus sericea</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>10</u> =Total Cover					Absolute % Cover	Dominant Species?	Indicator Status	1. <u>Equisetum arvense</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	2. <u>Phleum pratense</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	3. <u>Agrostis gigantea</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	4. <u>Actaea rubra</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	5. <u>Glyceria grandis</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	6. <u>Marchantia polymorpha</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>	7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>80</u> =Total Cover					Absolute % Cover	Dominant Species?	Indicator Status	1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u> =Total Cover				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B) Prevalence Index worksheet: <table style="width: 100%;"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr><td>OBL species <u>5</u></td><td>x 1 = <u>5</u></td></tr> <tr><td>FACW species <u>5</u></td><td>x 2 = <u>10</u></td></tr> <tr><td>FAC species <u>60</u></td><td>x 3 = <u>180</u></td></tr> <tr><td>FACU species <u>35</u></td><td>x 4 = <u>140</u></td></tr> <tr><td>UPL species <u>10</u></td><td>x 5 = <u>50</u></td></tr> <tr><td>Column Totals: <u>115</u> (A)</td><td><u>385</u> (B)</td></tr> <tr><td colspan="2">Prevalence Index = B/A = <u>3.35</u></td></tr> </tbody> </table> Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0¹ <u> </u> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants¹ <u> </u> Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>60</u>	x 3 = <u>180</u>	FACU species <u>35</u>	x 4 = <u>140</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>115</u> (A)	<u>385</u> (B)	Prevalence Index = B/A = <u>3.35</u>	
	Absolute % Cover	Dominant Species?	Indicator Status																																																																																																																																						
1. <u>Populus tremuloides</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																																																																																																																																						
2. <u>Pseudotsuga menziesii</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																																																																																																																																						
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>																																																																																																																																						
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>																																																																																																																																						
<u>25</u> =Total Cover																																																																																																																																									
	Absolute % Cover	Dominant Species?	Indicator Status																																																																																																																																						
1. <u>Rosa acicularis</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																																																																																																																																						
2. <u>Cornus sericea</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>																																																																																																																																						
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>																																																																																																																																						
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1. <u>Equisetum arvense</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>																																																																																																																																						
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3. <u>Agrostis gigantea</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																																																																																																																																						
4. <u>Actaea rubra</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																																																																																																																																						
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6. <u>Marchantia polymorpha</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>																																																																																																																																						
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>																																																																																																																																						
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2. <u> </u>	<u> </u>	<u> </u>	<u> </u>																																																																																																																																						
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Prevalence Index = B/A = <u>3.35</u>																																																																																																																																									

Remarks:

SOIL

Sampling Point: GAMA009s_upland01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	100					Loamy/Clayey	
3-7	10YR 2/2	100					Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☒ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No
Type: _____ Depth (inches): _____		☒	☐

Remarks:
Difficult to dig because of bedrock at 7", hydric soils assumed present.

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☒ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	No
Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____		☒	☐
Water Table Present?	Yes ☐	No ☒	Depth (inches): _____			
Saturation Present?	Yes ☒	No ☐	Depth (inches): 0			
(includes capillary fringe)						

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

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA009s_upland01
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 3
 Subregion (LRR): LRR E Lat: 44.994334 Long: -110.704850 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
1. <u>Pseudotsuga menziesii</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u>20</u>	<u> </u>	<u> </u>	
<u>20</u> =Total Cover				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> =Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Melilotus officinalis</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Achillea millefolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
3. <u>Poa compressa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
4. <u>Sonchus arvensis</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Antennaria rosea</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>	Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
6. <u>Leymus cinereus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Vulpia octoflora</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u>55</u> =Total Cover				
Woody Vine Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> =Total Cover				
% Bare Ground in Herb Stratum <u>45</u>				

Remarks:

SOIL

Sampling Point: GAMA009s_upland01

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☐ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	4A, and 4B)	
☐ Saturation (A3)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☐	Depth (inches):	
Water Table Present?	Yes ☐ No ☐	Depth (inches):	
Saturation Present?	Yes ☐ No ☐	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA010s_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 23 T9S, R8E; 6th PM
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0323149212 Long: -110.715711079 Datum: NAD83
 Soil Map Unit Name: Pesowyo-Beartooth-Sawbuck families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>x</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Upland swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
1.					
2.					
3.					
4.					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Artemisia tridentata</u>		5	Yes	UPL	
2. <u>Atriplex canescens</u>		10	Yes	UPL	
3.					
4.					
		15	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Agropyron cristatum</u>		45	Yes	UPL	
2. <u>Pascopyrum smithii</u>		5	No	FACU	
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
		50	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1.					
2.					
			=Total Cover		
% Bare Ground in Herb Stratum <u>50</u>					

Remarks:

SOIL

Sampling Point: GAMA010s_upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☐	Depth (inches):	Wetland Hydrology Present? Yes ☐ No ☒
Water Table Present?	Yes ☐ No ☐	Depth (inches):	
Saturation Present?	Yes ☐ No ☐	Depth (inches):	
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Remarks:
None observed.

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA011_dp
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 54, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): rocky streambank Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR): LRR E Lat: 45.0054723332 Long: -110.697303863 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: R5UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Wetlands within stream along hillside.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60.0%</u> (A/B)
1. <u>Juniperus scopulorum</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>5</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Cornus sericea</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Rosa acicularis</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>23</u> =Total Cover		
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex utriculata</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Mentha arvensis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	
3. <u>Melilotus officinalis</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Agrostis stolonifera</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
5. <u>Helianthus nuttallii</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
6. <u>Veronica anagallis-aquatica</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>85</u> =Total Cover		
Woody Vine Stratum (Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u> </u> =Total Cover		
% Bare Ground in Herb Stratum <u>15</u>				

Remarks:

SOIL

Sampling Point: GAMA011_dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☒ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	4A, and 4B)	
☒ Saturation (A3)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	1
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA011_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 54, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0054565641 Long: -110.697309769 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: R5UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Uplands adjacent to creek.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Cornus sericea</u>		5	Yes	FACW	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		5	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Melilotus officinalis</u>		50	Yes	FACU	
2. <u>Solidago canadensis</u>		5	No	FACU	
3. <u>Equisetum arvense</u>		15	No	FAC	
4. <u>Poa compressa</u>		10	No	FACU	
5. <u>Glycyrrhiza lepidota</u>		10	No	FAC	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		90	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
			=Total Cover		
% Bare Ground in Herb Stratum <u>10</u>					

Remarks:

SOIL

Sampling Point: GAMA011_upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA012_dp
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0056957277 Long: -110.703977092 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Fringe wetland around unnamed pond.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Schoenoplectus tabernaemontani</u>		25	Yes	OBL	
2. <u>Typha latifolia</u>		25	Yes	OBL	
3. <u>Polypogon monspeliensis</u>		10	No	FACW	
4. <u>Hordeum jubatum</u>		5	No	FAC	
5. <u>Eleocharis palustris</u>		5	No	OBL	
6. <u>Epilobium angustifolium</u>		2	No	FACU	
7. <u>Juncus balticus</u>		2	No	FACW	
8. <u>Agrostis gigantea</u>		5	No	FAC	
9. <u>Grindelia squarrosa</u>		5	No	FACU	
10. <u>Lemna minor</u>		3	No	OBL	
11. <u> </u>					
		87	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>13</u>					

Remarks:

SOIL

Sampling Point: GAMA012 dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	0.5
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Project/Site: Yellowstone National Park North Entrance Road City/County: Park Sampling Date: 7/31/23
Applicant/Owner: National Park Service State: MT Sampling Point: GAMA013_dp01
Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
Landform (hillside, terrace, etc.): Lake fringe Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): LRR E Lat: 45.0043988688 Long: -110.700551401 Datum: NAD83
Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

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

Hydrophytic Vegetation Present?	Yes <u> X </u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> X </u>	No <u> </u>
Hydric Soil Present?	Yes <u> X </u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u> X </u>	No <u> </u>			
Remarks: Fringe of Slide Lake.					

<u>Tree Stratum</u>	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____		_____	_____	_____
2. _____		_____	_____	_____
3. _____		_____	_____	_____
4. _____		_____	_____	_____
		=Total Cover		
<u>Sapling/Shrub Stratum</u>	(Plot size: <u>15 ft.</u>)			
1. _____		_____	_____	_____
2. _____		_____	_____	_____
3. _____		_____	_____	_____
4. _____		_____	_____	_____
5. _____		_____	_____	_____
		=Total Cover		
<u>Herb Stratum</u>	(Plot size: <u>5 ft.</u>)			
1. <u>Schoenoplectus tabernaemontani</u>		70	Yes	OBL
2. <u>Typha latifolia</u>		3	No	OBL
3. <u>Carex utriculata</u>		5	No	OBL
4. <u>Agrostis gigantea</u>		5	No	FAC
5. <u>Scirpus americanus</u>		5	No	OBL
6. _____		_____	_____	_____
7. _____		_____	_____	_____
8. _____		_____	_____	_____
9. _____		_____	_____	_____
10. _____		_____	_____	_____
11. _____		_____	_____	_____
		88	=Total Cover	
<u>Woody Vine Stratum</u>	(Plot size: _____)			
1. _____		_____	_____	_____
2. _____		_____	_____	_____
		=Total Cover		
<u>% Bare Ground in Herb Stratum</u>		<u>12</u>		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

 X 1 - Rapid Test for Hydrophytic Vegetation

 2 - Dominance Test is >50%

 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 5 - Wetland Non-Vascular Plants¹

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes X No

Remarks:

SOIL

Sampling Point: GAMA013_dp01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 2/1						Loamy/Clayey	organic material
4-12	N 3/		10YR 3/6	2	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☒ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No
Type: _____			
Depth (inches): _____			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	No
Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____			
Water Table Present?	Yes ☒	No ☐	Depth (inches): 2			
Saturation Present?	Yes ☒	No ☐	Depth (inches): 0			
(includes capillary fringe)						

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

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA013_dp02
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0043912955 Long: -110.700586054 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Concave depression fringe of lake.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
=Total Cover					
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u>Juncus balticus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>		
2. <u>Schoenoplectus tabernaemontani</u>	<u>10</u>	<u>No</u>	<u>OBL</u>		Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. <u>Helianthus nuttallii</u>	<u>5</u>	<u>No</u>	<u>FACW</u>		
4. <u>Solidago gigantea</u>	<u>5</u>	<u>No</u>	<u>FACW</u>		
5. <u>Agrostis gigantea</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>		
6. <u>Glycyrrhiza lepidota</u>	<u>5</u>	<u>No</u>	<u>FAC</u>		
7. <u>Carex utriculata</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>		
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		100 =Total Cover			Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
Woody Vine Stratum (Plot size: <u> </u>)					
1. <u> </u>					
2. <u> </u>					
=Total Cover					
% Bare Ground in Herb Stratum <u>0</u>					

Remarks:

SOIL

Sampling Point: GAMA013_dp02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/1	100					Loamy/Clayey	
1-12	2.5YR 4/1	93	10YR 4/4	7	C	PL	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☒ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No
Type: _____			
Depth (inches): _____			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	No
Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____			
Water Table Present?	Yes ☒	No ☐	Depth (inches): 10			
Saturation Present?	Yes ☒	No ☐	Depth (inches): 0			
(includes capillary fringe)						

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

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA013_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Lake Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.004354392 Long: -110.700643933 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Edge of wetlands along Slide Lake - mesic and higher ground.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
					Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
					Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>

SOIL

Sampling Point: GAMA013_upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100						organic material
6-20	10YR 3/2	90	2.5Y 4/1	10	D	M	Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No	X
Type: _____				
Depth (inches): _____				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	X	No
Surface Water Present?	Yes	No	X	Depth (inches):			
Water Table Present?	Yes	No	X	Depth (inches):			
Saturation Present?	Yes	X	No	Depth (inches):	8		
(includes capillary fringe)							

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

Remarks:

Saturation at 8" but no water table.

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

Project/Site:	<u>Yellowstone National Park North Entrance Road</u>	City/County:	<u>Gardiner/Park</u>	Sampling Date:	<u>8/4/23</u>
Applicant/Owner:	<u>National Park Service</u>	State:	<u>MT</u>	Sampling Point:	<u>GAMA014_dp</u>
Investigator(s):	<u>Moneka Worah, Isabel Mansour</u>				
	Section, Township, Range: <u>PB 53 T9S, R8E; Montana Meridian</u>				
Landform (hillside, terrace, etc.):	<u>depression</u>	Local relief (concave, convex, none):	<u>concave</u>	Slope (%):	<u>1</u>
Subregion (LRR):	<u>LRR E</u>	Lat:	<u>45.0043070</u>	Long:	<u>-110.7059120</u>
				Datum:	<u>NAD83</u>
Soil Map Unit Name:	<u>Lepner-Gladlow-Beartooth families, complex</u>			NWI classification:	<u>PEM1A</u>

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

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

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

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

Hydrophytic Vegetation Present?	Yes <u> X </u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> X </u>	No <u> </u>
Hydric Soil Present?	Yes <u> X </u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u> X </u>	No <u> </u>			
Remarks: Wetland depression along hillside.					

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: _____ 30 ft. _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
		=Total Cover		
Sapling/Shrub Stratum	(Plot size: _____ 15 ft. _____)			
1.				
2.				
3.				
4.				
5.				
		=Total Cover		
Herb Stratum	(Plot size: _____ 5 ft. _____)			
1.	Carex utriculata	45	Yes	OBL
2.	Cicuta maculata	5	No	OBL
3.	Phleum pratense	10	No	FAC
4.	Juncus balticus	10	No	FACW
5.	Agrostis gigantea	5	No	FAC
6.	Poa compressa	5	No	FACU
7.	Iris missouriensis	5	No	FACW
8.				
9.				
10.				
11.				
		85	=Total Cover	
Woody Vine Stratum	(Plot size: _____)			
1.				
2.				
		=Total Cover		
% Bare Ground in Herb Stratum		15		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

- ___ X 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0¹
- ___ 4 - Morphological Adaptations¹(Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants¹
- ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes	X	No
____	____	____

Remarks:

SOIL

Sampling Point: GAMA014_dp

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100					Loamy/Clayey	
8-12	10YR 2/1	90	10YR 4/2	10	D	M	Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6) ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Redox Depressions (F8) ☐ Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☒ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
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Remarks:
Difficult to see redoximorphic features in dark soil, likely increase in depletions below 12 inches.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☒ High Water Table (A2) ☐ Salt Crust (B11) ☒ Saturation (A3) ☐ Aquatic Invertebrates (B13) ☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1) ☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4) ☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8)				<u>Secondary Indicators (2 or more required)</u> ☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☒ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heave Hummocks (D7)	
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Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☒ No ☐ Depth (inches): <u>0</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers
Western Mountains, Valleys, and Coast – Version 2.0

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/4/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA014_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0042461 Long: -110.7058343 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)																
1. <u> </u>																					
2. <u> </u>																					
3. <u> </u>																					
4. <u> </u>																					
		=Total Cover																			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: <table border="0"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u> </u></td> <td>x 1 = <u> </u></td> </tr> <tr> <td>FACW species <u> </u></td> <td>x 2 = <u> </u></td> </tr> <tr> <td>FAC species <u> </u></td> <td>x 3 = <u> </u></td> </tr> <tr> <td>FACU species <u> </u></td> <td>x 4 = <u> </u></td> </tr> <tr> <td>UPL species <u> </u></td> <td>x 5 = <u> </u></td> </tr> <tr> <td>Column Totals: <u> </u> (A)</td> <td><u> </u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u> </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> </u>	x 1 = <u> </u>	FACW species <u> </u>	x 2 = <u> </u>	FAC species <u> </u>	x 3 = <u> </u>	FACU species <u> </u>	x 4 = <u> </u>	UPL species <u> </u>	x 5 = <u> </u>	Column Totals: <u> </u> (A)	<u> </u> (B)	Prevalence Index = B/A = <u> </u>	
Total % Cover of:	Multiply by:																				
OBL species <u> </u>	x 1 = <u> </u>																				
FACW species <u> </u>	x 2 = <u> </u>																				
FAC species <u> </u>	x 3 = <u> </u>																				
FACU species <u> </u>	x 4 = <u> </u>																				
UPL species <u> </u>	x 5 = <u> </u>																				
Column Totals: <u> </u> (A)	<u> </u> (B)																				
Prevalence Index = B/A = <u> </u>																					
1. <u>Rosa acicularis</u>		15	Yes	FACU																	
2. <u> </u>																					
3. <u> </u>																					
4. <u> </u>																					
5. <u> </u>																					
		15 =Total Cover																			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Phleum pratense</u>		40	Yes	FAC																	
2. <u>Achillea millefolium</u>		5	No	FACU																	
3. <u>Vulpia octoflora</u>		15	Yes	UPL																	
4. <u>Juncus balticus</u>		5	No	FACW																	
5. <u>Eriogonum heracleoides</u>		5	No	UPL																	
6. <u> </u>																					
7. <u> </u>																					
8. <u> </u>																					
9. <u> </u>																					
10. <u> </u>																					
11. <u> </u>																					
		70 =Total Cover																			
Woody Vine Stratum	(Plot size: <u> </u>)																				
1. <u> </u>																					
2. <u> </u>																					
		=Total Cover																			
% Bare Ground in Herb Stratum <u>30</u>																					

Remarks:

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

SOIL

Sampling Point: GAMA014_upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6) ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Redox Depressions (F8) ☐ Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u> X </u>
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Remarks:
Dig not dig due to dominance of upland vegetation.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Salt Crust (B11)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	☐ Drainage Patterns (B10)	☐ Dry-Season Water Table (C2)	☐ Saturation Visible on Aerial Imagery (C9)	☐ Geomorphic Position (D2)
☐ High Water Table (A2)	☐ Aquatic Invertebrates (B13)	☐ Hydrogen Sulfide Odor (C1)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Shallow Aquitard (D3)	☐ FAC-Neutral Test (D5)	☐ Raised Ant Mounds (D6) (LRR A)	☐ Frost-Heave Hummocks (D7)
☐ Saturation (A3)	☐ Presence of Reduced Iron (C4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		
☐ Water Marks (B1)	☐ Sediment Deposits (B2)	☐ Drift Deposits (B3)	☐ Algal Mat or Crust (B4)	☐ Iron Deposits (B5)	☐ Surface Soil Cracks (B6)	☐ Inundation Visible on Aerial Imagery (B7)	☐ Sparsely Vegetated Concave Surface (B8)

Field Observations: Surface Water Present? Yes _____ No <u> X </u> Depth (inches): _____ Water Table Present? Yes _____ No <u> X </u> Depth (inches): _____ Saturation Present? Yes _____ No <u> X </u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u> X </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA015_dp
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0037301118 Long: -110.700963658 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					
2.					
3.					
4.					
					=Total Cover
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1.					
2.					
3.					
4.					
5.					
					=Total Cover
Herb Stratum	(Plot size: <u>5 ft.</u>)				
1.	<u>Agrostis gigantea</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
2.	<u>Phleum pratense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3.	<u>Juncus balticus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	
4.	<u>Carex bebbii</u>	<u>3</u>	<u>No</u>	<u>OBL</u>	
5.	<u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
6.	<u>Carex microptera</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
7.					
8.					
9.					
10.					
11.					
					<u>103</u> =Total Cover
Woody Vine Stratum	(Plot size: <u> </u>)				
1.					
2.					
					=Total Cover
% Bare Ground in Herb Stratum		<u>0</u>			

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 2 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u> </u>	x 1 = <u> </u>
FACW species <u> </u>	x 2 = <u> </u>
FAC species <u> </u>	x 3 = <u> </u>
FACU species <u> </u>	x 4 = <u> </u>
UPL species <u> </u>	x 5 = <u> </u>
Column Totals: <u> </u> (A)	<u> </u> (B)
Prevalence Index = B/A = <u> </u>	

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 5 - Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

SOIL

Sampling Point: GAMA015 dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☒ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	4A, and 4B)	
☐ Saturation (A3)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☒ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)			
		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA015_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 7
 Subregion (LRR): LRR E Lat: 45.003759527 Long: -110.701021963 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Juniperus occidentalis</u>		12	Yes	UPL	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		12	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Vaccinium scoparium</u>		10	No	FACU	
2. <u>Achillea millefolium</u>		15	Yes	FACU	
3. <u>Linaria dalmatica</u>		20	Yes	UPL	
4. <u>Melilotus officinalis</u>		15	Yes	FACU	
5. <u>Equisetum arvense</u>		5	No	FAC	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		65	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
			=Total Cover		
% Bare Ground in Herb Stratum <u>35</u>					

Remarks:

SOIL

Sampling Point: GAMA015_upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☐ Depth (inches): Water Table Present? Yes ☐ No ☐ Depth (inches): Saturation Present? Yes ☐ No ☐ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indicators observed.			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA017_dp
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 54, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0032030548 Long: -110.696917465 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Wetlands within depression/pond.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Eleocharis palustris</u>		70	Yes	OBL	
2. <u>Hordeum jubatum</u>		5	No	FAC	
3. <u>Beckmannia syzigachne</u>		10	No	OBL	
4. <u>Artemisia frigida</u>		5	No	UPL	
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		90	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>10</u>					

Remarks:

SOIL

Sampling Point: GAMA017_dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☒ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	4A, and 4B)	
☒ Saturation (A3)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☒ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	1
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA019_dp01
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.002277698 Long: -110.706001171 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: R5UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: Wetland swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Salix wolfii</u>	5	Yes	OBL	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Alnus incana</u>	10	Yes	FACW																	
3. <u> </u>																				
4. <u> </u>																				
	15	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)																				
1. <u>Ribes aureum</u>	3	Yes	FAC	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u> </u></td> <td>x 1 = <u> </u></td> </tr> <tr> <td>FACW species <u> </u></td> <td>x 2 = <u> </u></td> </tr> <tr> <td>FAC species <u> </u></td> <td>x 3 = <u> </u></td> </tr> <tr> <td>FACU species <u> </u></td> <td>x 4 = <u> </u></td> </tr> <tr> <td>UPL species <u> </u></td> <td>x 5 = <u> </u></td> </tr> <tr> <td>Column Totals: <u> </u> (A)</td> <td><u> </u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u> </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> </u>	x 1 = <u> </u>	FACW species <u> </u>	x 2 = <u> </u>	FAC species <u> </u>	x 3 = <u> </u>	FACU species <u> </u>	x 4 = <u> </u>	UPL species <u> </u>	x 5 = <u> </u>	Column Totals: <u> </u> (A)	<u> </u> (B)	Prevalence Index = B/A = <u> </u>	
Total % Cover of:	Multiply by:																			
OBL species <u> </u>	x 1 = <u> </u>																			
FACW species <u> </u>	x 2 = <u> </u>																			
FAC species <u> </u>	x 3 = <u> </u>																			
FACU species <u> </u>	x 4 = <u> </u>																			
UPL species <u> </u>	x 5 = <u> </u>																			
Column Totals: <u> </u> (A)	<u> </u> (B)																			
Prevalence Index = B/A = <u> </u>																				
2. <u>Cornus alba</u>	10	Yes	FACW																	
3. <u>Lonicera utahensis</u>	2	No	FAC																	
4. <u> </u>																				
5. <u> </u>																				
	15	=Total Cover																		
Herb Stratum (Plot size: <u>5 ft.</u>)																				
1. <u>Urtica dioica</u>	5	No	FAC	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Helianthus grosseserratus</u>	2	No	FAC																	
3. <u>Symphyotrichum spathulatum</u>	7	No	FAC																	
4. <u>Solidago gigantea</u>	7	No	FACW																	
5. <u>Juncus balticus</u>	20	Yes	FACW																	
6. <u>Cicuta maculata</u>	20	Yes	OBL																	
7. <u>Agrostis gigantea</u>	15	Yes	FAC																	
8. <u>Equisetum arvense</u>	5	No	FAC																	
9. <u>Poa palustris</u>	15	Yes	FAC																	
10. <u> </u>																				
11. <u> </u>																				
	96	=Total Cover																		
Woody Vine Stratum (Plot size: <u> </u>)																				
1. <u> </u>				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
2. <u> </u>																				
		=Total Cover																		
% Bare Ground in Herb Stratum <u>4</u>																				

SOIL

Sampling Point: GAMA019_dp01

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ ? Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☒ No ☐	Depth (inches):	6
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA019_dp02
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: _____ Long: -110.705052415 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1. _____																					
2. _____																					
3. _____																					
4. _____																					
					Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																				
OBL species _____	x 1 = _____																				
FACW species _____	x 2 = _____																				
FAC species _____	x 3 = _____																				
FACU species _____	x 4 = _____																				
UPL species _____	x 5 = _____																				
Column Totals: _____ (A)	_____ (B)																				
Prevalence Index = B/A = _____																					
=Total Cover																					
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)																				
1. _____																					
2. _____																					
3. _____																					
4. _____																					
					Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
=Total Cover																					
Herb Stratum	(Plot size: <u>5 ft.</u>)																				
1. <u>Typha latifolia</u>		<u>30</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Typha X glauca</u>		<u>30</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Urtica dioica</u>		<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. <u>Cicuta maculata</u>		<u>3</u>	<u>No</u>	<u>OBL</u>																	
5. <u>Agrostis gigantea</u>		<u>10</u>	<u>No</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
6. <u>Carex utriculata</u>		<u>15</u>	<u>No</u>	<u>OBL</u>																	
7. <u>Phleum pratense</u>		<u>2</u>	<u>No</u>	<u>FAC</u>																	
8. <u>Equisetum arvense</u>		<u>5</u>	<u>No</u>	<u>FAC</u>																	
9. _____																					
10. _____					Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
11. _____																					
100 =Total Cover																					
Woody Vine Stratum	(Plot size: _____)																				
1. _____																					
2. _____																					
=Total Cover																					
% Bare Ground in Herb Stratum <u>0</u>																					

Remarks:

SOIL

Sampling Point: GAMA019 dp02

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	1
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA019_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.0023421421 Long: -110.706032159 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Hillslope above wetland swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Juniperus occidentalis</u>	20	Yes	UPL	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
2. <u> </u>				
3. <u> </u>				
4. <u> </u>				
	20	=Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>Lonicera utahensis</u>	5	No	FAC	Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
2. <u>Symphoricarpos occidentalis</u>	15	Yes	FAC	
3. <u>Rosa acicularis</u>	10	Yes	FACU	
4. <u>Rhamnus cathartica</u>	3	No	UPL	
5. <u>Vaccinium globulare</u>	2	No	FACU	
	35	=Total Cover		
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u>Lupinus argenteus</u>	15	Yes	UPL	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Medicago sativa</u>	10	No	UPL	
3. <u>Phleum pratense</u>	15	Yes	FAC	
4. <u>Poa pratensis</u>	25	Yes	FAC	
5. <u>Juncus balticus</u>	5	No	FACW	
6. <u> </u>				
7. <u> </u>				
8. <u> </u>				
9. <u> </u>				
10. <u> </u>				
11. <u> </u>				
	70	=Total Cover		
Woody Vine Stratum (Plot size: <u> </u>)				
1. <u> </u>				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
2. <u> </u>				
		=Total Cover		
% Bare Ground in Herb Stratum <u>30</u>				

Remarks:

SOIL

Sampling Point: GAMA019_upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (2 or more required)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ ? Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☐ Depth (inches): Water Table Present? Yes ☐ No ☐ Depth (inches): Saturation Present? Yes ☐ No ☐ Depth (inches): (includes capillary fringe) Wetland Hydrology Present? Yes ☐ No ☒			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Remarks:
None observed.

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA020_dp
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): LRR E Lat: 45.0025670611 Long: -110.700698954 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PUSC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> </u> (A) Total Number of Dominant Species Across All Strata: <u> </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> </u> (A/B)
2.					
3.					
4.					
=Total Cover					
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1.					
2.					
3.					
4.					
Herb Stratum (Plot size: <u>5 ft.</u>)					Hydrophytic Vegetation Indicators: <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	<u>Eleocharis palustris</u>	<u>50</u>	<u>Yes</u>	<u>OBL</u>	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
		<u>50</u>		<u> </u>	
Woody Vine Stratum (Plot size: <u> </u>)					Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1.					
2.					
				<u> </u>	
% Bare Ground in Herb Stratum <u>50</u>					

Remarks:

SOIL

Sampling Point: GAMA020_dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☒ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☒ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA020_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 5
 Subregion (LRR): LRR E Lat: 45.0026347845 Long: -110.700854149 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Terrace above wetland depression.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
1.					
2.					
3.					
4.					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
					Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
					Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>

SOIL

Sampling Point: GAMA020 upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indicators observed.			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA021_dp
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 53 T9S, R8E; Montana Meridia
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0023417371 Long: -110.698907125 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> </u> (A) Total Number of Dominant Species Across All Strata: <u> </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> </u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u> </u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Eleocharis palustris</u>		85	Yes	OBL	
2. <u>Hordeum jubatum</u>		5	No	FAC	
3. <u>Phleum pratense</u>		5	No	FAC	
4. <u> </u>					
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		95	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>5</u>					

Remarks:

SOIL

Sampling Point: GAMA021 dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA022_upland
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 54, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.0018504849 Long: -110.693939832 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Depression that is drying out.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Artemisia tridentata</u>		<u>3</u>	<u>No</u>	<u>UPL</u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		<u>3</u> =Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Hordeum jubatum</u>		<u>10</u>	<u>No</u>	<u>FAC</u>	
2. <u>Eleocharis palustris</u>		<u>75</u>	<u>Yes</u>	<u>OBL</u>	
3. <u>Rumex crispus</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Polygonum bistortoides</u>		<u>3</u>	<u>No</u>	<u>FACW</u>	
5. <u>Festuca idahoensis</u>		<u>3</u>	<u>No</u>	<u>FACU</u>	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		<u>96</u> =Total Cover			
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>4</u>					

Remarks:

SOIL

Sampling Point: GAMA022_upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	100					Loamy/Clayey	
3-10	2.5YR 4/2	100					Loamy/Clayey	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)							Indicators for Problematic Hydric Soils³:	
☐ Histosol (A1)			☐ Sandy Redox (S5)				☐ 2 cm Muck (A10)	
☐ Histic Epipedon (A2)			☐ Stripped Matrix (S6)				☐ Red Parent Material (F21)	
☐ Black Histic (A3)			☐ Loamy Mucky Mineral (F1) (except MLRA 1)				☐ Very Shallow Dark Surface (F22)	
☐ Hydrogen Sulfide (A4)			☐ Loamy Gleyed Matrix (F2)				☐ Other (Explain in Remarks)	
☐ Depleted Below Dark Surface (A11)			☐ Depleted Matrix (F3)				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
☐ Thick Dark Surface (A12)			☐ Redox Dark Surface (F6)					
☐ Sandy Mucky Mineral (S1)			☐ Depleted Dark Surface (F7)					
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)			☐ Redox Depressions (F8)					
☐ Sandy Gleyed Matrix (S4)								
Restrictive Layer (if observed):								
Type: _____ Depth (inches): _____						Hydric Soil Present? Yes _____ No <u> X </u>		
Remarks:								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

U.S. Army Corps of Engineers

Western Mountains, Valleys, and Coast – Version 2.0

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA027_dp
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 54 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Floodplain terrace Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9979598332 Long: -110.69365652 Datum: NAD83
 Soil Map Unit Name: Pesowyo family-Rock outcrop-Kadygulch family, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Gardiner River floodplain.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Schoenoplectus tabernaemontani</u>		15	No	OBL	
2. <u>Agrostis gigantea</u>		25	Yes	FAC	
3. <u>Glycyrrhiza lepidota</u>		10	No	FAC	
4. <u>Helianthus nuttallii</u>		10	No	FACW	
5. <u>Equisetum hyemale</u>		3	No	FACW	
6. <u>Calamagrostis canadensis</u>		30	Yes	FACW	
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		93	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>7</u>					

SOIL

Sampling Point: GAMA027_dp

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100					Loamy/Clayey	
6-20	10YR 3/1	90	7.5YR 5/8	10	C	PL	Loamy/Clayey	Prominent redox concentrations
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)							Indicators for Problematic Hydric Soils³:	
☐ Histosol (A1)			☐ Sandy Redox (S5)				☐ 2 cm Muck (A10)	
☐ Histic Epipedon (A2)			☐ Stripped Matrix (S6)				☐ Red Parent Material (F21)	
☐ Black Histic (A3)			☐ Loamy Mucky Mineral (F1) (except MLRA 1)				☐ Very Shallow Dark Surface (F22)	
☐ Hydrogen Sulfide (A4)			☐ Loamy Gleyed Matrix (F2)				☐ Other (Explain in Remarks)	
☐ Depleted Below Dark Surface (A11)			☐ Depleted Matrix (F3)					
☐ Thick Dark Surface (A12)			☒ Redox Dark Surface (F6)					
☐ Sandy Mucky Mineral (S1)			☐ Depleted Dark Surface (F7)				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)			☐ Redox Depressions (F8)					
☐ Sandy Gleyed Matrix (S4)								
Restrictive Layer (if observed):								
Type: _____ Depth (inches): _____						Hydric Soil Present? Yes <u> X </u> No <u> </u>		
Remarks:								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☒ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☐	Depth (inches):	
Water Table Present?	Yes ☐ No ☐	Depth (inches):	
Saturation Present?	Yes ☐ No ☐	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 7/31/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA027_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 54 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): slightly convex Slope (%): 2
 Subregion (LRR): LRR E Lat: 44.9980636153 Long: -110.693693807 Datum: NAD83
 Soil Map Unit Name: Pesowyo family-Rock outcrop-Kadygulch family, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Upland floodplain.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					
2.					
3.					
4.					
					=Total Cover
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1.	<u>Artemisia tridentata</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>	
2.	<u>Rosa acicularis</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>	
3.	<u>Ribes aureum</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>	
4.					
5.					
					<u>11</u> =Total Cover
Herb Stratum (Plot size: <u>5 ft.</u>)					
1.	<u>Glycyrrhiza lepidota</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
2.	<u>Agrostis gigantea</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	
3.	<u>Apocynum cannabinum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
					<u>90</u> =Total Cover
Woody Vine Stratum (Plot size: <u> </u>)					
1.					
2.					
					=Total Cover
% Bare Ground in Herb Stratum <u>10</u>					

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
 Total Number of Dominant Species Across All Strata: 5 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u> </u>	x 1 = <u> </u>
FACW species <u> </u>	x 2 = <u> </u>
FAC species <u> </u>	x 3 = <u> </u>
FACU species <u> </u>	x 4 = <u> </u>
UPL species <u> </u>	x 5 = <u> </u>
Column Totals: <u> </u> (A)	<u> </u> (B)
Prevalence Index = B/A = <u> </u>	

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 5 - Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: GAMA027_upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 3/2	100					Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)		

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

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No	X
Type: _____				
Depth (inches): _____				

Remarks:
No indicators met.

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations:				Wetland Hydrology Present?	Yes	No	X
Surface Water Present?	Yes	No	X	Depth (inches):			
Water Table Present?	Yes	No	X	Depth (inches):			
Saturation Present?	Yes	No	X	Depth (inches):			
(includes capillary fringe)							

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

Remarks:

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA030_dp01
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 0
 Subregion (LRR): LRR E Lat: 44.9953489457 Long: -110.704079063 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Wetlands along hillslope.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
=Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Juniperus scopulorum</u>		<u>5</u>	<u>Yes</u>	<u>UPL</u>	
2. <u>Betula occidentalis</u>		<u>15</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Salix bebbiana</u>		<u>3</u>	<u>No</u>	<u>FACW</u>	
4. <u> </u>					
<u>23</u> =Total Cover					
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex utriculata</u>		<u>70</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Agrostis gigantea</u>		<u>15</u>	<u>No</u>	<u>FAC</u>	
3. <u>Epilobium ciliatum</u>		<u>5</u>	<u>No</u>	<u>FACW</u>	
4. <u>Helianthus nuttallii</u>		<u>5</u>	<u>No</u>	<u>FACW</u>	
5. <u>Equisetum hyemale</u>		<u>2</u>	<u>No</u>	<u>FACW</u>	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
<u>97</u> =Total Cover					
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>					
2. <u> </u>					
=Total Cover					
% Bare Ground in Herb Stratum <u>3</u>					

Remarks:

SOIL

Sampling Point: GAMA030_dp01

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☒ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA030_dp02
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9957745 Long: -110.7052165 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: wet seep/ swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1. <u> </u>																					
2. <u> </u>																					
3. <u> </u>																					
4. <u> </u>																					
		=Total Cover			Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u> </u></td> <td>x 1 = <u> </u></td> </tr> <tr> <td>FACW species <u> </u></td> <td>x 2 = <u> </u></td> </tr> <tr> <td>FAC species <u> </u></td> <td>x 3 = <u> </u></td> </tr> <tr> <td>FACU species <u> </u></td> <td>x 4 = <u> </u></td> </tr> <tr> <td>UPL species <u> </u></td> <td>x 5 = <u> </u></td> </tr> <tr> <td>Column Totals: <u> </u> (A)</td> <td><u> </u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u> </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> </u>	x 1 = <u> </u>	FACW species <u> </u>	x 2 = <u> </u>	FAC species <u> </u>	x 3 = <u> </u>	FACU species <u> </u>	x 4 = <u> </u>	UPL species <u> </u>	x 5 = <u> </u>	Column Totals: <u> </u> (A)	<u> </u> (B)	Prevalence Index = B/A = <u> </u>	
Total % Cover of:	Multiply by:																				
OBL species <u> </u>	x 1 = <u> </u>																				
FACW species <u> </u>	x 2 = <u> </u>																				
FAC species <u> </u>	x 3 = <u> </u>																				
FACU species <u> </u>	x 4 = <u> </u>																				
UPL species <u> </u>	x 5 = <u> </u>																				
Column Totals: <u> </u> (A)	<u> </u> (B)																				
Prevalence Index = B/A = <u> </u>																					
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																					
1. <u> </u>																					
2. <u> </u>																					
3. <u> </u>																					
4. <u> </u>																					
5. <u> </u>																					
		=Total Cover																			
Herb Stratum (Plot size: <u>5 ft</u>)																					
1. <u>Erythranthe guttata</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																		
2. <u>Agrostis gigantea</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																		
3. <u>Phleum pratense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																		
4. <u>Carex nebrascensis</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																		
5. <u>Epilobium ciliatum</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																		
6. <u>Nasturtium officinale</u>	<u>10</u>	<u>No</u>	<u>OBL</u>																		
7. <u>Carex microptera</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																		
8. <u>Juncus balticus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																		
9. <u>Equisetum hyemale</u>	<u>3</u>	<u>No</u>	<u>FACW</u>																		
10. <u>Trifolium hybridum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																		
11. <u> </u>																					
		<u>103</u>	=Total Cover																		
Woody Vine Stratum (Plot size: <u> </u>)																					
1. <u> </u>																					
2. <u> </u>																					
		=Total Cover																			
% Bare Ground in Herb Stratum <u>0</u>																					

SOIL

Sampling Point: GAMA030_dp02

[illegible]

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except			☐ Water-Stained Leaves (B9) (MLRA 1, 2			
☐ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)			4A, and 4B)			
☒ Saturation (A3)	☐ Salt Crust (B11)			☐ Drainage Patterns (B10)			
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)			☐ Dry-Season Water Table (C2)			
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)			☐ Saturation Visible on Aerial Imagery (C9)			
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)			☐ Geomorphic Position (D2)			
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)			☐ Shallow Aquitard (D3)			
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)			☒ FAC-Neutral Test (D5)			
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)			☐ Raised Ant Mounds (D6) (LRR A)			
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)			☐ Frost-Heave Hummocks (D7)			
☐ Sparsely Vegetated Concave Surface (B8)							
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): 1 Water Table Present? Yes ☒ No ☐ Depth (inches): 0 Saturation Present? Yes ☒ No ☐ Depth (inches): 0 (includes capillary fringe)				Wetland Hydrology Present? Yes ☒ No ☐			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:							

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA030_upland01
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9953269013 Long: -110.704050092 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Uplands adjacent to wet seep.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Juniperus scopulorum</u>		10	Yes	UPL	
2. <u>Betula occidentalis</u>		10	Yes	FACW	
3. <u> </u>					
4. <u> </u>					
		20	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Solidago canadensis</u>		15	No	FACU	
2. <u>Helianthus nuttallii</u>		15	No	FACW	
3. <u>Bromus inermis</u>		20	Yes	UPL	
4. <u>Glycyrrhiza lepidota</u>		30	Yes	FAC	
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		80	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
			=Total Cover		
% Bare Ground in Herb Stratum <u>20</u>					

Remarks:

SOIL

Sampling Point: GAMA030_upland01

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	<u>Secondary Indicators (2 or more required)</u>	
☐ High Water Table (A2)	☐ MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☐ Saturation (A3)	☐ Salt Crust (B11)	☐ 4A, and 4B)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Drainage Patterns (B10)	
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Shallow Aquitard (D3)	
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Frost-Heave Hummocks (D7)	
Field Observations:			
Surface Water Present?	Yes ☐ No ☒ <u>X</u>	Depth (inches):	☐
Water Table Present?	Yes ☐ No ☒ <u>X</u>	Depth (inches):	☐
Saturation Present?	Yes ☐ No ☒ <u>X</u>	Depth (inches):	☐
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒ <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indicators observed.			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA030_upland02
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): wet seep/swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.995775 Long: -110.705220 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant	Indicator Status
1.				
2.				
3.				
4.				
=Total Cover				
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)			
1.				
2.				
3.				
4.				
5.				
=Total Cover				
Herb Stratum	(Plot size: <u>5 ft.</u>)			
1. <u>Bromus inermis</u>		<u>20</u>	<u>Yes</u>	<u>UPL</u>
2. <u>Helianthus nuttalli</u>		<u>15</u>	<u>No</u>	<u>FACW</u>
3. <u>Solidago canadensis</u>		<u>15</u>	<u>No</u>	<u>UPL</u>
4. <u>Glycyrrhiza lepidota</u>		<u>30</u>	<u>Yes</u>	<u>FAC</u>
5.				
6.				
7.				
8.				
9.				
10.				
11.				
<u>80</u> =Total Cover				
Woody Vine Stratum	(Plot size: <u>30 ft.</u>)			
1.				
2.				
=Total Cover				
% Bare Ground in Herb Stratum <u>20</u>				
Remarks:				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u> </u>	x 1 = <u> </u>
FACW species <u> </u>	x 2 = <u> </u>
FAC species <u> </u>	x 3 = <u> </u>
FACU species <u> </u>	x 4 = <u> </u>
UPL species <u> </u>	x 5 = <u> </u>
Column Totals: <u> </u> (A)	<u> </u> (B)
Prevalence Index = B/A = <u> </u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

 2 - Dominance Test is >50%

 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹(Provide supporting data in Remarks or on a separate sheet)

 5 - Wetland Non-Vascular Plants¹

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No X

SOIL

Sampling Point: GAMA030_upland02

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒ X	Depth (inches):	
Water Table Present?	Yes ☐ No ☒ X	Depth (inches):	
Saturation Present?	Yes ☐ No ☒ X	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒ X	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA031_dp
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 54 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Slope swale Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 44.9949769508 Long: -110.696624912 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Wetland in swale.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> </u> (A) Total Number of Dominant Species Across All Strata: <u> </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> </u> (A/B)																
1.																					
2.																					
3.																					
4.																					
		=Total Cover			Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u> </u></td> <td>x 1 = <u> </u></td> </tr> <tr> <td>FACW species <u> </u></td> <td>x 2 = <u> </u></td> </tr> <tr> <td>FAC species <u> </u></td> <td>x 3 = <u> </u></td> </tr> <tr> <td>FACU species <u> </u></td> <td>x 4 = <u> </u></td> </tr> <tr> <td>UPL species <u> </u></td> <td>x 5 = <u> </u></td> </tr> <tr> <td>Column Totals: <u> </u> (A)</td> <td><u> </u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u> </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> </u>	x 1 = <u> </u>	FACW species <u> </u>	x 2 = <u> </u>	FAC species <u> </u>	x 3 = <u> </u>	FACU species <u> </u>	x 4 = <u> </u>	UPL species <u> </u>	x 5 = <u> </u>	Column Totals: <u> </u> (A)	<u> </u> (B)	Prevalence Index = B/A = <u> </u>	
Total % Cover of:	Multiply by:																				
OBL species <u> </u>	x 1 = <u> </u>																				
FACW species <u> </u>	x 2 = <u> </u>																				
FAC species <u> </u>	x 3 = <u> </u>																				
FACU species <u> </u>	x 4 = <u> </u>																				
UPL species <u> </u>	x 5 = <u> </u>																				
Column Totals: <u> </u> (A)	<u> </u> (B)																				
Prevalence Index = B/A = <u> </u>																					
		=Total Cover																			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)																				
1.																					
2.																					
3.																					
4.																					
5.																					
		=Total Cover																			
Herb Stratum	(Plot size: <u>5 ft.</u>)																				
1. <u>Carex utriculata</u>		100	Yes	OBL																	
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
11.																					
		100 =Total Cover																			
Woody Vine Stratum	(Plot size: <u> </u>)																				
1.																					
2.																					
		=Total Cover																			
% Bare Ground in Herb Stratum <u>0</u>																					

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹(Provide supporting data in Remarks or on a separate sheet)
 5 - Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

SOIL

Sampling Point: GAMA031_dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	☐ Water-Stained Leaves (B9) (MLRA 1, 2	
☒ High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	4A, and 4B)	
☒ Saturation (A3)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA031_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: PB 54 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9949400158 Long: -110.696615831 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Uplands adjacent to wetland swale	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
=Total Cover					Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u>Artemisia tridentata</u>		<u>15</u>	<u>Yes</u>	<u>UPL</u>	
2. <u>Ericameria nauseosa</u>		<u>5</u>	<u>Yes</u>	<u>UPL</u>	
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
=Total Cover					
Herb Stratum (Plot size: <u>5 ft.</u>)					Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Phleum pratense</u>		<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Poa pratensis</u>		<u>30</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Pascopyrum smithii</u>		<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Cirsium arvense</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
=Total Cover					
Woody Vine Stratum (Plot size: <u> </u>)					Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
=Total Cover					
% Bare Ground in Herb Stratum <u>25</u>					

Remarks:

SOIL

Sampling Point: GAMA031 upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒ X	Depth (inches):	
Water Table Present?	Yes ☐ No ☒ X	Depth (inches):	
Saturation Present?	Yes ☐ No ☒ X	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒ X	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA035_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 19 T58N, 114W; 6th PM
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9880982802 Long: -110.691225445 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Old oxbow	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					
2.					
3.					
4.					
					=Total Cover
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				
1.					
2.					
3.					
4.					
5.					
					=Total Cover
Herb Stratum	(Plot size: <u>5 ft.</u>)				
1.	<u>Apocynum cannabinum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
2.	<u>Glycyrrhiza lepidota</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
3.	<u>Equisetum hyemale</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4.	<u>Poa compressa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
5.	<u>Juncus balticus</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	
6.					
7.					
8.					
9.					
10.					
11.					
					<u>95</u> =Total Cover
Woody Vine Stratum	(Plot size: <u> </u>)				
1.					
2.					
					=Total Cover
% Bare Ground in Herb Stratum		<u>5</u>			

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across All Strata: 2 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u> </u>	x 1 = <u> </u>
FACW species <u> </u>	x 2 = <u> </u>
FAC species <u> </u>	x 3 = <u> </u>
FACU species <u> </u>	x 4 = <u> </u>
UPL species <u> </u>	x 5 = <u> </u>
Column Totals: <u> </u> (A)	<u> </u> (B)
Prevalence Index = B/A = <u> </u>	

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 5 - Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

SOIL

Sampling Point: GAMA035_upland

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (2 or more required)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ X Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐	No ☒ X	Depth (inches):
Water Table Present?	Yes ☐	No ☒ X	Depth (inches):
Saturation Present?	Yes ☐	No ☒ X	Depth (inches):
(includes capillary fringe)			
Wetland Hydrology Present? Yes ☐ No ☒ X			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland10
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: Section 19 T58N, 114W; 6th PM
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): LRR E Lat: 44.9868054091 Long: -110.700009618 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Upland depression from road runoff.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
=Total Cover					
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u>Elymus lanceolatus</u>		35	Yes	FACU	
2. <u>Poa compressa</u>		30	Yes	FACU	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. <u>Bromus inermis</u>		15	No	UPL	
4. <u>Achillea millefolium</u>		5	No	FACU	
5. <u>Artemisia frigida</u>		5	No	UPL	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		90	=Total Cover		
Woody Vine Stratum (Plot size: <u> </u>)					
1. <u> </u>					Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
2. <u> </u>					
=Total Cover					
% Bare Ground in Herb Stratum <u>10</u>					

SOIL

Sampling Point: GAMAupland10

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indicators observed.			

U.S. Army Corps of Engineers

Western Mountains, Valleys, and Coast – Version 2

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA037_dp
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 25 T57N, 115W; 6th PM
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.8920046707 Long: -110.740651107 Datum: NAD83
 Soil Map Unit Name: Shook, Sawpit and Kegsprings families, soils NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: In large wet meadow/seep complex.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Salix wolfii</u>		<u>15</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Dasiphora fruticosa</u>		<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3. <u> </u>					
4. <u> </u>					
		<u>20</u>	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex aquatilis</u>		<u>85</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Geum aleppicum</u>		<u>5</u>	<u>No</u>	<u>FACW</u>	
3. <u>Symphyotrichum spathulatum</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Phleum pratense</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Equisetum hyemale</u>		<u>2</u>	<u>No</u>	<u>FACW</u>	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		<u>102</u>	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>0</u>					

SOIL

Sampling Point: GAMA037 dp

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☒ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☐ Depth (inches):		
Water Table Present?	Yes ☐ No ☐ Depth (inches):		
Saturation Present?	Yes ☐ No ☐ Depth (inches):		
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMA037_upland
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 25 T57N, 115W; 6th PM
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.891979 Long: -110.740610 Datum: NAD83
 Soil Map Unit Name: Shook, Sawpit and Kegsprings families, soils NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Hillslope above wetland complex.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Ericameria nauseosa</u>		20	Yes	UPL	
2. <u>Artemisia tridentata</u>		50	Yes	UPL	
3. <u>Dasiphora fruticosa</u>		10	No	FAC	
4. <u> </u>					
5. <u> </u>					
		80	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Phleum pratense</u>		10	Yes	FAC	
2. <u>Equisetum hyemale</u>		5	No	FACW	
3. <u>Trifolium pratense</u>		5	No	FACU	
4. <u>Bromus inermis</u>		10	Yes	UPL	
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		30	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
			=Total Cover		
% Bare Ground in Herb Stratum <u>70</u>					

Remarks:

SOIL

Sampling Point: GAMA037_upland**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/1	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (except MLRA 1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Matrix (F3) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Dark Surface (F6) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Depleted Dark Surface (F7) |
| ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) | ☐ Redox Depressions (F8) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|--|
| ☐ 2 cm Muck (A10) |
| ☐ Red Parent Material (F21) |
| ☐ Very Shallow Dark Surface (F22) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: Cobble/gravelDepth (inches): 2**Hydric Soil Present?** Yes ☐ No ☒**Remarks:**

Gravel cobble, refusal below 2 inches.

HYDROLOGY

Wetland Hydrology Indicators:Primary Indicators (minimum of one is required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:Surface Water Present? Yes ☐ No ☐ Depth (inches): Water Table Present? Yes ☐ No ☐ Depth (inches): Saturation Present? Yes ☐ No ☐ Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No indicators observed.

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland01
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 8 T9S, R8E; 6th PM
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): slightly convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.0599180325 Long: -110.774027349 Datum: NAD83
 Soil Map Unit Name: Haugan-Swiftcreek-Bitton families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Ericameria nauseosa</u>		15	Yes	UPL	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		15	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Agropyron cristatum</u>		30	Yes	UPL	
2. <u>Opuntia polyacantha</u>		10	Yes	UPL	
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		40	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
			=Total Cover		
% Bare Ground in Herb Stratum		<u>60</u>			

Remarks:

SOIL

Sampling Point: GAMaupland01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6) ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Redox Depressions (F8) ☐ Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks:
Soil not sampled due to dominance of upland vegetation.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ High Water Table (A2) ☐ Salt Crust (B11) ☐ Saturation (A3) ☐ Aquatic Invertebrates (B13) ☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1) ☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4) ☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8)				<u>Secondary Indicators (2 or more required)</u> ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heave Hummocks (D7)	
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Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
None observed.

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland02
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 8 T9S, R8E; 6th PM
 Landform (hillside, terrace, etc.): upland swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.060252463 Long: -110.773314825 Datum: NAD83
 Soil Map Unit Name: Haugan-Swiftcreek-Bitton families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Old ditch line.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
1.					
2.					
3.					
4.					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1.					
2.					
3.					
4.					
		=Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	<u>Agropyron cristatum</u>	<u>45</u>	<u>Yes</u>	<u>UPL</u>	
2.	<u>Opuntia polyacantha</u>	<u>10</u>	<u>No</u>	<u>UPL</u>	
3.	<u>Pascopyrum smithii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
		<u>60</u>	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1.					
2.					
		=Total Cover			
% Bare Ground in Herb Stratum		<u>40</u>			

Remarks:

SOIL

Sampling Point: GAMaupland02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6) ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Redox Depressions (F8) ☐ Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks:
Soil not sampled due to dominance of upland vegetation.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Surface Soil Cracks (B6) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ Salt Crust (B11) ☐ Aquatic Invertebrates (B13) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Other (Explain in Remarks)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heave Hummocks (D7)					

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
none observed.

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAUpland03
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: Protracted Block 44 T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): Upland slope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRR E Lat: 45.018473236 Long: -110.700096495 Datum: NAD83
 Soil Map Unit Name: Haugan-Swiftcreek-Bitton families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Upland along blue line.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
=Total Cover				
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)			
1.				
2.				
3.				
4.				
5.				
=Total Cover				
Herb Stratum	(Plot size: <u>5 ft.</u>)			
1.	<u>Pascopyrum smithii</u>	30	Yes	FACU
2.	<u>Bromus tectorum</u>	15	Yes	UPL
3.	<u>Bromus arvensis</u>	15	Yes	UPL
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
60 =Total Cover				
Woody Vine Stratum	(Plot size: <u> </u>)			
1.				
2.				
=Total Cover				
% Bare Ground in Herb Stratum <u>40</u>				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u> </u>	x 1 = <u> </u>
FACW species <u> </u>	x 2 = <u> </u>
FAC species <u> </u>	x 3 = <u> </u>
FACU species <u> </u>	x 4 = <u> </u>
UPL species <u> </u>	x 5 = <u> </u>
Column Totals: <u> </u> (A)	<u> </u> (B)
Prevalence Index = B/A = <u> </u>	

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 5 - Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL

Sampling Point: GAMAupland03

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indicators observed.			

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/1/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland04
 Investigator(s): Moneka Worah, Isabel Mansour Section, Township, Range: PB 53, T9S, R8E; Montana Meridian
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR E Lat: 45.0113429331 Long: -110.700117341 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Rosa acicularis</u>		5	Yes	FACU	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		5 =Total Cover			
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Juncus balticus</u>		35	Yes	FACW	
2. <u>Pascopyrum smithii</u>		20	Yes	FACU	
3. <u>Phleum pratense</u>		10	No	FAC	
4. <u>Chenopodium album</u>		5	No	FACU	
5. <u>Poa pratensis</u>		5	No	FAC	
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
		75 =Total Cover			
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>25</u>					

Remarks:

SOIL

Sampling Point: GAMAupland04

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒ X	Depth (inches):	
Water Table Present?	Yes ☐ No ☒ X	Depth (inches):	
Saturation Present?	Yes ☐ No ☒ X	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒ X	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: None observed			

U.S. Army Corps of Engineers

Western Mountains, Valleys, and Coast – Version 2

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland05
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 30 T58N, R114W; 6th PM
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9838305667 Long: -110.69049098 Datum: NAD83
 Soil Map Unit Name: Haugan-Swiftcreek-Bitton families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum (Plot size: <u> </u>)					
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u>Helianthus annuus</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
2. <u>Convolvulus arvensis</u>		<u>10</u>	<u>No</u>	<u>UPL</u>	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. <u>Grindelia squarrosa</u>		<u>30</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Bromus tectorum</u>		<u>10</u>	<u>No</u>	<u>UPL</u>	
5. <u>Leymus cinereus</u>		<u>15</u>	<u>Yes</u>	<u>FAC</u>	
6. <u>Sisymbrium altissimum</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		=Total Cover			Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
Woody Vine Stratum (Plot size: <u> </u>)					
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>25</u>					

Remarks:

SOIL

Sampling Point: GAMAupland05

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☐	Depth (inches):	
Water Table Present?	Yes ☐ No ☐	Depth (inches):	
Saturation Present?	Yes ☐ No ☐	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: None observed.			

US Army Corps of Engineers

Western Mountains, Valleys, and Coast – Version 2

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/2/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland06
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 30 T58N, R114W; 6th PM
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): LRR E Lat: 44.9844283098 Long: -110.701513429 Datum: NAD83
 Soil Map Unit Name: Lepner-Gladlow-Beartooth families, complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
1. <u>Pseudotsuga menziesii</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>15</u>	=Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Artemisia tridentata</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>5</u>	=Total Cover	
Herb Stratum (Plot size: <u>5 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Bromus inermis</u>	<u>75</u>	<u>Yes</u>	<u>UPL</u>	
2. <u>Stipa nelsonii</u>	<u>10</u>	<u>No</u>	<u>UPL</u>	
3. <u>Achillea millefolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
4. <u>Campanula rotundifolia</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>93</u>	=Total Cover	
Woody Vine Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u> </u>	=Total Cover	
% Bare Ground in Herb Stratum <u>7</u>				

Remarks:

SOIL

Sampling Point: GAMAupland06

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☐	Depth (inches):	
Water Table Present?	Yes ☐ No ☐	Depth (inches):	
Saturation Present?	Yes ☐ No ☐	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: none observed.			

US Army Corps of Engineers

Western Mountains, Valleys, and Coast – Version 2

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland07
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 26 T57N, R115W; 6th PM
 Landform (hillside, terrace, etc.): slight depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): LRR E Lat: 44.8938683758 Long: -110.744222961 Datum: NAD83
 Soil Map Unit Name: Shook, Sawpit and Kegsprings families, soils NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>x</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u>Artemisia tridentata</u>		<u>5</u>	<u>Yes</u>	<u>UPL</u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		=Total Cover			
Herb Stratum (Plot size: <u>5 ft.</u>)					Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Bromus tectorum</u>		<u>20</u>	<u>Yes</u>	<u>UPL</u>	
2. <u>Poa pratensis</u>		<u>2</u>	<u>No</u>	<u>FAC</u>	
3. <u>Polygonum aviculare</u>		<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Phleum pratense</u>		<u>10</u>	<u>Yes</u>	<u>FAC</u>	
5. <u>Taraxacum officinale</u>		<u>10</u>	<u>Yes</u>	<u>FACU</u>	
6. <u>Stipa nelsonii</u>		<u>3</u>	<u>No</u>	<u>UPL</u>	
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		=Total Cover			
Woody Vine Stratum (Plot size: <u> </u>)					Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>50</u>					

Remarks:

SOIL

Sampling Point: GAMaupland07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6) ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Redox Depressions (F8) ☐ Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks:
Soil not sampled due to dominance of upland vegetation.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ High Water Table (A2) ☐ Salt Crust (B11) ☐ Saturation (A3) ☐ Aquatic Invertebrates (B13) ☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1) ☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4) ☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8)				<u>Secondary Indicators (2 or more required)</u> ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heave Hummocks (D7)	
--	--	--	--	--	--

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
---	---

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

Remarks:
None observed.

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

Project/Site: Yellowstone National Park North Entrance Road City/County: Gardiner/Park Sampling Date: 8/3/23
 Applicant/Owner: National Park Service State: MT Sampling Point: GAMAupland08
 Investigator(s): Marie Russo, Jared Watson Section, Township, Range: Section 26 T57N, R115W; 6th PM
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): LRR E Lat: 44.8940891977 Long: -110.744562671 Datum: NAD83
 Soil Map Unit Name: Shook, Sawpit and Kegsprings families, soils NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Uplands adjacent to wetland complex.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
1. <u> </u>					
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u>Ericameria nauseosa</u>		<u>15</u>	<u>Yes</u>	<u>UPL</u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
		<u>15</u>	=Total Cover		
Herb Stratum	(Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> 5 - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Trifolium pratense</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
2. <u>Equisetum hyemale</u>		<u>5</u>	<u>No</u>	<u>FACW</u>	
3. <u>Cirsium arvense</u>		<u>15</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Phleum pratense</u>		<u>30</u>	<u>Yes</u>	<u>FAC</u>	
5. <u>Equisetum arvense</u>		<u>10</u>	<u>No</u>	<u>FAC</u>	
6. <u>Potentilla pensylvanica</u>		<u>15</u>	<u>Yes</u>	<u>FACU</u>	
7. <u>Fragaria virginiana</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
8. <u>Achillea millefolium</u>		<u>10</u>	<u>No</u>	<u>FACU</u>	
9. <u> </u>					
10. <u> </u>					
11. <u> </u>					
		<u>95</u>	=Total Cover		
Woody Vine Stratum	(Plot size: <u> </u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. <u> </u>					
2. <u> </u>					
		=Total Cover			
% Bare Ground in Herb Stratum <u>5</u>					

Remarks:

SOIL

Sampling Point: GAMaupland08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6) ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Redox Depressions (F8) ☐ Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
--	---

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:
No soil sampled due to the dominance of upland vegetation.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ High Water Table (A2) ☐ Salt Crust (B11) ☐ Saturation (A3) ☐ Aquatic Invertebrates (B13) ☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1) ☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4) ☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8)				<u>Secondary Indicators (2 or more required)</u> ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heave Hummocks (D7)	
--	--	--	--	--	--

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
---	---

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

Remarks:

SOIL

Sampling Point: GAMApupland04

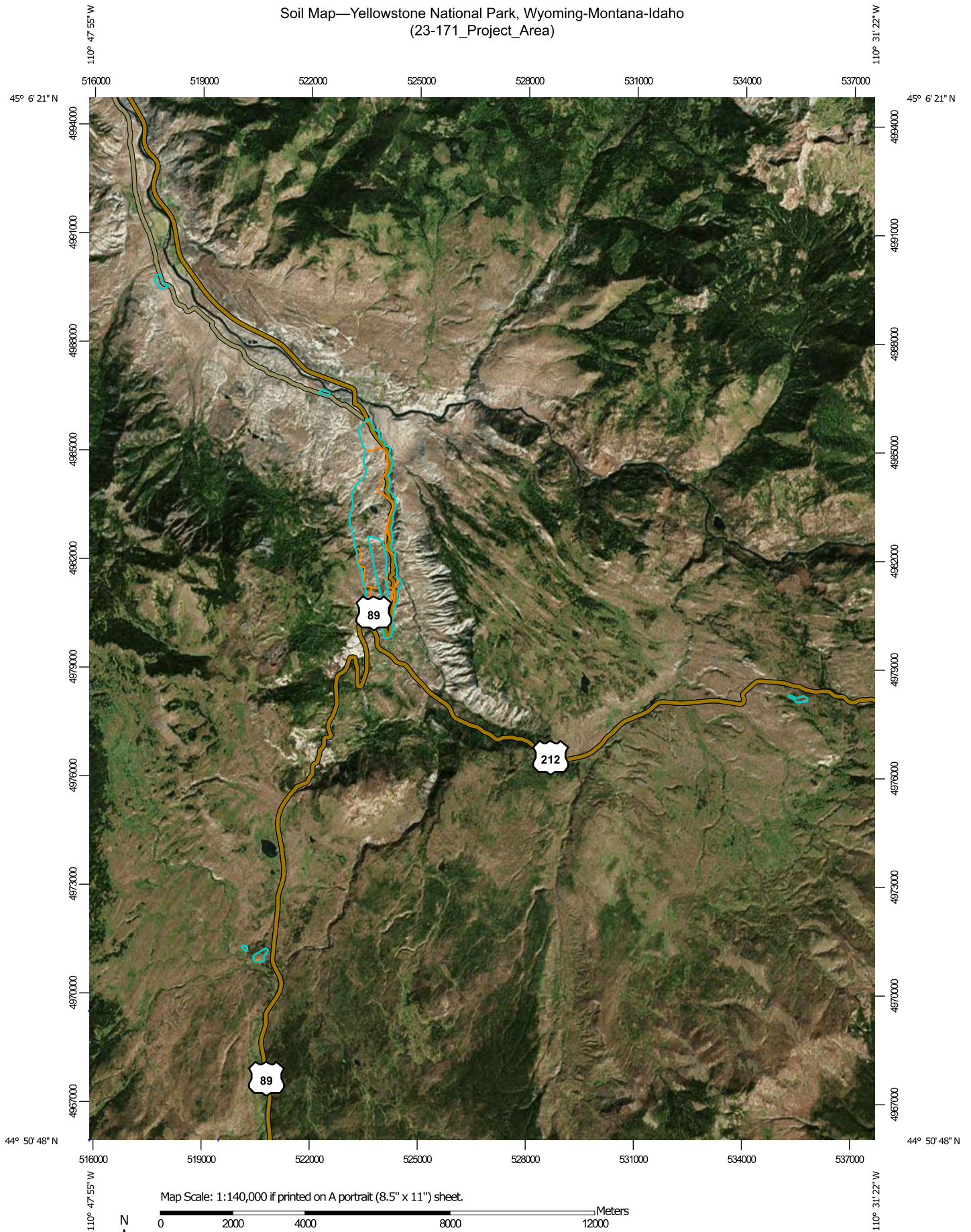
[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: None observed.			

Appendix D Soils Map

Soil Map—Yellowstone National Park, Wyoming-Montana-Idaho (23-171_Project_Area)



Map Scale: 1:140,000 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

9/7/2023
Page 1 of 3

Soil Map—Yellowstone National Park, Wyoming-Montana-Idaho
(23-171_Project_Area)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:62,500.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yellowstone National Park, Wyoming-Montana-Idaho

Survey Area Data: Version 5, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
295F	Pesowyo-Beartooth-Sawbuck families, complex	10.6	0.9%
423Z	Arrowpeak, Midfork families and Lithic Udorthents soils	85.2	7.3%
1267	Como-Ledgefork families-Typic Cryaquepts, complex	0.7	0.1%
1721F	Haugan-Swiftcreek-Bitton families, complex	163.3	13.9%
1795	Kegsprings-Agneston-Quietus families, complex	1.0	0.1%
2216	Shook, Sawpit and Kegsprings families, soils	22.9	2.0%
2751	Midfork, Telcher families, soils and Rock outcrop	0.4	0.0%
2924	Hobacker-Libeg-Greyback families, complex	42.7	3.6%
2996	Shook-Badwater-Passcreek families, complex	67.3	5.7%
5217F	Pesowyo family-Rock outcrop-Kadygulch family, complex	84.1	7.2%
7172F	Lepner-Gladlow-Beartooth families, complex	692.6	59.1%
8261	Kangas, Ledgefork families and Typic Cryaquolls, soils	1.9	0.2%
Totals for Area of Interest		1,172.7	100.0%

Appendix E Montana Wetland Assessment Data Forms

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project Name: North Entrance -- Gardiner to Mammoth 2. MDT Project #: _____ Control #: _____

3. Evaluation Date: Mo. 8 Day 31 Yr. 23 4. Evaluator(s): Moneka Worah 5. Wetlands/Site #(s): Depressional wetlands

6. Wetland Location(s): i. Legal: T 9S N or S; R 8E E or W; S PB 43, 44, 53, 54 ; T _____ N or S; R _____ E or W; S _____ ;
 ii. Approx. Stationing or Mileposts: _____
 iii. Watershed: _____ Watershed Name, County: _____

7. a. Evaluating Agency: _____; 8. Wetland size: (total acres) _____ (visually estimated)
 b. Purpose of Evaluation: 2.185 (measured, e.g. by GPS [if applies])
 1. X Wetlands potentially affected by MDT project
 2. _____ Mitigation wetlands; pre-construction
 3. _____ Mitigation wetlands; post-construction
 4. _____ Other _____

9. Assessment area (AA): (acres, _____ (visually estimated)
 see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
LF	EM		PP	100

Abbreviations: (see manual for definitions)

HGM Classes: Riverine (R), Depressional (D), Slope (S), Mineral Soil Flats (MSF), Organic Soil Flats (OSF), Lacustrine Fringe (LF);

Cowardin Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO)

Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A)

Water Regimes: Permanent / Perennial (PP), Seasonal / Intermittent (SI), Temporary / Ephemeral (TE)

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
 (Circle one) Unknown Rare **Common** Abundant

12. General condition of AA:

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (ANVS) lists)

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

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

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

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: wetlands in small ponds in project area.

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	←NO	YES→	L
1 class, monoculture (1 species comprises ≥90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	_____
Secondary habitat (list species)	D	S	_____
Incidental habitat (list species)	D	S	Grizzly bear
No usable habitat	S		

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

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

Sources for documented use (e.g. observations, records, etc):

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	_____
Secondary habitat (list species)	D	S	Western toad, other species
Incidental habitat (list species)	D	S	_____
No usable habitat	S		

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: Functional Points and Rating	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use (e.g. observations, records, etc.):

14C. General Wildlife Habitat Rating:

i. **Evidence of overall wildlife use in the AA** (circle substantial, moderate, or low based on supporting evidence):

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

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

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

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

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

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

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

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

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

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

Comments:

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then circle **NA** here and proceed to 14E.)

Type of Fishery: Cold Water (CW)____ Warm Water (WW)____ Use the CW or WW guidelines in the user manual to complete the matrix

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see **Appendix E**) occur in fish habitat? **Y N** If yes, reduce score in i above by 0.1: _____

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? **Y N** If yes, add 0.1 to the adjusted score in i or **ii** above: _____

iii. Final Score and Rating: _____ **Comments:** _____

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Entrenchment ratio (ER) estimation – see User’s Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width)

Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.



Slightly Entrenched ER = >2.2			Moderately Entrenched ER = 1.41 – 2.2	Entrenched ER = 1.0 – 1.4		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type

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

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

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

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

Comments: _____

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14D.iii.)	General Wildlife Habitat Rating (14C.iii.)		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB):** Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** **N** If yes, add 0.1 to the score in ii above and adjust rating accordingly: _____

iv. Final Score and Rating: 0.7 **Comments:**

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

	Duration of saturation at AA Wetlands <u>FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM</u>			
<i>Criteria</i>	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	N/A			

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: (affords “bonus” points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (circle) **Y** **N** (if 'Yes' continue with the evaluation; if 'No' then circle **NA** here and proceed to the overall summary and rating page)

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

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

[illegible]

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): _____

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.1	1		
B. MT Natural Heritage Program Species Habitat	M	0.5	1		
C. General Wildlife Habitat	H	0.9	1		
D. General Fish Habitat	NA				
E. Flood Attenuation	NA				
F. Short and Long Term Surface Water Storage	M	0.7	1		
G. Sediment/Nutrient/Toxicant Removal	NA				
H. Sediment/Shoreline Stabilization	H	1	1		
I. Production Export/Food Chain Support	M	0.7	1		
J. Groundwater Discharge/Recharge	H	1	1		
K. Uniqueness	M	0.5	1		
L. Recreation/Education Potential (bonus points)	H	0.2	NA		
Totals:		5.6	8		
Percent of Possible Score			70 %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☒ Percent of possible score > 65% (round to nearest whole #).

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: (circle appropriate category based on the criteria outlined above) I **II** III IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project Name: North Entrance – Gardiner to Mammoth 2. MDT Project #: _____ Control #: _____

3. Evaluation Date: Mo. 8 Day 31 Yr. 23 4. Evaluator(s): Moneka Worah 5. Wetlands/Site #(s): Gardner River wetlands and Boiling River

6. Wetland Location(s): i. Legal: T 9S N or S; R 8E E or W; S PB 43, 54 ; T 58N N or S; R 114WE or W; S 19, 30 ;
 ii. Approx. Stationing or Mileposts: _____
 iii. Watershed: _____ Watershed Name, County: Upper Yellowstone, Park County

7. a. Evaluating Agency: NPS ; 8. Wetland size: (total acres) _____ (visually estimated)
 b. Purpose of Evaluation: 7.93 (measured, e.g. by GPS [if applies])
 1. X Wetlands potentially affected by MDT project
 2. _____ Mitigation wetlands; pre-construction
 3. _____ Mitigation wetlands; post-construction
 4. _____ Other _____

9. Assessment area (AA): (acres, _____ (visually estimated)
 see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	PEM		PP	100

Abbreviations: (see manual for definitions)

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

Cowardin Classes: Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

Modifiers: Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

Water Regimes: Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
 (Circle one) Unknown Rare Common **Abundant**

12. General condition of AA:

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

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

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

Old road adjacent to some wetlands, but mainly has low disturbance in and around wetlands.

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

Bindweed, knapweed, bull thistle

iii. Provide brief descriptive summary of AA and surrounding land use/habitat:

Wetlands abutting Gardner River in Yellowstone National Park

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	←NO	YES→	L
1 class, monoculture (1 species comprises ≥90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	
Secondary habitat (list species)	D	S	
Incidental habitat (list species)	D	S	Grizzly bear
No usable habitat	S		

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

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

Sources for documented use (e.g. observations, records, etc.):

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	Yellowstone cutthroat trout, Western toad
Secondary habitat (list species)	D	S	
Incidental habitat (list species)	D	S	
No usable habitat	S		

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: Functional Points and Rating	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use (e.g. observations, records, etc.):

14C. General Wildlife Habitat Rating:

i. **Evidence of overall wildlife use in the AA** (circle substantial, moderate, or low based on supporting evidence):

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

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

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

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

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

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

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

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

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

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

Comments:

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then circle **NA** here and proceed to 14E.)

Type of Fishery: **Cold Water (CW)** Warm Water (WW) Use the CW or WW guidelines in the user manual to complete the matrix

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see **Appendix E**) occur in fish habitat? **Y N** If yes, reduce score in i above by 0.1: _____

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? **Y N** If yes, add 0.1 to the adjusted score in i or **ii** above: _____

iii. Final Score and Rating: 0.7M **Comments:**

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Entrenchment ratio (ER) estimation – see User’s Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width)

Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.



Slightly Entrenched ER = >2.2			Moderately Entrenched ER = 1.41 – 2.2		Entrenched ER = 1.0 – 1.4		
C stream type	D stream type	E stream type	B stream type		A stream type	F stream type	G stream type

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

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

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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14D.iii.)	General Wildlife Habitat Rating (14C.iii.)		
	E/H	M	L
E/H	H	H	M
M	.H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB):** Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** **N** If yes, add 0.1 to the score in ii above and adjust rating accordingly: 0.9H

iv. Final Score and Rating: 0.9H **Comments:**

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

	Duration of saturation at AA Wetlands <u>FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM</u>			
<i>Criteria</i>	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	N/A			

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: (affords “bonus” points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (circle) **Y** **N** (if 'Yes' continue with the evaluation; if 'No' then circle **NA** here and proceed to the overall summary and rating page)

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

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

[illegible]

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): _____

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.1	1		
B. MT Natural Heritage Program Species Habitat	M	0.7	1		
C. General Wildlife Habitat	H	0.9	1		
D. General Fish Habitat	M	0.7	1		
E. Flood Attenuation	M	0.4	1		
F. Short and Long Term Surface Water Storage	L	0.3	1		
G. Sediment/Nutrient/Toxicant Removal	H	0.9	1		
H. Sediment/Shoreline Stabilization	H	0.1	1		
I. Production Export/Food Chain Support	H	0.9	1		
J. Groundwater Discharge/Recharge	M	0.7	1		
K. Uniqueness	L	0.3	1		
L. Recreation/Education Potential (bonus points)	H	0.2	NA		
Totals:		7.1	11		
Percent of Possible Score			64.5 %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: (circle appropriate category based on the criteria outlined above) I **II** III IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project Name: North Entrance – Gardiner to Mammoth 2. MDT Project #: _____ Control #: _____

3. Evaluation Date: Mo. 8 Day 31 Yr. 23 4. Evaluator(s): Moneka Worah 5. Wetlands/Site #(s): Seep supported wetlands

6. Wetland Location(s): i. Legal: T 9S N or S; R 8E E or W; S PB 44, 53 ; T _____ N or S; R _____ E or W; S _____ ;
 ii. Approx. Stationing or Mileposts: _____
 iii. Watershed: _____ Watershed Name, County: Upper Yellowstone, Park County

7. a. Evaluating Agency: NPS ; 8. Wetland size: (total acres) _____ (visually estimated)
 b. Purpose of Evaluation: 3.892 (measured, e.g. by GPS [if applies])
 1. X Wetlands potentially affected by MDT project
 2. _____ Mitigation wetlands; pre-construction
 3. _____ Mitigation wetlands; post-construction
 4. _____ Other _____

9. Assessment area (AA): (acres, _____ (visually estimated)
 see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Slope	PEM		SI	75
Slope	SS		SI	25

Abbreviations: (see manual for definitions)

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

Cowardin Classes: Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

Modifiers: Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

Water Regimes: Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
 (Circle one) Unknown Rare Common Abundant

12. General condition of AA:

i. **Disturbance:** (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

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

Comments: (types of disturbance, intensity, season, etc.): road adjacent to wetlands

ii. **Prominent noxious, aquatic nuisance, & other exotic vegetation species:** dalmatian toadflax

iii. **Provide brief descriptive summary of AA and surrounding land use/habitat:** wetlands supported by seeps in project area.

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	<u>M</u>	NA	NA	NA
1 class, but not a monoculture	M	←NO	YES→	L
1 class, monoculture (1 species comprises ≥90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	_____
Secondary habitat (list species)	D	S	_____
Incidental habitat (list species)	D	S	Grizzly bear
No usable habitat	S		

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

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

Sources for documented use (e.g. observations, records, etc):

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	_____
Secondary habitat (list species)	D	S	Western toad, other species
Incidental habitat (list species)	D	S	_____
No usable habitat	S		

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: Functional Points and Rating	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use (e.g. observations, records, etc.):

14C. General Wildlife Habitat Rating:

i. **Evidence of overall wildlife use in the AA** (circle substantial, moderate, or low based on supporting evidence):

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

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

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

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

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

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

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

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

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

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

Comments:

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then circle **NA** here and proceed to 14E.)

Type of Fishery: Cold Water (CW)____ Warm Water (WW)____ Use the CW or WW guidelines in the user manual to complete the matrix

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see **Appendix E**) occur in fish habitat? **Y N** If yes, reduce score in i above by 0.1: _____

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? **Y N** If yes, add 0.1 to the adjusted score in i or **ii** above: _____

iii. Final Score and Rating: _____ **Comments:** _____

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Entrenchment ratio (ER) estimation – see User’s Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width)

Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.



Slightly Entrenched ER = >2.2			Moderately Entrenched ER = 1.41 – 2.2	Entrenched ER = 1.0 – 1.4		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type

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

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

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

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

Comments: _____

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14D.iii.)	General Wildlife Habitat Rating (14C.iii.)		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB):** Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** **N** If yes, add 0.1 to the score in ii above and adjust rating accordingly: _____

iv. Final Score and Rating: 0.7M **Comments:**

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

	Duration of saturation at AA Wetlands <u>FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM</u>			
<i>Criteria</i>	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	N/A			

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: (affords “bonus” points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (circle) **Y** **N** (if 'Yes' continue with the evaluation; if 'No' then circle **NA** here and proceed to the overall summary and rating page)

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

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

[illegible]

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): _____

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.1	1		
B. MT Natural Heritage Program Species Habitat	M	0.5	1		
C. General Wildlife Habitat	M	0.7	1		
D. General Fish Habitat	NA				
E. Flood Attenuation	NA				
F. Short and Long Term Surface Water Storage	L	0.2	1		
G. Sediment/Nutrient/Toxicant Removal	NA				
H. Sediment/Shoreline Stabilization	NA				
I. Production Export/Food Chain Support	M	0.7	1		
J. Groundwater Discharge/Recharge	M	0.7	1		
K. Uniqueness	M	0.5	1		
L. Recreation/Education Potential (bonus points)	H	0.2	NA		
Totals:		3.6	7		
Percent of Possible Score			51 %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

- ___ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ___ Score of 1 functional point for Uniqueness; **or**
- ___ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ___ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ___ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ___ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ___ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ___ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ___ Score of .9 functional point for Uniqueness; **or**
- ___ Percent of possible score > 65% (round to nearest whole #).

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ___ "Low" rating for Uniqueness; **and**
- ___ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ___ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: (circle appropriate category based on the criteria outlined above) I II **III** IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. **Project Name:** North Entrance – Gardiner to Mammoth 2. **MDT Project #:** _____ **Control #:** _____

3. **Evaluation Date:** Mo. 8 Day 31 Yr. 23 4. **Evaluator(s):** Moneka Worah 5. **Wetlands/Site #(s):** Slide Lake and Unnamed Lake

6. **Wetland Location(s):** i. **Legal:** T 9S N or S; R 8E E or W; S PB 53, 54 ; T _____ N or S; R _____ E or W; S _____ ;
 ii. **Approx. Stationing or Mileposts:** _____
 iii. **Watershed:** _____ **Watershed Name, County:** Upper Yellowstone, Park County

7. a. **Evaluating Agency:** NPS ; 8. **Wetland size:** (total acres) _____ (visually estimated)
 b. **Purpose of Evaluation:** 1.842 (measured, e.g. by GPS [if applies])
 1. X Wetlands potentially affected by MDT project
 2. _____ Mitigation wetlands; pre-construction
 3. _____ Mitigation wetlands; post-construction
 4. _____ Other _____

9. **Assessment area (AA):** (acres, _____ (visually estimated)
 see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	PEM		PP	100

Abbreviations: (see manual for definitions)

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

Cowardin Classes: Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

Modifiers: Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

Water Regimes: Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

11. **Estimated relative abundance:** (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

(Circle one) Unknown Rare Common **Abundant**

12. General condition of AA:

i. **Disturbance:** (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

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

Comments: (types of disturbance, intensity, season, etc.): Road adjacent to wetland at unnamed lake

ii. **Prominent noxious, aquatic nuisance, & other exotic vegetation species:** Dalmation toadflax

iii. **Provide brief descriptive summary of AA and surrounding land use/habitat:** Wetlands abutting Slide Lake and unnamed lake

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	←NO	YES→	L
1 class, monoculture (1 species comprises ≥90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	
Secondary habitat (list species)	D	S	
Incidental habitat (list species)	D	S	Grizzly bear
No usable habitat	S		

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

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

Sources for documented use (e.g. observations, records, etc):

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	
Secondary habitat (list species)	D	S	Western toad, other species
Incidental habitat (list species)	D	S	
No usable habitat	S		

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: Functional Points and Rating	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use (e.g. observations, records, etc.):

14C. General Wildlife Habitat Rating:

i. **Evidence of overall wildlife use in the AA** (circle substantial, moderate, or low based on supporting evidence):

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

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

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

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

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

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

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

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

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

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

Comments:

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then circle **NA** here and proceed to 14E.)

Type of Fishery: Cold Water (CW)____ Warm Water (WW)____ Use the CW or WW guidelines in the user manual to complete the matrix

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see **Appendix E**) occur in fish habitat? **Y N** If yes, reduce score in i above by 0.1: _____

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? **Y N** If yes, add 0.1 to the adjusted score in i or **ii** above: _____

iii. Final Score and Rating: _____ **Comments:**

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Entrenchment ratio (ER) estimation – see User’s Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width)

Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.



Slightly Entrenched ER = >2.2			Moderately Entrenched ER = 1.41 – 2.2	Entrenched ER = 1.0 – 1.4		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type

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

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

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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14D.iii.)	General Wildlife Habitat Rating (14C.iii.)		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB):** Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** **N** If yes, add 0.1 to the score in ii above and adjust rating accordingly: _____

iv. Final Score and Rating: 0.8H **Comments:**

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

	Duration of saturation at AA Wetlands <u>FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM</u>			
<i>Criteria</i>	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	N/A			

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: (affords “bonus” points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (circle) **Y** **N** (if 'Yes' continue with the evaluation; if 'No' then circle **NA** here and proceed to the overall summary and rating page)

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

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating)

<i>Known or Potential Recreation or Education Area</i>	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

[illegible]

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): _____

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.1	1		
B. MT Natural Heritage Program Species Habitat	M	0.5	1		
C. General Wildlife Habitat	M	0.7	1		
D. General Fish Habitat	NA				
E. Flood Attenuation	NA				
F. Short and Long Term Surface Water Storage	H	0.8	1		
G. Sediment/Nutrient/Toxicant Removal	NA				
H. Sediment/Shoreline Stabilization	H	1	1		
I. Production Export/Food Chain Support	H	0.8	1		
J. Groundwater Discharge/Recharge	H	1	1		
K. Uniqueness	L	0.3	1		
L. Recreation/Education Potential (bonus points)	H	0.2	NA		
Totals:		5.4	8		
Percent of Possible Score			67.5 %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☒ Percent of possible score > 65% (round to nearest whole #).

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: (circle appropriate category based on the criteria outlined above) I **II** III IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project Name: North Entrance – Gardiner to Mammoth 2. MDT Project #: YELL 326069B Control #: _____

3. Evaluation Date: Mo. 8 Day 31 Yr. 23 4. Evaluator(s): Moneka Worah 5. Wetlands/Site #(s): Slide Lake Tributary

6. Wetland Location(s): i. Legal: T 9S N or S; R 8E E or W; S PB 53, 54 ; T N or S; R E or W; S ;
 ii. Approx. Stationing or Mileposts: _____
 iii. Watershed: _____ Watershed Name, County: Upper Yellowstone, Park County

7. a. Evaluating Agency: NPS ;
 b. Purpose of Evaluation:
 1. ☒ Wetlands potentially affected by MDT project
 2. ☐ Mitigation wetlands; pre-construction
 3. ☐ Mitigation wetlands; post-construction
 4. ☐ Other _____

8. Wetland size: (total acres) _____ (visually estimated)
 0.966 (measured, e.g. by GPS [if applies])

9. Assessment area (AA): (acres, _____ (visually estimated)
 see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Slope	PEM		PP	20
Riverine	PEM		PP	65
Riverine	SS		PP	15

Abbreviations: (see manual for definitions)

HGM Classes: Riverine (R), Depressional (D), Slope (S), Mineral Soil Flats (MSF), Organic Soil Flats (OSF), Lacustrine Fringe (LF);

Cowardin Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO)

Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A)

Water Regimes: Permanent / Perennial (PP), Seasonal / Intermittent (SI), Temporary / Ephemeral (TE)

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
 (Circle one) Unknown Rare **Common** Abundant

12. General condition of AA:

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (ANVS) lists)

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

Comments: (types of disturbance, intensity, season, etc.): Road adjacent to wetlands

ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species: dalmation toadflax

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: wetlands upstream and downstream

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	←NO	YES→	L
1 class, monoculture (1 species comprises ≥90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	
Secondary habitat (list species)	D	S	
Incidental habitat (list species)	D	S	Grizzly bear
No usable habitat	S		

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

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

Sources for documented use (e.g. observations, records, etc):

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	
Secondary habitat (list species)	D	S	toad, other species
Incidental habitat (list species)	D	S	
No usable habitat	S		

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: Functional Points and Rating	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use (e.g. observations, records, etc.):

14C. General Wildlife Habitat Rating:

i. **Evidence of overall wildlife use in the AA** (circle substantial, moderate, or low based on supporting evidence):

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

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

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

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

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

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

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

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

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

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

Comments:

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then circle **NA** here and proceed to 14E.)

Type of Fishery: Cold Water (CW)____ Warm Water (WW)____ Use the CW or WW guidelines in the user manual to complete the matrix

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see **Appendix E**) occur in fish habitat? **Y N** If yes, reduce score in i above by 0.1: _____

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? **Y N** If yes, add 0.1 to the adjusted score in i or **ii**a above: _____

iii. Final Score and Rating: _____ **Comments:** _____

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Entrenchment ratio (ER) estimation – see User’s Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width)

Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.



Slightly Entrenched ER = >2.2			Moderately Entrenched ER = 1.41 – 2.2	Entrenched ER = 1.0 – 1.4		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type

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

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

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

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

Comments: _____

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14D.iii.)	General Wildlife Habitat Rating (14C.iii.)		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB):** Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** **N** If yes, add 0.1 to the score in ii above and adjust rating accordingly: _____

iv. Final Score and Rating: 0.7M **Comments:**

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

	Duration of saturation at AA Wetlands <u>FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM</u>			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	N/A			

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: (affords “bonus” points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (circle) **Y** **N** (if 'Yes' continue with the evaluation; if 'No' then circle **NA** here and proceed to the overall summary and rating page)

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

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

[illegible]

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): _____

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.1	1		
B. MT Natural Heritage Program Species Habitat	M	0.5	1		
C. General Wildlife Habitat	M	0.7	1		
D. General Fish Habitat	NA				
E. Flood Attenuation	M	0.5	1		
F. Short and Long Term Surface Water Storage	L	0.2	1		
G. Sediment/Nutrient/Toxicant Removal	NA				
H. Sediment/Shoreline Stabilization	H	1	1		
I. Production Export/Food Chain Support	M	0.7	1		
J. Groundwater Discharge/Recharge	H	1	1		
K. Uniqueness	M	0.5	1		
L. Recreation/Education Potential (bonus points)	H	0.2	NA		
Totals:		5.4	9		
Percent of Possible Score			60 %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

- ___ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ___ Score of 1 functional point for Uniqueness; **or**
- ___ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ___ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ___ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ___ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ___ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ___ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ___ Score of .9 functional point for Uniqueness; **or**
- ___ Percent of possible score > 65% (round to nearest whole #).

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ___ "Low" rating for Uniqueness; **and**
- ___ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ___ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: (circle appropriate category based on the criteria outlined above) I II **III** IV

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ATTACHMENT B CONCEPTUAL RESTORATION PLAN

Conceptual Restoration Plan

Date:	December 13, 2024	Jacobs
Project name:	Mammoth to Gardiner Permanent Road Project	717 17th Street
Project no:	MT ERFO NP YELL 2022-1(2)	Suite 2750
Attention:	Nate Jones and Melissa Hogan, WFLHD	Denver, CO 80202
Prepared by:	Rachel Newton and Diane Yates, Jacobs	United States
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1. Introduction

This memorandum describes the conceptual design approach for potential restoration sites to compensate for permanent wetland impacts resulting from the Mammoth to Gardiner Road project (project) (MT ERFO NP YELL 2022-1[2]). The 500-year flood event of June 13, 2022, destroyed infrastructure in the northern portion of the park including several sections of the North Entrance Road between Mammoth Hot Springs and Gardiner, Montana (NPS 2024a). The road is open year-round and serves as the only winter vehicle access in and out of the park. After temporarily closing to regular visitor traffic on June 13, 2022, a temporary road between Gardiner and Mammoth Hot Springs opened to the public on October 30, 2022. This project would construct a new permanent North Entrance Road in Yellowstone National Park (YNP). Goals for the new road include providing year-round access between Gardiner and Mammoth, natural hazard resiliency, and the protection of natural and cultural resources.

The design concepts presented herein serve as the first steps of a collaborative design process to restore and enhance wetland and stream functions at select locations near YNP's North Entrance and are intended to support the development of a Wetland Statement of Findings. These design concepts were developed in compliance with the National Park Service's (NPS's) goal for "no net loss of wetlands" as found in the NPS Director's Order #77-1 (D.O. #77-1). As recommended in D.O. #77-1, "Highest priority should be placed on removing such damaging facilities, structures, or activities and restoring pre-existing wetland habitats and processes. Where removing such facilities or activities is not practicable, the NPS should seek ways to minimize and, to the extent possible, reverse the adverse impacts" (NPS 2016). The sites proposed for restoration have been degraded by human activities, primarily by historic road construction activities. The goal for all restoration sites is to restore wetland ecological processes that were functioning prior to disturbance, to the extent practicable.

1.1 Wetland Restoration and Enhancement

In compliance with the Clean Water Act and D.O. #77-1 (NPS 2016), compensatory mitigation is required for permanent impacts to wetlands and other waters. Within the NPS, compensation refers primarily to restoring natural wetland functions in degraded or former natural wetland habitats on NPS-managed lands. Wetlands cannot be created where they did not previously exist. For the purposes of this memorandum, wetland mitigation refers to two different approaches: restoration and enhancement. In keeping with D.O. #77-1, wetland restoration occurs within degraded or former natural wetland habitats on NPS lands.

Wetland enhancement refers to a modification to hydrologic conditions, vegetation communities, and/or other habitat components of an existing wetland in favor of a specific wetland function or value (NRCS 2007). The wetland functions and values considered in the development of this conceptual mitigation plan were taken from the Montana Wetland Assessment Method (MWAM) (Berglund and McEldowney 2008). Functions are self-sustaining properties of a wetland ecosystem related to ecological significance and include habitat for federally and state-listed threatened and endangered species, general fish and

wildlife habitat, flood attenuation, and surface water storage. Values are benefits derived from functions and are based on human judgment of the worth or importance of those functions. Values evaluated by MWAM include uniqueness and recreation/education potential.

2. Proposed Compensation

Potential restoration sites were investigated during field surveys on August 6 through 9, 2024, and included the alignment options for the permanent North Entrance Road and three stream locations along Old Yellowstone Trail South. Survey results and potential restoration sites were presented to YNP staff on September 19, 2024. Three sites were selected for further evaluation: Landslide Creek cattail marsh, Old Gardiner Road, and Gardner River Canyon (Figure 1).

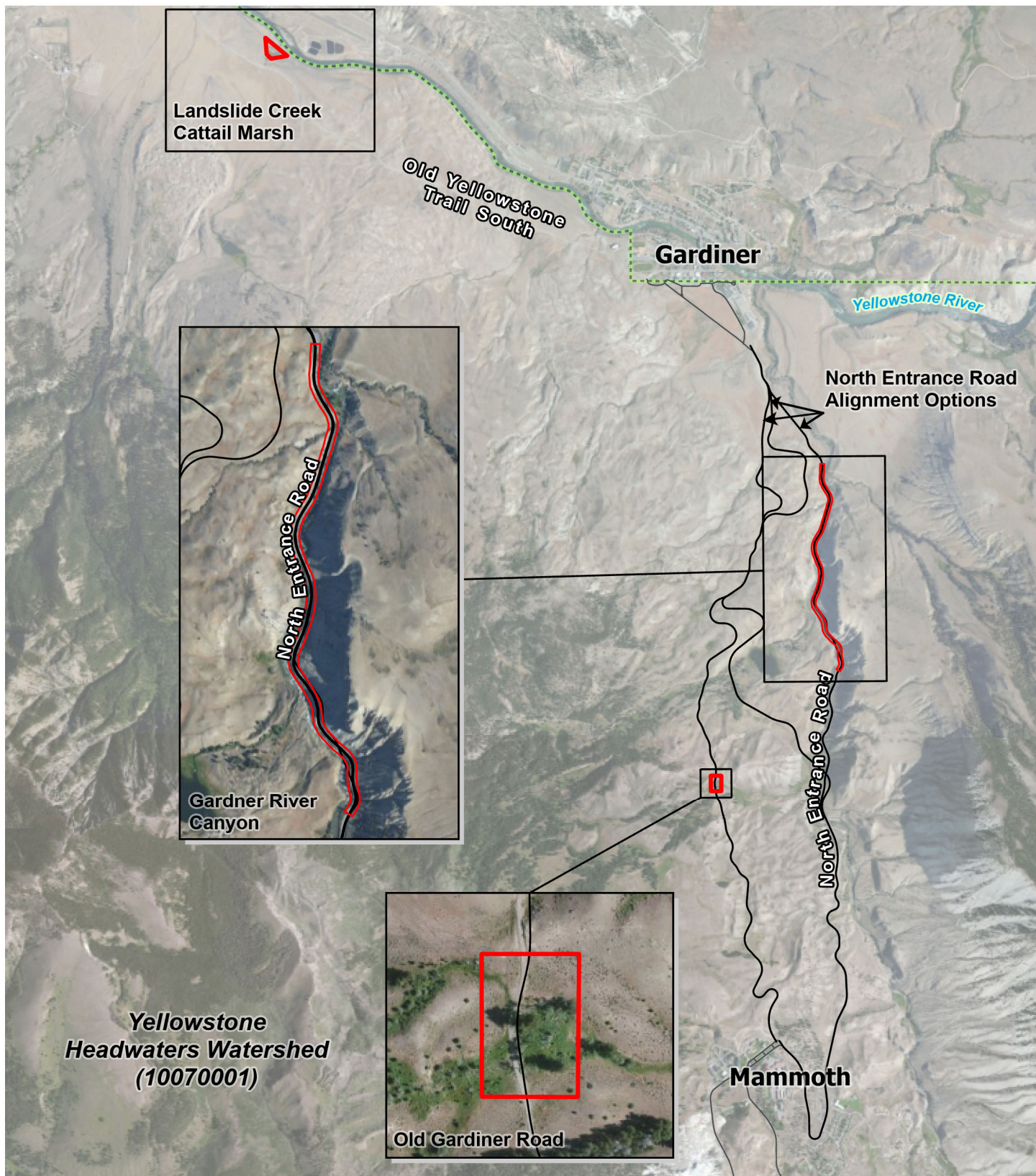
As shown in Table 1, the conceptual mitigation presented in this memorandum identified up to 31.83 acres of mitigation with a preliminary estimate of up to 16.42 acres in potential mitigation credit. These values present a best-case scenario and assume each restoration activity qualifies for advance mitigation credits. Ratios presented in the table are based on previous project experience and permit verifications within YNP and location and type of mitigation. All acreages and ratios are considered preliminary and subject to U.S. Army Corps of Engineers (USACE) approval. Potential mitigation acreage may be adjusted from the values reported in Table 1, pending further field data collection and analysis and design progression. Additional opportunities may develop as design progresses on the selected North Entrance Road alignment option.

Table 1. Summary of Conceptual Restoration Sites and Potential Mitigation Acreage

Restoration Site Name	Restoration Type	Potential Restoration Acreage	Ratio	Net Credit Acres
Landslide Creek Cattail Marsh	Enhancement	1.44	2:1	0.72
Old Gardiner Road	Enhancement	0.10	2:1	0.05
Gardner River Canyon	Enhancement	29.28	2:1	14.64
Gardner River Canyon	Restoration	1.01	1:1	1.01
Total		31.83	N/A	16.42

The conceptual design presented in this memorandum was developed based on aquatic resources delineations in 2023 and 2024 (ERO 2023; Jacobs 2024), review of light detection and ranging (LiDAR) data, and desktop review of historical aerials and topographic mapping. Existing site conditions, proposed restoration and enhancement activities, and recommendations for additional data collection are discussed in the following sections.

Typical design details from the Yellowstone River Bridge Project are in Attachment 1. A preliminary list of recommended plant species is included in Attachment 2. A list of culvert design best management practices is included in Attachment 3. Mark-ups to 30 percent conceptual design drawings for Gardner River Canyon are presented in Attachment 4.



Legend

- Proposed Restoration Site
- Yellowstone National Park
- Major Road

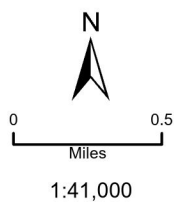


Figure 1
Proposed Restoration Sites
 Conceptual Restoration Plan
 Mammoth to Gardiner Road
 MT ERFO NP YELL 2022-1(2)
 Yellowstone National Park

3. Conceptual Design

The following subsections describe the conceptual mitigation design for each proposed restoration site. Details drawings from the Yellowstone River Bridge Project demonstrating these concepts are included in Attachment 1. The following activities are common to all mitigation sites and share the intention of minimizing adverse impacts to natural vegetation, soils, and waterways adjacent to mitigation sites:

- Prior to starting construction activities, mark limits of construction, access routes, and storage locations for equipment and materials with stakes. Trips on access routes located off the main road corridor will be limited.
- Use equipment and construction methods that will minimize compaction of upland vegetation and soils on access roads, topsoil stockpiles, and equipment/material storage locations.
- Mulch disturbed slopes greater than 10 percent with shredded native bark. Top access routes with mulch and seed after construction activities are completed.
- Through coordination and concurrence with a YNP botanist, re-establish native vegetation with plant materials sourced from within YNP to the extent practicable (onsite/neighboring locations) or other approved sources.
- Control weeds and protect new planting areas from browsing with fencing for a minimum of 5 years.
- Monitor mitigation sites yearly for at least 5 years. Identify and implement additional restoration work if goals are not met.

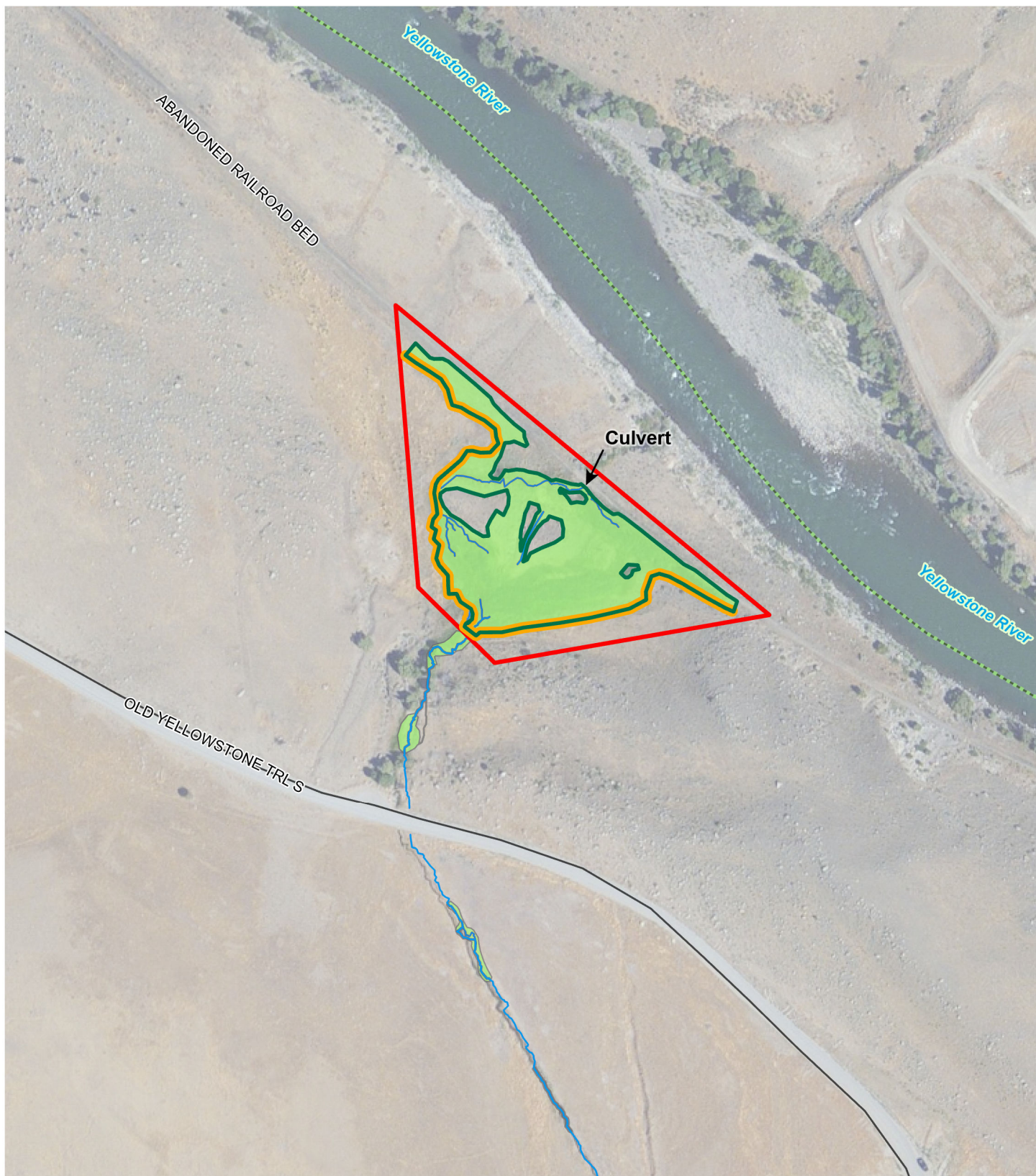
3.1 Landslide Creek Cattail Marsh

3.1.1 Existing Conditions

The Landslide Creek cattail marsh restoration site occupies a small alluvial fan on a terrace above the Yellowstone River (Figure 2). Prior to human intervention, flow from Landslide Creek was unimpeded on its way to the river. Construction of the Northern Pacific Railway in 1903 disturbed natural patterns (Kraft 1999); the railroad embankment acts as an earthen dam, and stream flow is restricted through a narrow metal culvert. The railway was abandoned in 1948 and now serves as a bike trail (NPS 2024b).

The marsh receives hydrologic inputs from the perennial Landslide Creek and groundwater seeps. Surface water, although shallow, is likely present throughout the year. Concentrated flow paths were variable and discontinuous. During the 2024 delineation, the main stem of Landslide Creek flowed on the western boundary of the marsh, with side channels scattered throughout (Jacobs 2024). Hydrologic conditions on site are variable, likely because of poorly sorted landslide material (Williams, pers. comm. 2024). A review of historical aerial imagery indicates the marsh has expanded since the early 2000s. Furthermore, the small upland patches shown in Figure 2 were previously connected. These islands were dominated by upland vegetation, including rubber rabbitbrush (*Ericameria nauseosa*, upland [UPL]), pricklypear cactus (*Opuntia polyacantha*, UPL), and Sandberg's bluegrass (*Poa secunda*, facultative upland [FACU]) (Photos 1 and 2).

Vegetation within the marsh is dominated by broad-leaved cattail (*Typha latifolia*, obligate [OBL]), with two smaller concentrations of water sedge (*Carex aquatilis*, OBL) and hardstem bulrush (*Schoenoplectus acutus*, OBL). Other graminoids present include Baltic rush (*Juncus balticus*, facultative wetland [FACW]), meadow barley (*Hordeum brachyantherum*, FACW) and Nebraska sedge (*Carex nebrascensis*, OBL). Forbs are more common along the wetland margins and include field mint (*Mentha arvensis*, FACW) and hairy evening-primrose (*Oenothera villosa* var. *strigosa*, facultative [FAC]). Investigation of the soil profile indicated silt loam.



Legend

- Proposed Restoration Site
- Yellowstone National Park
- Major Road

Delineated Features

- Wetlands
- Waters

Proposed Restoration

- Wetland Enhancement
- Riparian buffer

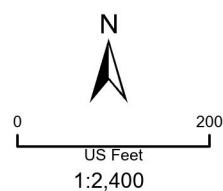


Figure 2
Landslide Creek Cattail Marsh
 Conceptual Restoration Plan
 Mammoth to Gardiner Road
 MT ERFO NP YELL 2022-1(2)
Yellowstone National Park



Photo 1. View to the southeast of an upland island in the middle of the Landslide Creek cattail marsh.



Photo 2. View to the northwest of the Landslide Creek cattail marsh and the abandoned railroad bed (red line).

Wildlife usage of the marsh is high, and ranges from invertebrates to ungulates. Red-winged blackbirds (*Agelaius phoeniceus*), Wilson's snipe (*Gallinago delicata*), unidentified small rodents, and a common garter snake (*Thamnophis sirtalis*) were observed during the 2024 delineation. Ungulate usage is very high; signs of bison (*Bison bison*), mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus canadensis nelsoni*), and pronghorn (*Antilocapra americana*) were present in the vicinity.

The surrounding sagebrush steppe was subject to cattle and wildlife ranching until 1995 (NPS 2002) and is largely degraded. Upland vegetation is dominated by nonnative grasses, primarily crested wheatgrass (*Agropyron cristatum*, UPL). Native bunchgrasses are present but restricted; Sandberg's bluegrass is common on rocky microsites, and Great Basin wildrye (*Leymus cinereus*, FAC) is found along the wetland margins. Cover by woody species is low, but diversity is high: Wyoming big sagebrush (*Artemisia tridentata* ssp. *tridentata*, UPL), broom snakeweed (*Gutierrezia sarothrae*, UPL), winterfat (*Krascheninnikovia lanata*, UPL),

prickly rose (*Rosa acicularis*, FACU), skunkbush sumac (*Rhus trilobata*, UPL), and Rocky Mountain juniper (*Juniperus scopulorum*, UPL) are present. Forb cover is also low, and species diversity is limited; dominant species include Hood's phlox (*Phlox hoodii*, UPL) and pricklypear cactus. Moderate cover by Canada thistle (*Cirsium arvense*, FAC), a Montana state-listed Priority 2B noxious weed (MNHP 2024), was observed.

3.1.2 Proposed Restoration Action

Potential restoration activities at the Landslide Creek cattail marsh are limited. As stated in D.O. #77-1, NPS's priority is removing damaging facilities and structures, where possible, and minimizing impacts to existing wetlands. The primary damaging facilities to the marsh and Landslide Creek are the railroad embankment and culvert. Enhancing wildlife habitat functions of the marsh could be achieved by adding more physical structure, but these opportunities are limited. Creating areas of open water within the marsh would be unsustainable in the long-term because natural successional processes would result in the areas filling in. Open water would also likely increase the likelihood of wildlife-human interaction on the bike trail. Large areas of riparian plantings would require fencing to ensure success, and the amount of construction and maintenance required to fence off the entire marsh is cost-prohibitive relative to the potential functional lift. Refer to Attachment 2, Preliminary Plant List, for a list of suggested plants for this project.

However, smaller clumps of shrub plantings could be protected using t-posts and wire fencing spaced at sufficient distance from each other to deter grazing by large ungulates while allowing movement of smaller animals. Brush piles could also be constructed using native materials; plantings would be protected by the brush pile during the establishment phase (Attachment 1, Sheet N.19). Plantings would occur along the upslope margins to accommodate shifting wetland margins downslope and would include prickly rose, skunkbush sumac, serviceberry (*Amelanchier alnifolia*, FACU), and silverberry (*Elaeagnus commutata*, FAC) (Photo 3). Planting with these berry-producing shrubs would increase woody vegetation cover in the area while providing a food source for birds and small mammals. To minimize disturbance, plant materials and fencing would be installed using hand tools. Typical details for shrub plantings are in Attachment 1, Sheets N.16 and N.17). Spacing plantings within a 5-foot-wide buffer would create up to 0.25 acre of riparian buffer and potentially enhance up to 1.44 acres of the marsh. Noxious weeds, including Canada thistle, would also be treated. Additional data collection to better understand site conditions would include digging more soil test pits along the margins to identify preferred soil text and moisture locations for the plantings.



Photo 3. View to the west of the Landslide Creek cattail marsh. Shrub plantings could create up to 0.25 acre of habitat (yellow line) and enhance the cattail marsh.

Restoration activities at this marsh could also include replacing the existing culvert with a pedestrian bridge (Photo 4). This would increase hydrologic connectivity across the abandoned railroad bed while maintaining usage of the existing bike trail. This reach of Landslide Creek could be enhanced through the placement of post-assisted diffusion structures and riparian shrub plantings. The diffusion structures would slow flow and raise the existing groundwater levels. Shrub plantings would increase physical structure and improve sediment retention before reaching the Yellowstone River. This reach of Landslide Creek was not included in the 2024 delineation. If restoration activities proceed in this area, an aquatic resource delineation of Landslide Creek and the fringe wetlands would be required before potential credit acres could be quantified.



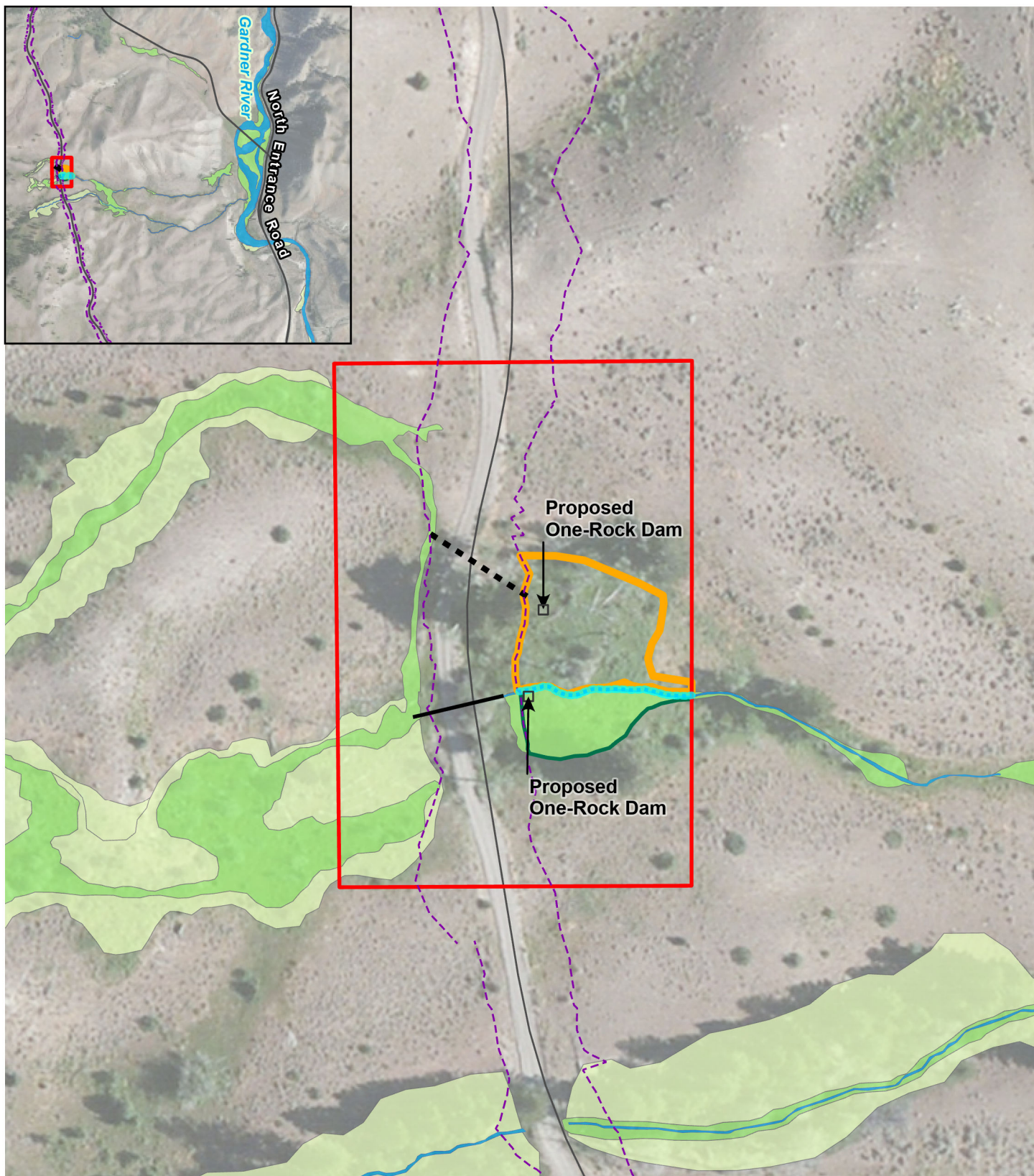
Photo 4. View to the north of Landslide Creek (blue line) flowing from the existing culvert towards the Yellowstone River. Proposed restoration activities would include replacing the culvert with a pedestrian bridge and enhancing the existing fringe wetlands with shrub plantings.

3.2 Old Gardiner Road

3.2.1 Existing Conditions

The proposed restoration site on the Old Gardiner Road alignment option presents an opportunity to redirect stream flow away from the existing roadbed while enhancing an existing stream channel and wetland (Figure 3). This alignment option would improve the existing Old Gardiner Road, which was constructed after the 2022 flood to serve as the temporary North Entrance Road connecting Mammoth to Gardiner (NPS 2024c).

The 2023 aquatic resource delineation identified wetland and riparian areas along two small streams upslope of the existing Old Gardiner Road (ERO 2023). The northwestern stream flows towards the road embankment then travels in a roadside ditch for approximately 160 feet before joining the southwestern stream. The southwestern stream flows through a 36-inch corrugated metal pipe (CMP) culvert and continues downslope to the Gardner River. Fringe wetlands are present along both streams. Hydrology appears to be driven primarily by perennial streamflow originating from springs upslope. Soils were not investigated in the immediate vicinity, but the 2023 delineation data indicated loam is present upslope. Wetland vegetation is relatively uniform on both sides of the road. Herbaceous vegetation consists of water sedge, common timothy (*Phleum pratense*, FAC), spreading bentgrass (*Agrostis stolonifera*, FAC) and field horsetail (*Equisetum arvense*, FAC) (Photo 5). Woody species, including water birch (*Betula occidentalis*, FACW), common snowberry (*Symphoricarpos albus*, FACU) and Bebb's willow (*Salix bebbiana*, FACW), form a sparse overstory on the eastern side of the road. Douglas-fir (*Pseudotsuga menziesii*, FACU) is also present.



Legend

- ▭ Proposed Restoration Site
- Existing Culvert
- - - Cut/Fill
- Old Gardiner Road
- Proposed One-Rock Dam

Delineated Features

- Riparian
- Wetlands
- Waters

Proposed Restoration

- Wetland Enhancement
- Riparian buffer
- Proposed Culvert
- ⋯ Stream Enhancement

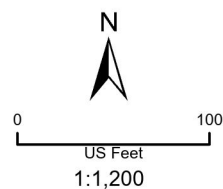


Figure 3
Old Gardiner Road
 Conceptual Restoration Plan
 Mammoth to Gardiner Road
 MT ERFO NP YELL 2022-1(2)
 Yellowstone National Park

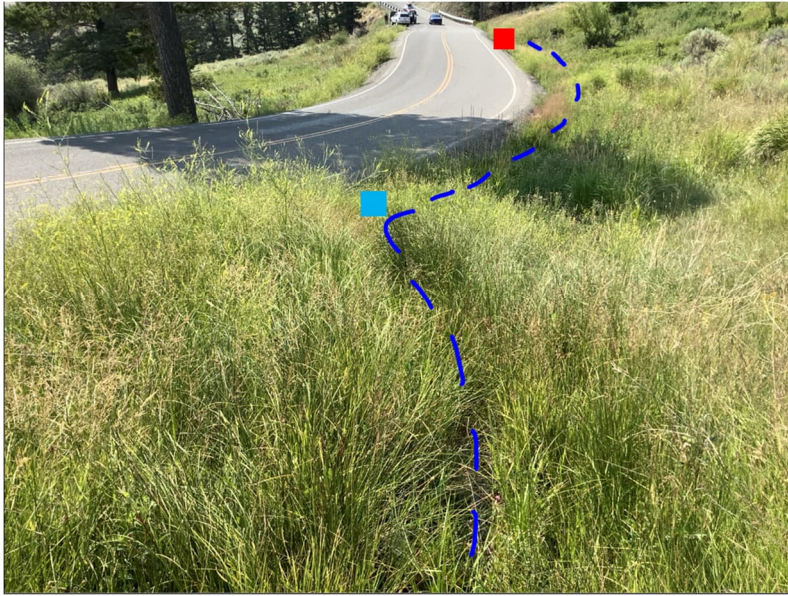


Photo 5. View to the south at the Old Gardiner Road restoration site. A small stream (dashed blue line) flows along the edge of the road embankment before joining another stream and flowing through the existing 36-inch CMP culvert (red square). Installing an additional culvert (aqua square) would divert flow under the road prism.

3.2.2 Proposed Restoration Action

Wetland and stream enhancement would occur through the installation of an additional CMP culvert where the northwestern stream hits the road embankment (Photo 5). Diverting flow under the road through a culvert would mimic natural topographical patterns while improving the integrity of the road embankment. A list of best management practices to consider when installing culverts is included in Attachment 3. Typical details for channel treatments are included in Attachment 3-1.

To further facilitate the establishment of a riparian buffer on the downstream end, a one-rock dam similar to a Zeedyk structure (Photo 6) would be constructed of native materials and installed at the proposed culvert outlet to slow water permeation into the soil.



Photo 6. Example of Zeedyk structure (Maestas et al. 2018).

This would spread out flow and reduce erosion potential while wetting a larger area. Additional one-rock dams could be installed at the culvert outlet for the southern stream. Riparian shrubs would be planted at the one-rock dams and between the toe of the adjacent hillslope, the road embankment, and the stream, creating up to 0.20 acre of riparian buffer. This buffer would improve sediment retention and removal, enhancing up to 0.10 acre of fringing palustrine emergent (PEM) wetland and <0.01 acre (129 linear feet) of stream channel. Shrub species would include Bebb's willow, common snowberry, black twinberry (*Lonicera involucrata*, FAC), water birch, and quaking aspen (*Populus tremuloides*, FACU). Typical details for shrub plantings are in Attachment 1, Sheets N.16 and N.17.

In addition to characterizing soils for a cross-section of the proposed riparian buffer, two-dimensional hydraulic modeling may be required to correctly site the proposed additional culvert. The use of piezometers to track seasonal fluctuations in groundwater is also recommended. Topographic survey likely exists from post-flood recovery operations.



Photo 7. View to the northeast (downslope) of the Old Gardiner Road restoration site. The photo shows the existing culvert outlet (red square), stream (blue line), and wetland (foreground).

3.3 Gardner River Canyon

3.3.1 Existing Conditions

The North Entrance Road connected Mammoth to Gardiner until the June 2022 flood, when several sections of the road were washed out (Photo 8). Other sections of the road and associated infrastructure remain in place but continue to deteriorate. Vegetation along the Gardner River consists of scattered shrubs and trees, including Rocky Mountain juniper, prickly rose, assorted willows (*Salix* spp.), and balsam poplar (*Populus balsamifera*, FAC). Cobbles and gravels dominate the soil profile.



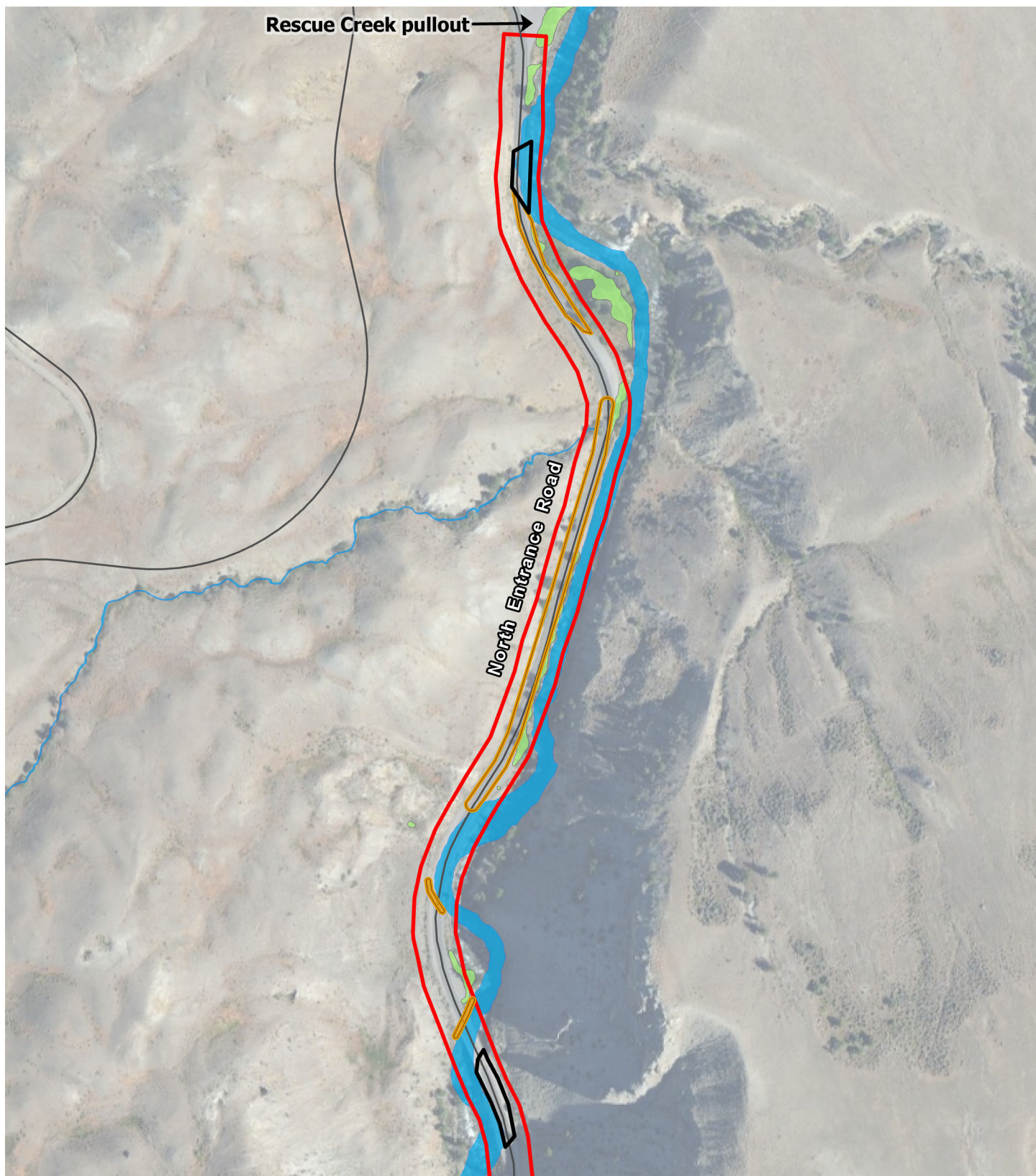
Photo 8. Overhead view of Gardner River Canyon post-2022 flood (source: NPS). Bank stabilization and riparian buffers (red circles) in select locations would enhance the Gardner River and fringe wetlands.

3.3.2 Proposed Restoration Action

Reclamation activities within Gardner River Canyon present opportunities to enhance up to 23.26 acres (17,733 linear feet) of the Gardner River and 6.02 acres of existing fringe wetlands delineated in 2023 (ERO 2023). Desktop review of 30 percent conceptual design plans for road reclamation identified several locations for restoration activities (Figures 4 and 5; Attachment 4). Based on this assessment, approximately 1.01 acres of floodplain could be restored simply by removing the existing road embankment so natural processes reshape the bed and bank. At select areas, bank stabilization would likely be required to prevent additional scour and sedimentation within the river (Photos 8 and 9). Three conceptual cross sections have been developed (Attachment 4, Sheet G.12); identification of appropriate places to apply these cross sections would be made following two-dimensional hydraulic modeling and additional site visits.



Photo 9. Overhead view of Gardner River Canyon (source: NPS). Bank stabilization (red circle) would maintain the integrity of remaining road elements converted to pedestrian trails.



Legend

- ▬ Proposed Restoration Site
- Road

Delineated Features

- Wetlands
- Waters

Proposed Restoration

- Floodplain Restoration
- Riparian Buffer

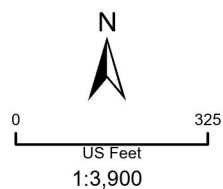
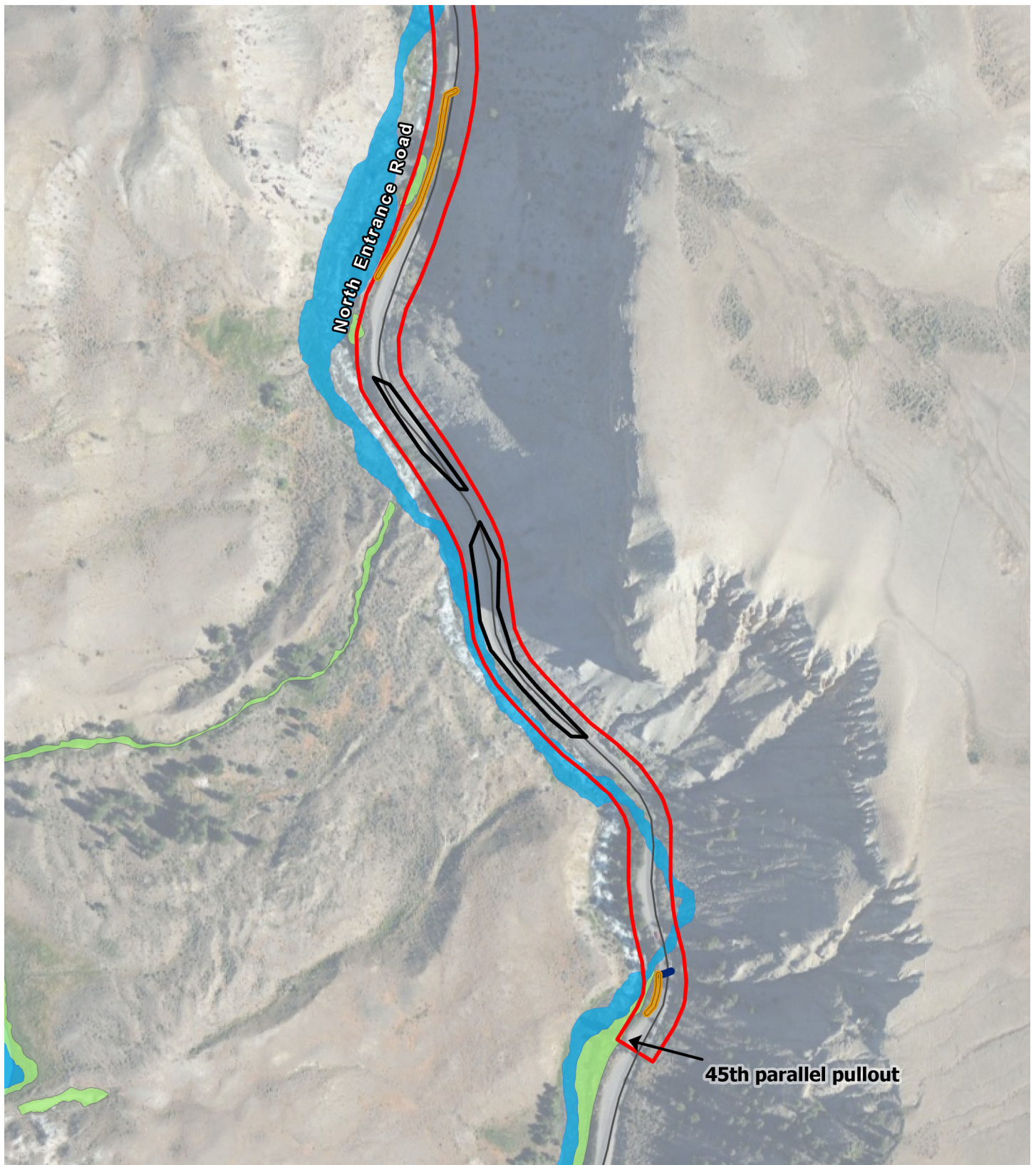


Figure 4-1
Gardner River Canyon
 Conceptual Restoration Plan
 Mammoth to Gardiner Road
 MT ERFO NP YELL 2022-1(2)
Yellowstone National Park



Legend

- █ Proposed Restoration Site
- Road

Delineated Features

- █ Wetlands
- █ Waters

Proposed Restoration

- Floodplain Restoration
- █ Bank Stabilization
- █ Riparian Buffer

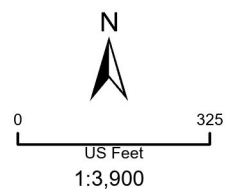


Figure 4-2
Gardner River Canyon
 Conceptual Restoration Plan
 Mammoth to Gardiner Road
 MT ERFO NP YELL 2022-1(2)
Yellowstone National Park

Approximately 1.28 acres of riparian buffer would be restored after road reclamation activities are complete. Supplemental plantings of balsam poplar, prickly rose, skunkbush sumac, and other shrubs native to Gardiner Basin would provide food and shade sources for fish and wildlife. Existing road elements remaining in place, such as bridge abutments, would be amended to improve the likelihood of vegetation establishment. The positioning of boulders in select locations would create microsites for riparian vegetation plantings while providing additional scour protection. Additional information regarding flow velocity and other river dynamics and topographical survey would be required.

Early coordination with the USACE Montana Regulatory Office is advised to ensure proper application of the Montana Stream Mitigation Procedure in determining credits for the Gardner River Canyon site. The Montana Stream Mitigation Procedure considers several restoration factors when assessing mitigation credit; these include removal of riprap from below the ordinary high water mark, the addition of woody debris in the floodplain, and restoration of channel morphology (USACE 2010). Locations for these and other restoration activities will be refined as design progresses, allowing for a more accurate tally of mitigation credits.

3.4 Summary and Next Steps

The conceptual restoration discussed in this memo could restore and enhance up to 31.83 acres of existing wetlands, streams, and the Gardner River. This could potentially provide up to 16.42 net credit acres. These numbers are early estimates and likely represent an overestimate. Early coordination with the USACE Montana Regulatory Office is advised.

Upon Western Federal Lands Highway Division and Park review of this conceptual memo, and if approved, Jacobs will revise concepts based on feedback provided. Approved concepts will be carried forward into the Wetland Statement of Findings scheduled for preparation in 2025. Opportunities for restoration and enhancement will also be further explored and quantified as they relate to proposed road improvements and alignment options to be carried forward for further consideration.

4. References

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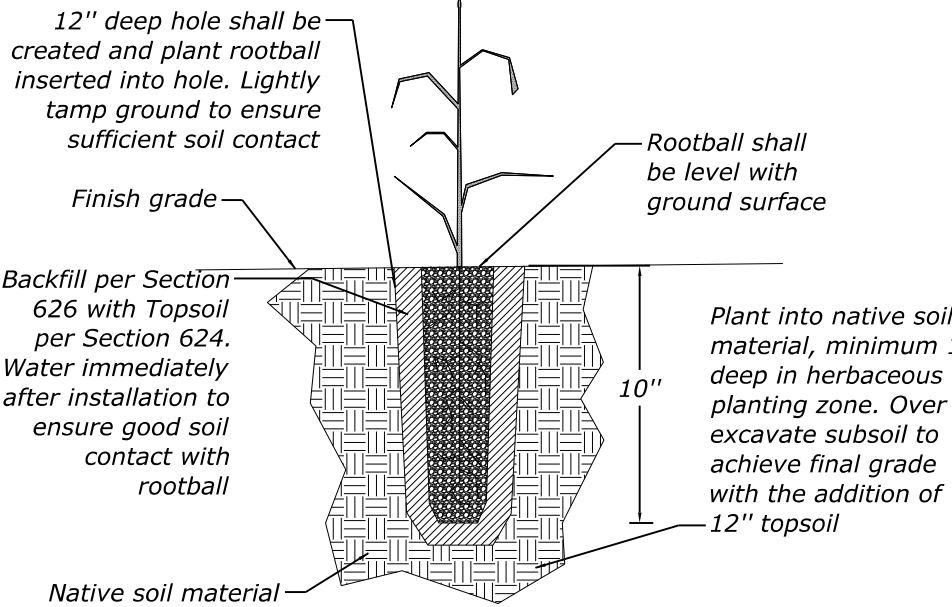
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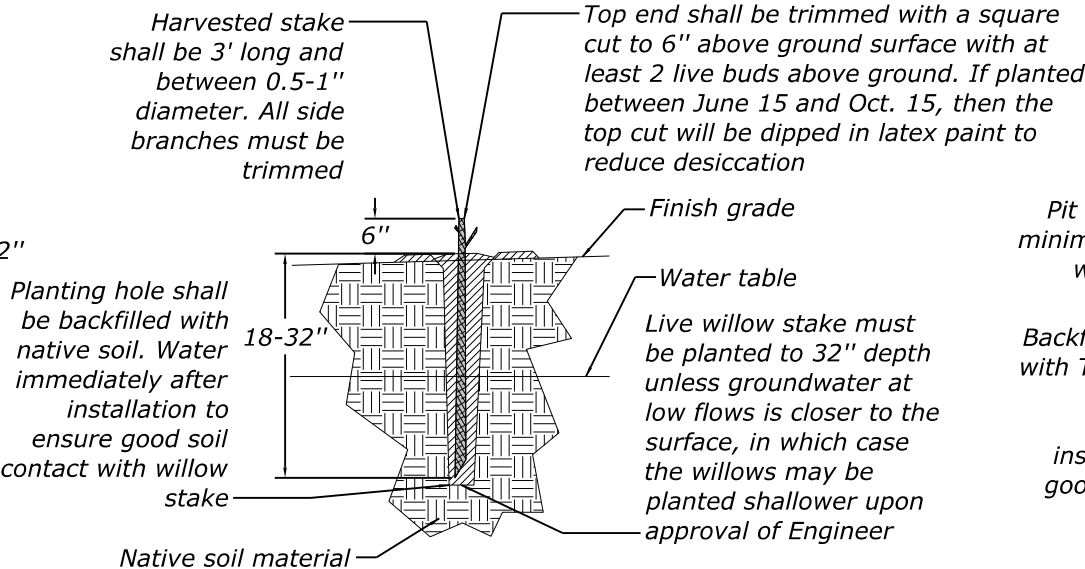
Williams, Karen, geomorphologist, Jacobs. 2024. Personal communication (phone call) with Rachel Newton, botanist, Jacobs. December 4.

Attachment 1

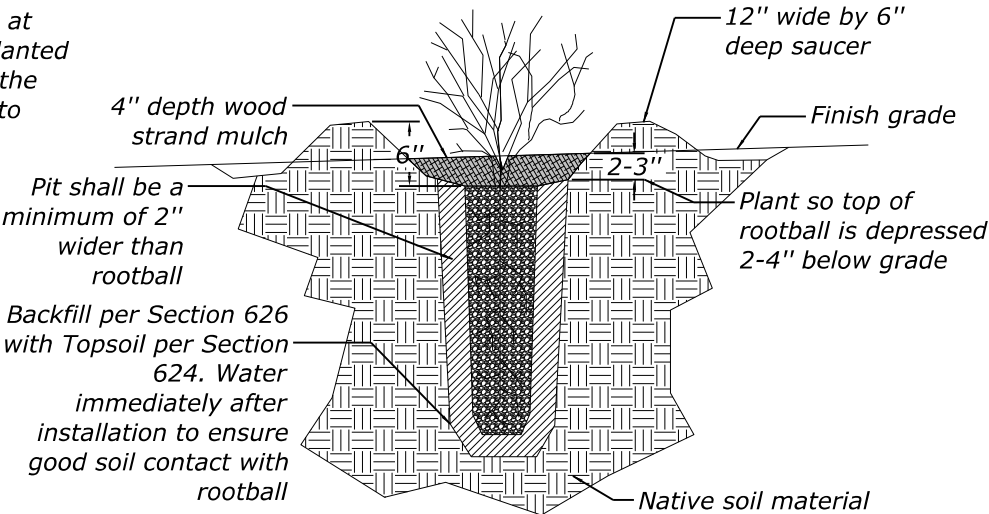
Typical Design Details from the Yellowstone River Bridge Project



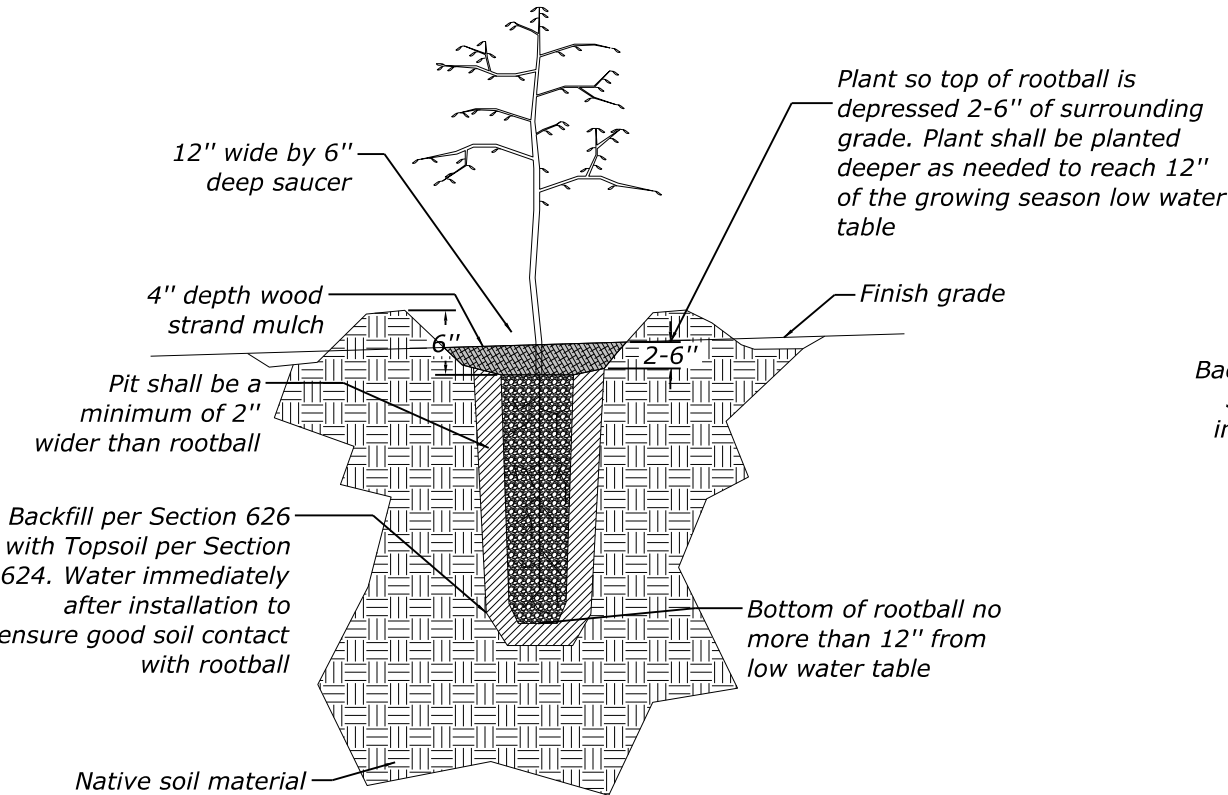
**DEEP ROOTED HERBACEOUS SEEDLING
CONTAINER PLANTING - SECTION VIEW**
NOT TO SCALE



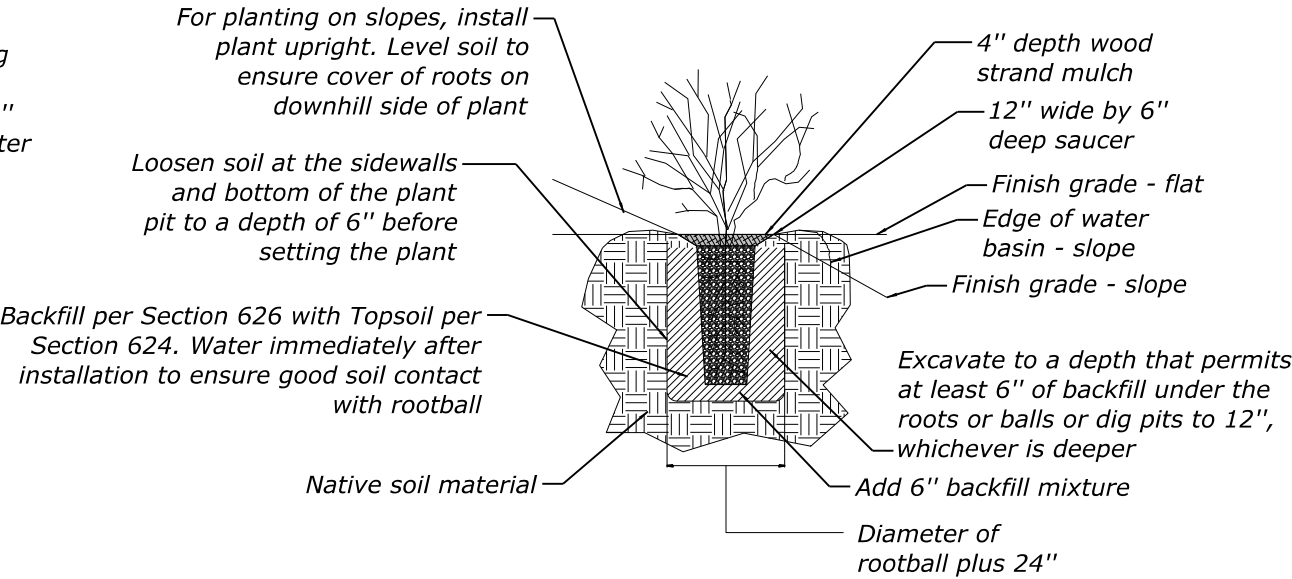
**LIVE WILLOW STAKES PLANTING -
SECTION VIEW**
NOT TO SCALE



**DEEP ROOTED SHRUB CONTAINER
PLANTING - SECTION VIEW**
NOT TO SCALE

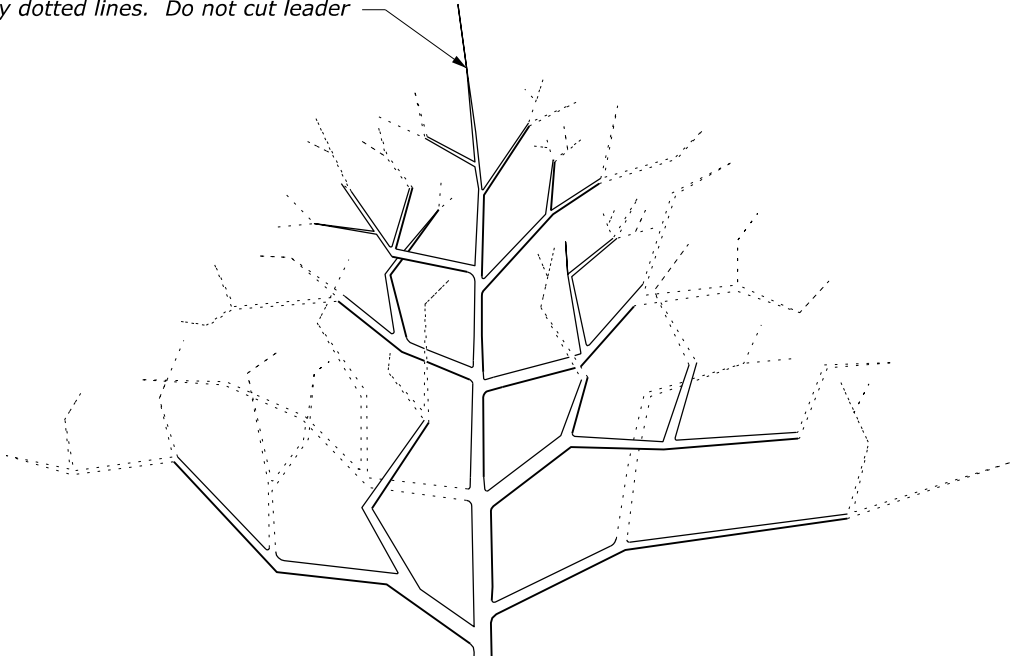


**DEEP ROOTED DECIDUOUS AND EVERGREEN TREE
CONTAINER PLANTING - SECTION VIEW**
NOT TO SCALE

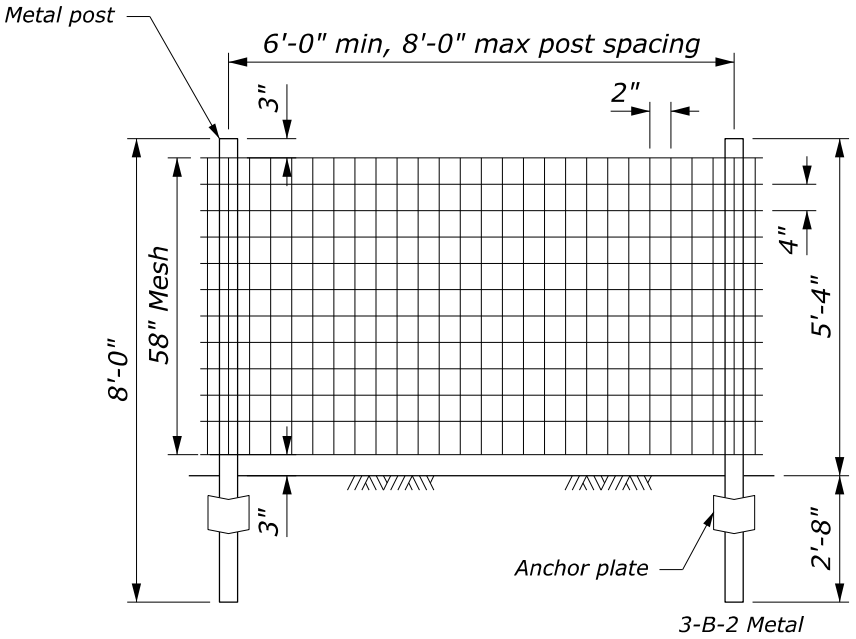


**SHRUB/TREE MEDIUM CONTAINER
PLANTING - SECTION VIEW**
NOT TO SCALE

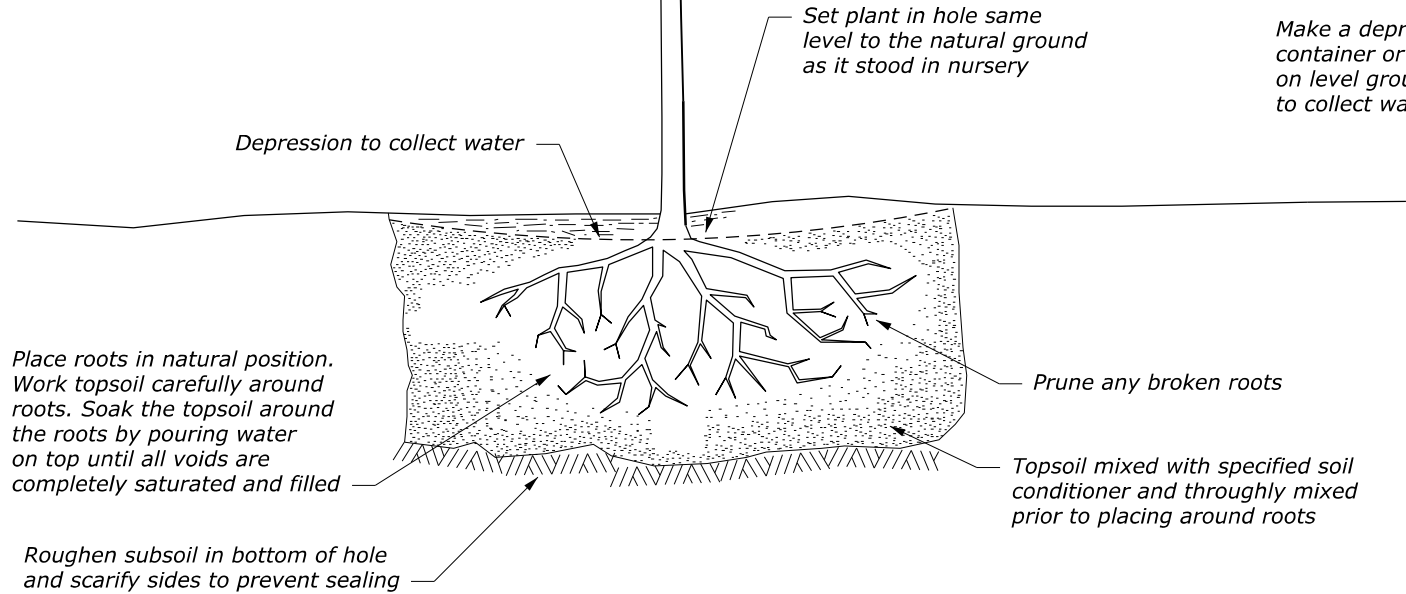
For bare root trees and shrubs, prune branches about 1/3 for nursery stock and about 1/2 for collected material as indicated by dotted lines. Do not cut leader



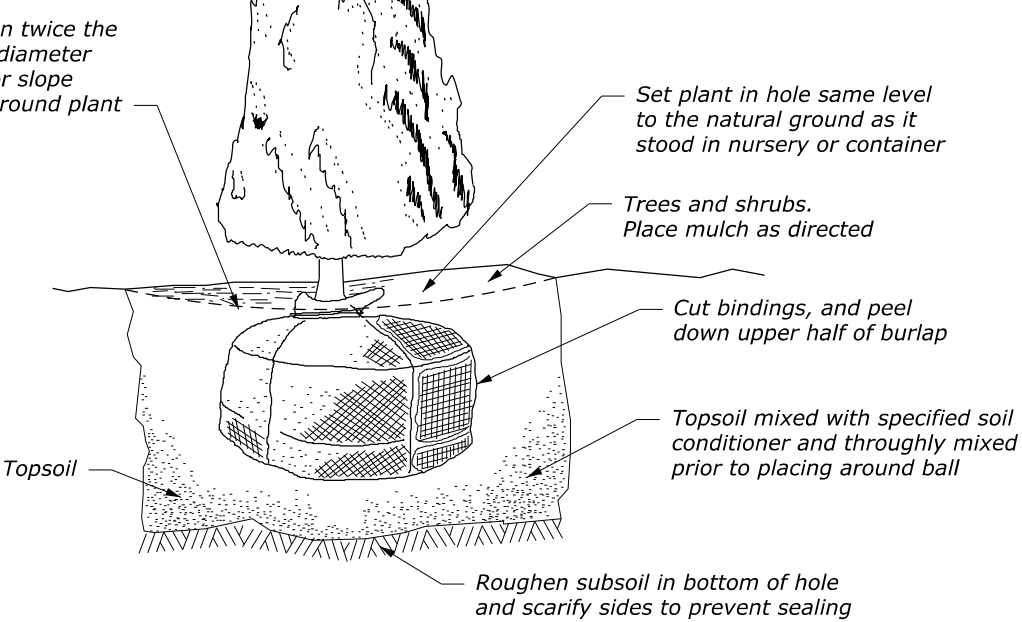
Settle the loose soil around the ball of earth by soaking it thoroughly with water



FENCE, WOVEN WIRE (TREE PROTECTION)

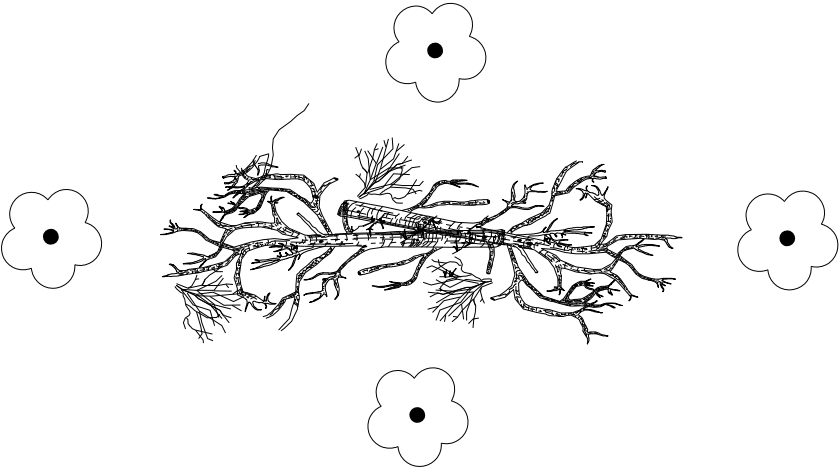
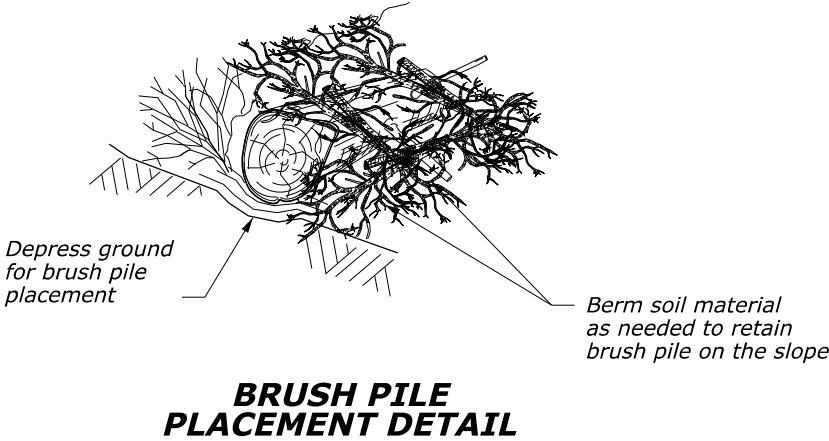


METHOD OF PLANTING TREES AND SHRUBS



METHOD OF PLANTING BALLED AND BURLAPPED TREES AND SHRUBS

STATE	PROJECT	SHEET NUMBER
WY	NPS YELL 12(2)	N.19



- NOTE:**
- 1. Brush pile dimensions: 6' to 7' diameter, 2' to 3' high.
 - 2. Place brush piles according to Subsection 647.08(B).
 - 3. Plant containerized shrubs or trees around brush piles as shown on the detail on this sheet. Spacing varies by species as shown on sheets N.2, N.3, and N.4, or as directed by CO.

- LEGEND:**
-  Containerized shrub or tree

Attachment 2

Preliminary Plant List

Table 1-1. Preliminary Plant List by Plant Material Type and Restoration Site

Vegetation Type	Plant Species	Wetland Indicator Status ^[a]	Plant Material Type		Restoration Site		
			Field-collected Plug or Stake	Nursery-grown Container Plant	Landslide Creek Cattail Marsh	Old Gardiner Road	Gardner River Canyon
Shrub	Serviceberry <i>Amelanchier alnifolia</i>	FACU		X	X	X	X
Shrub	Silverberry <i>Elaeagnus commutata</i>	FAC		X	X	X	X
Shrub	Black twinberry <i>Lonicera involucrata</i>	FAC		X	X	X	X
Shrub	Skunkbush sumac <i>Rhus trilobata</i>	UPL		X	X	X	X
Shrub	Prickly rose <i>Rosa acicularis</i>	FACU		X	X	X	X
Shrub	Bebb's willow <i>Salix bebbiana</i>	FACW	X	X		X	X
Shrub	Common snowberry <i>Symphoricarpos albus</i>	FACU		X		X	X
Shrub/Tree	Quaking aspen <i>Populus tremuloides</i>	FACU		X	X	X	X
Tree	Water birch <i>Betula occidentalis</i>	FACW		X		X	X
Tree	Rocky Mountain juniper <i>Juniperus scopulorum</i>	UPL		X	X	X	X
Tree	Balsam poplar <i>Populus balsamifera</i>	FAC	X	X		X	X
Tree	Douglas-fir <i>Pseudotsuga menziesii</i>	FACU		X		X	X

^[a]USACE 2020

FAC = facultative

FACU = facultative upland

FACW = facultative wetland

UPL = upland

Attachment 3

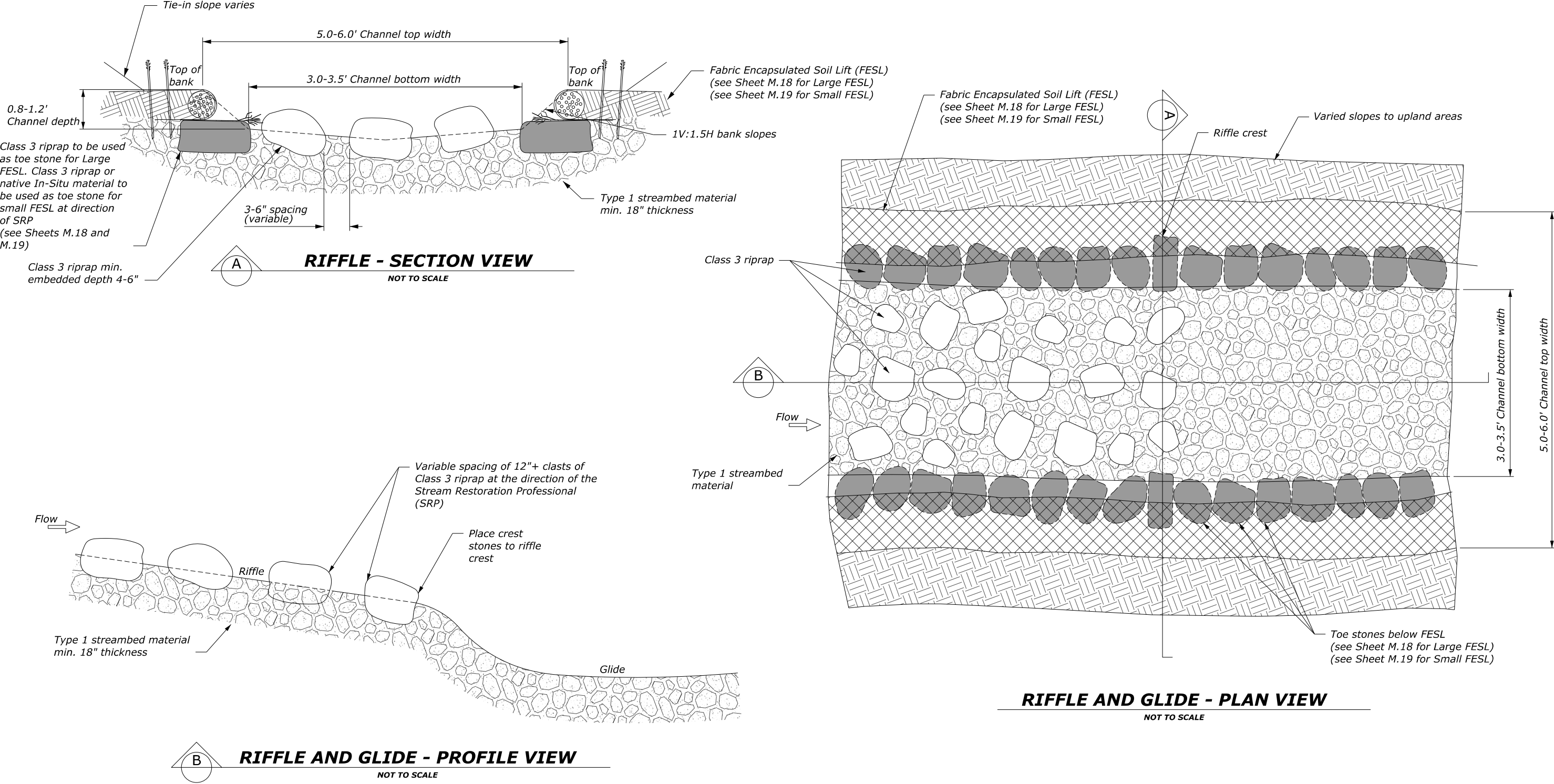
Culvert Design and Installation Best Management Practices

Best Management Practices for Culvert Design and Installation

- Size culverts to both convey water under the road and restore streambanks to conditions typical of pre-disturbance construction.
- Maintain existing flow patterns and velocities but design culvert inlets and outlet to mimic natural channel forms. Refer to Typical Channel Treatment, Riffle and Glide Detail (M.13), Step Pool –Detail (M.14), Cascade Detail (M.15), and Grade Control Details from the Yellowstone River Bridge project (Attachment 3-1).
- Place rocks and boulders along culvert wingwalls to provide additional scour protection and re-create natural channel forms.
- Place rocks at the culvert mouth to dissipate force, if necessary.
- Use multiple culverts to spread flow over a larger area.
- Consider creating small animal underpasses along the sides of the culverts.

Attachment 3-1
Typical Channel Treatments from
Yellowstone River Bridge Project

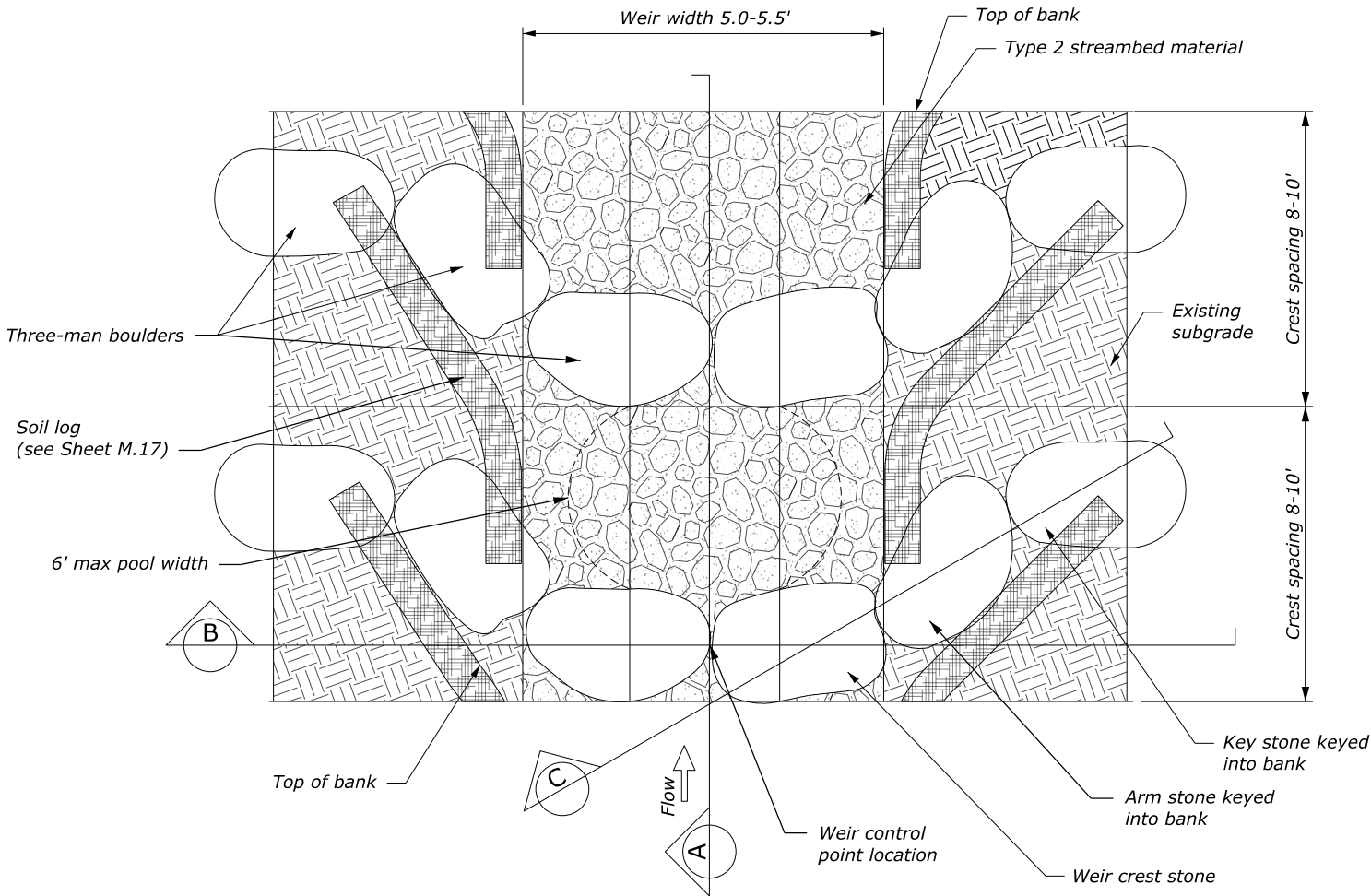
STATE	PROJECT	SHEET NUMBER
WY	NPS YELL 12(2)	M.13



NOTE:
1. SRP = Stream Restoration Professional
2. WSEL = Water Surface Elevation
3. FESL = Fabric Encapsulated Soil Lift

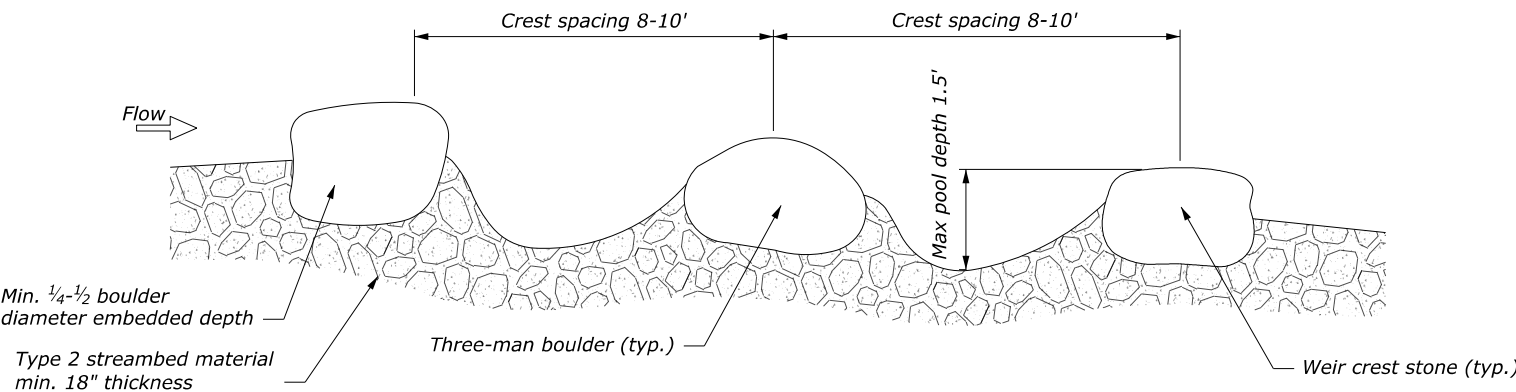
**TYPICAL CHANNEL TREATMENT
RIFFLE AND GLIDE DETAIL**

STATE	PROJECT	SHEET NUMBER
WY	NPS YELL 12(2)	M.14



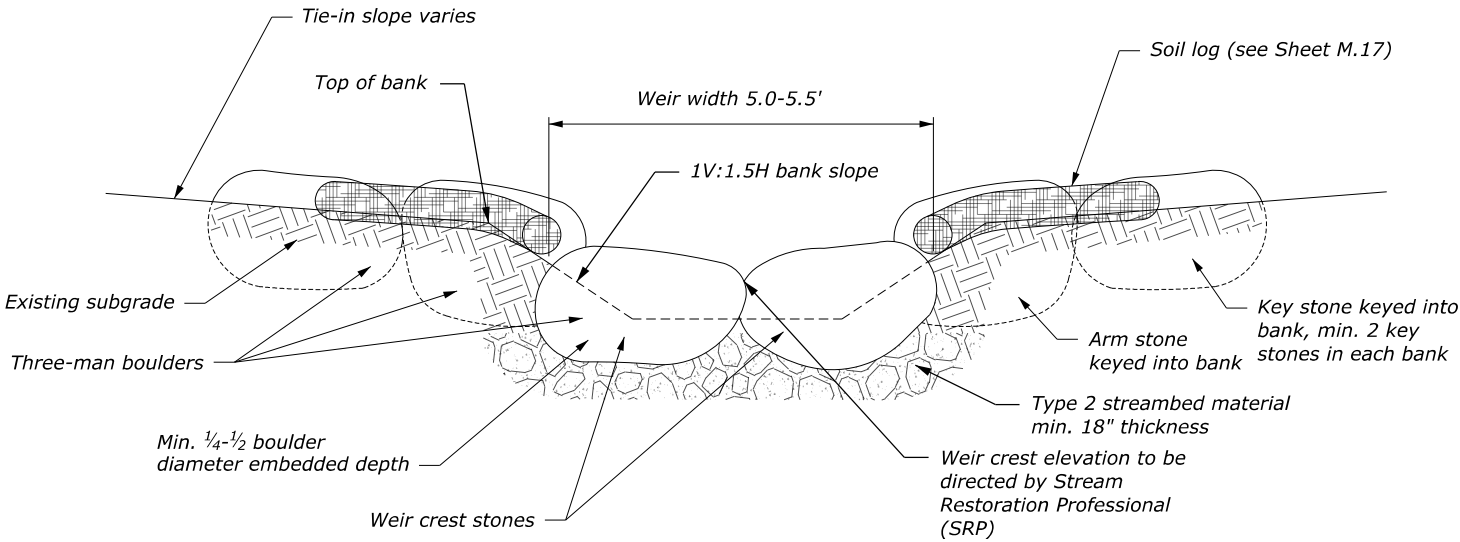
STEP POOL - PLAN VIEW

NOT TO SCALE



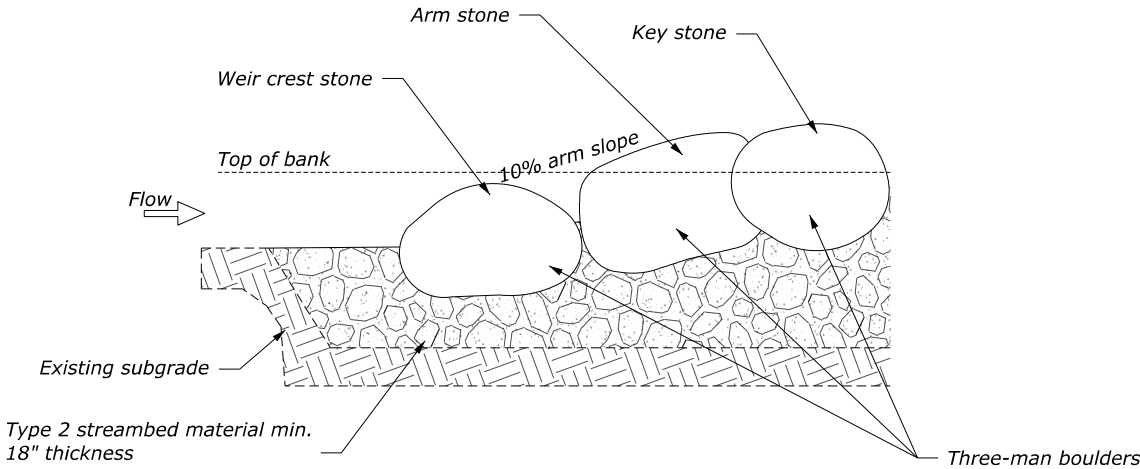
STEP POOL - PROFILE VIEW

NOT TO SCALE



STEP POOL - CREST CROSS SECTION

NOT TO SCALE



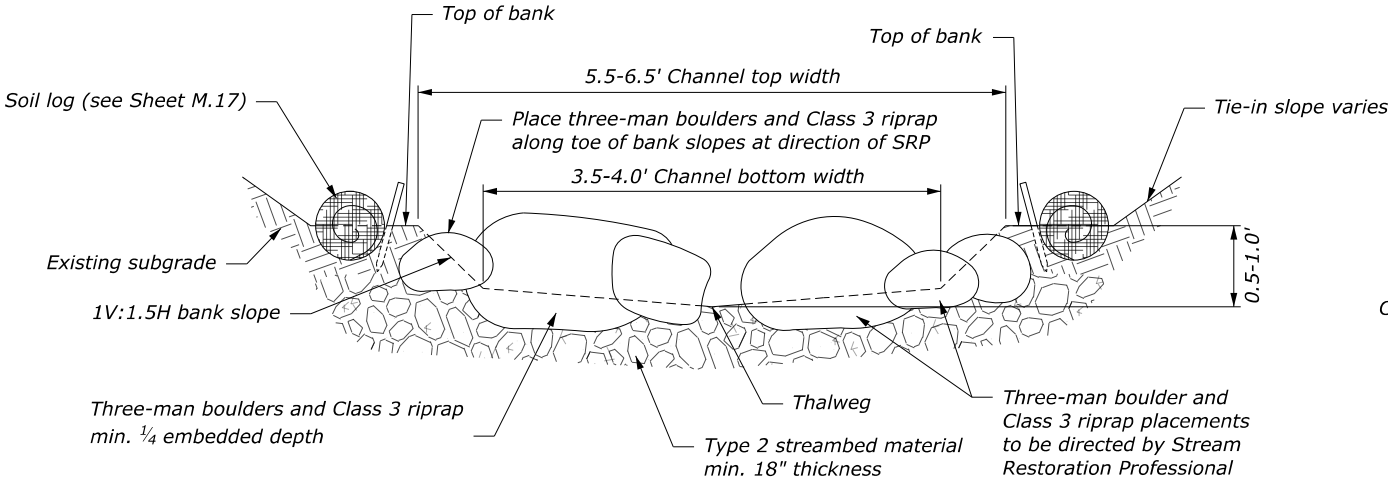
STEP POOL - ARM CROSS SECTION

NOT TO SCALE

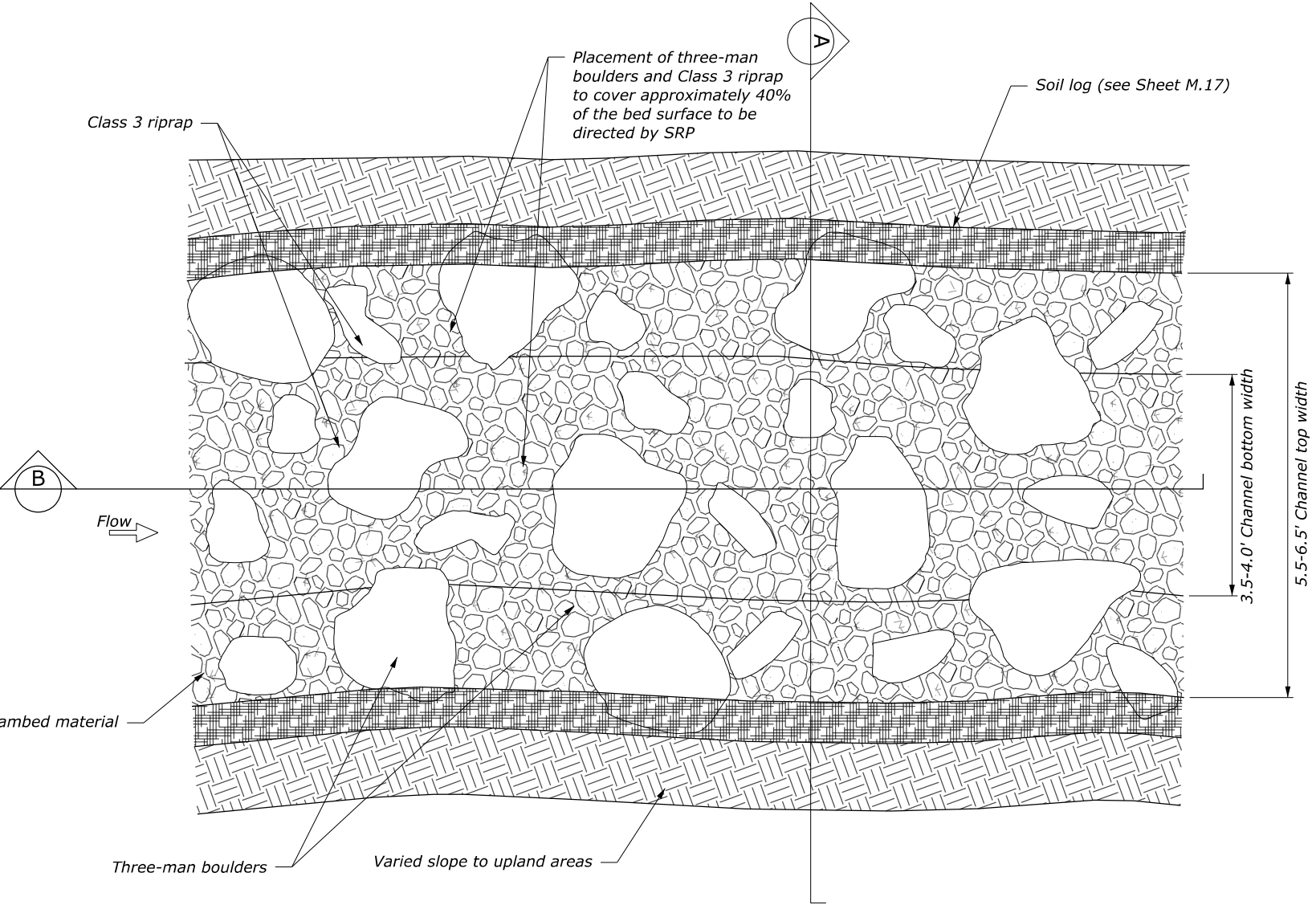
NOTE:
1. SRP = Stream Restoration Professional

**TYPICAL CHANNEL TREATMENT
STEP POOL DETAIL**

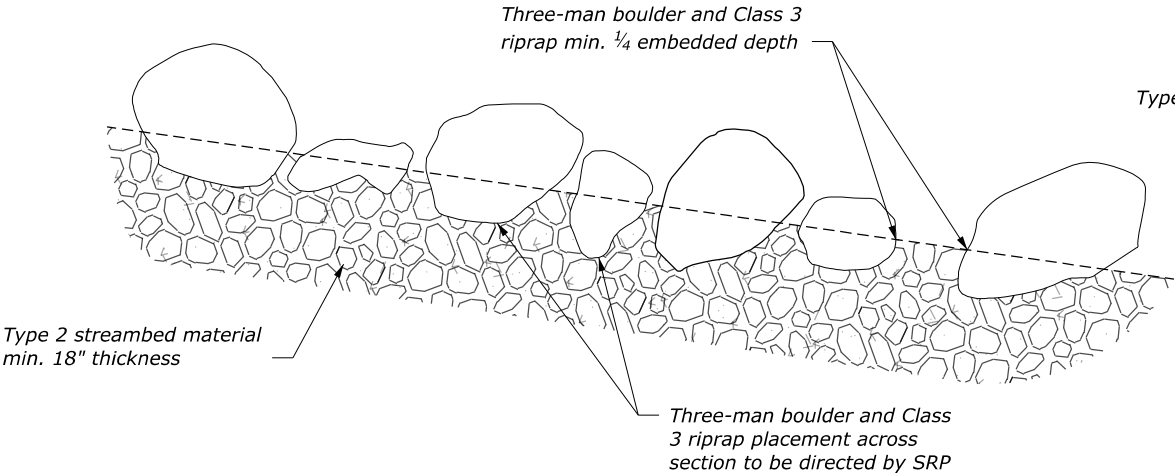
STATE	PROJECT	SHEET NUMBER
WY	NPS YELL 12(2)	M.15



CASCAD - SECTION VIEW
NOT TO SCALE



CASCAD - PLAN VIEW
NOT TO SCALE



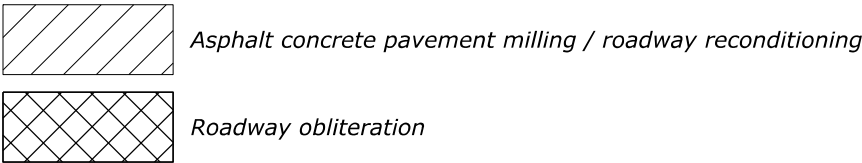
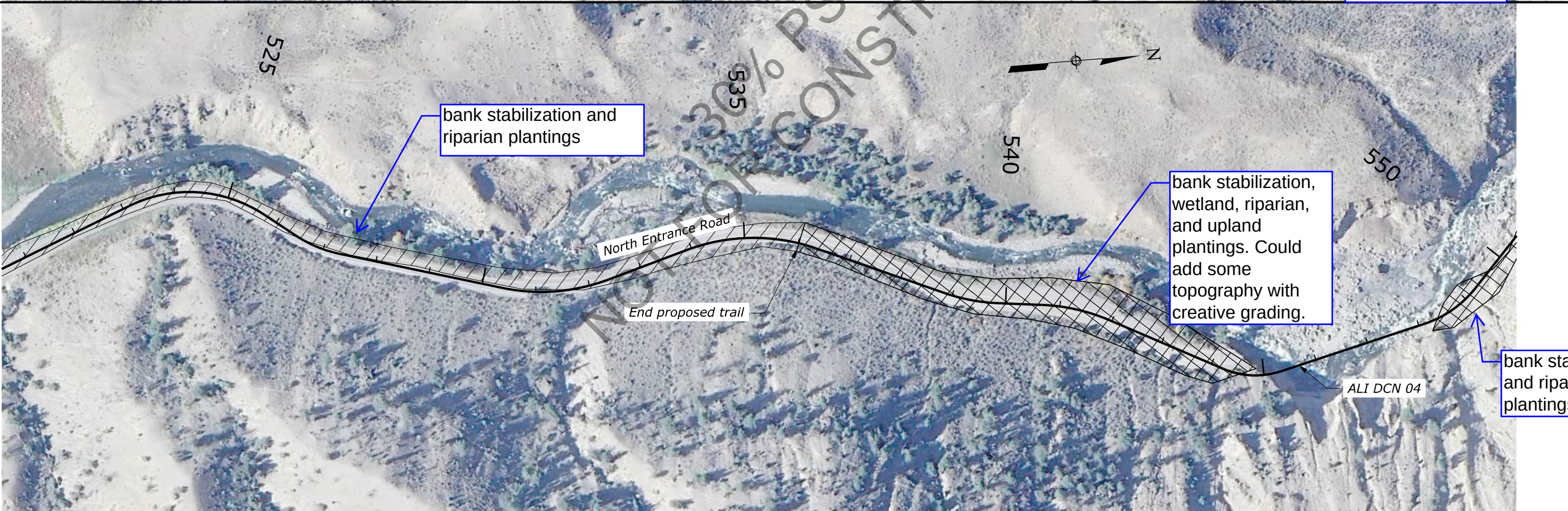
CASCAD - PROFILE VIEW
NOT TO SCALE

NOTE:
1. SRP = Stream Restoration Professional

**TYPICAL CHANNEL TREATMENT
CASCAD DETAIL**

Attachment 4

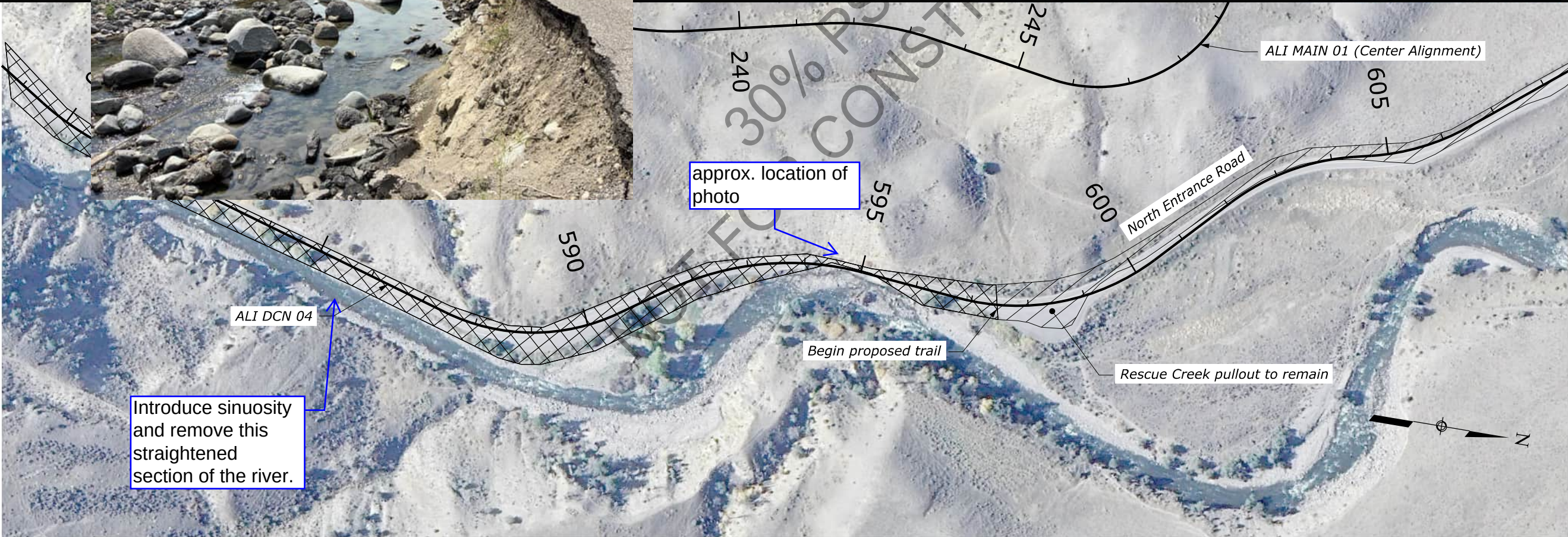
30 Percent Design Drawings



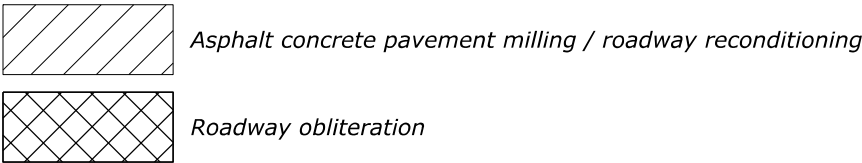
**NORTH ENTRANCE RD.
DECONSTRUCTION
(CENTER ALIGNMENT)**



Bank stabilization activities here after bridge removed? Intent is to withstand subsequent floods. We will be developing similar for SBC #1 Realign West - reclamation.



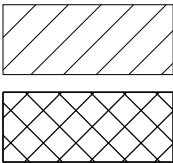
Introduce sinuosity and remove this straightened section of the river.



**NORTH ENTRANCE RD.
DECONSTRUCTION
(CENTER ALIGNMENT)**



30% PS&E
NOT FOR CONSTRUCTION

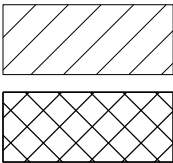


Asphalt concrete pavement milling / roadway reconditioning

Roadway obliteration

**NORTH ENTRANCE RD.
DECONSTRUCTION
(CENTER ALIGNMENT)**

PROJECT	SHEET NUMBER
MT ERFO NP YELL 2022-1(2)	G.4

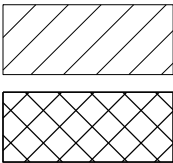
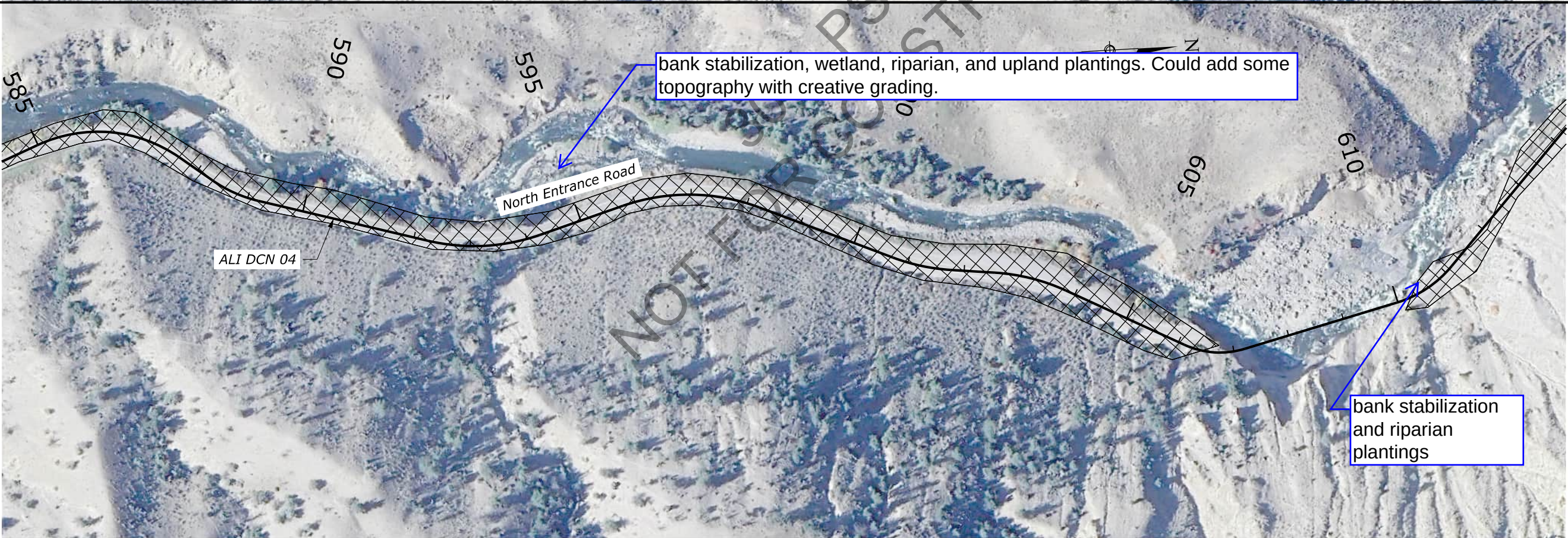
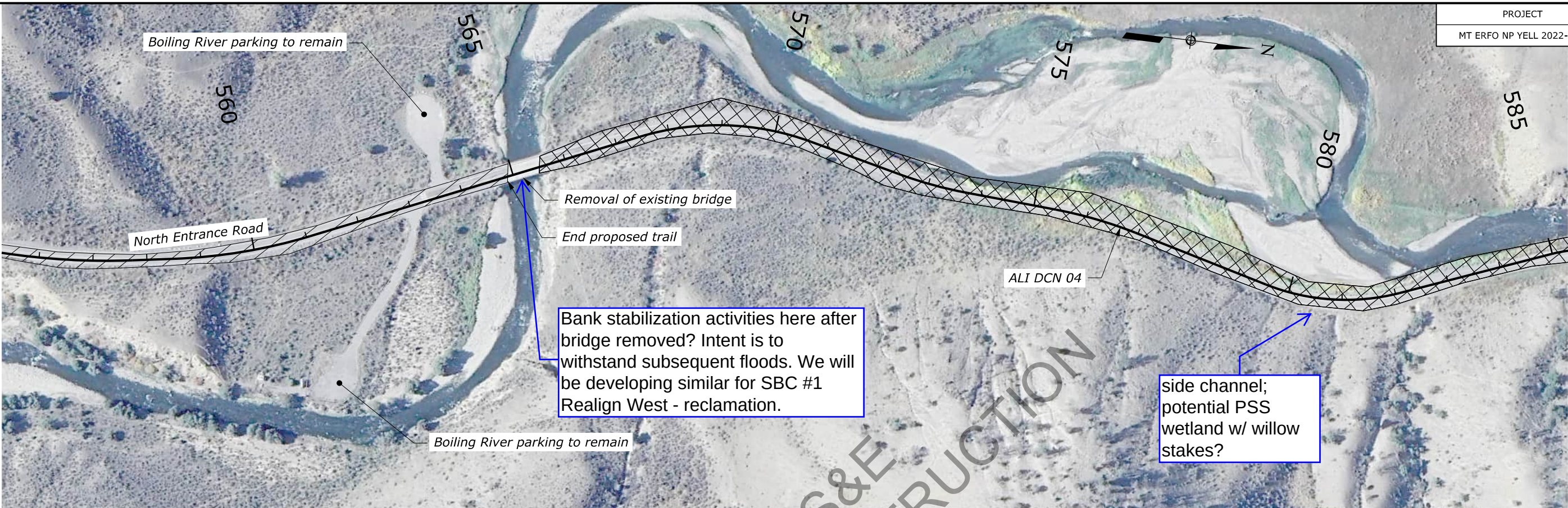


Asphalt concrete pavement milling / roadway reconditioning

Roadway obliteration

**NORTH ENTRANCE RD.
DECONSTRUCTION
(OGR ALIGNMENT)**

PROJECT	SHEET NUMBER
MT ERFO NP YELL 2022-1(2)	G.5

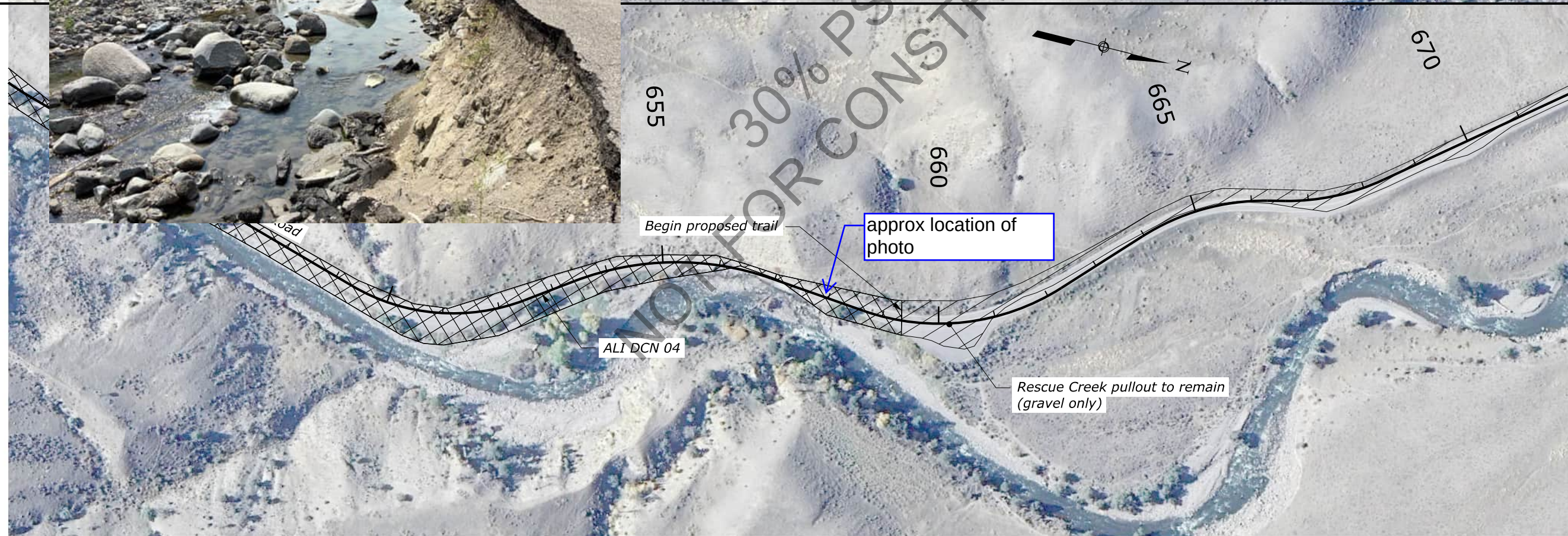
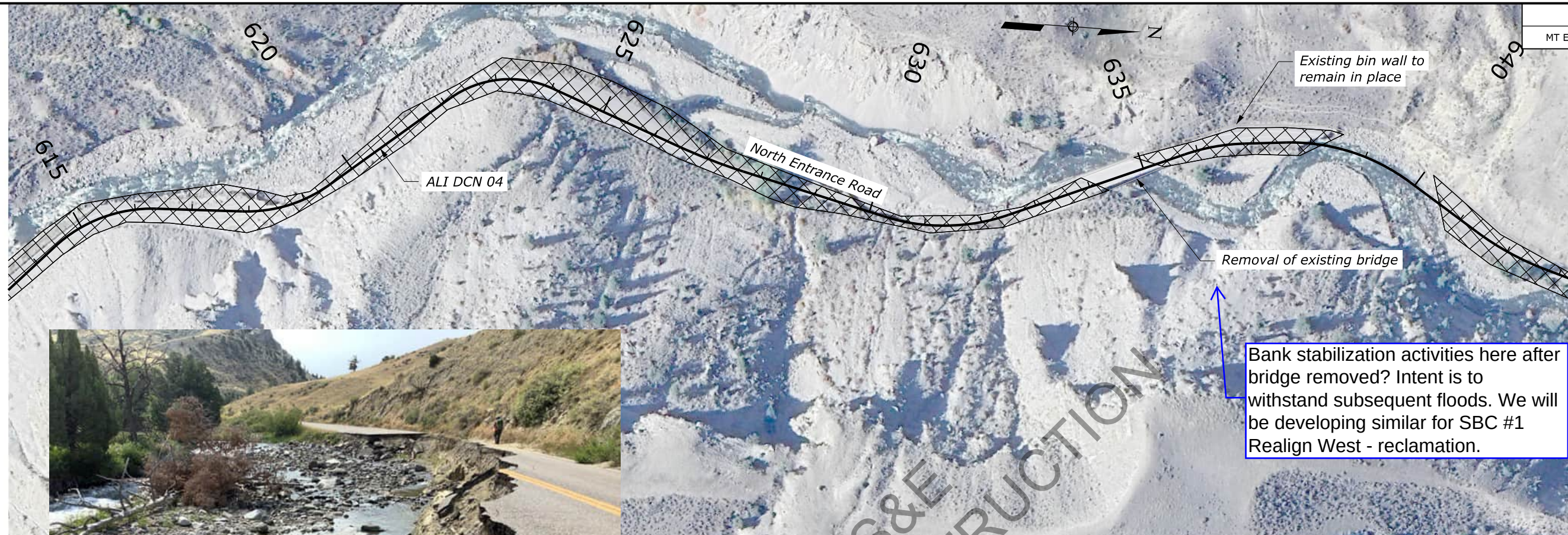


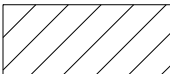
Asphalt concrete pavement milling / roadway reconditioning

Roadway obliteration

**NORTH ENTRANCE RD.
DECONSTRUCTION
(OGR ALIGNMENT)**

PROJECT	SHEET NUMBER
MT ERFO NP YELL 2022-1(2)	G.6



-  Asphalt concrete pavement milling / roadway reconditioning
-  Roadway obliteration

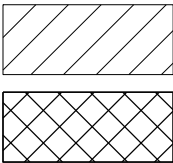
**NORTH ENTRANCE RD.
DECONSTRUCTION
(OGR ALIGNMENT)**

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PROJECT	SHEET NUMBER
MT ERFO NP YELL 2022-1(2)	G.7



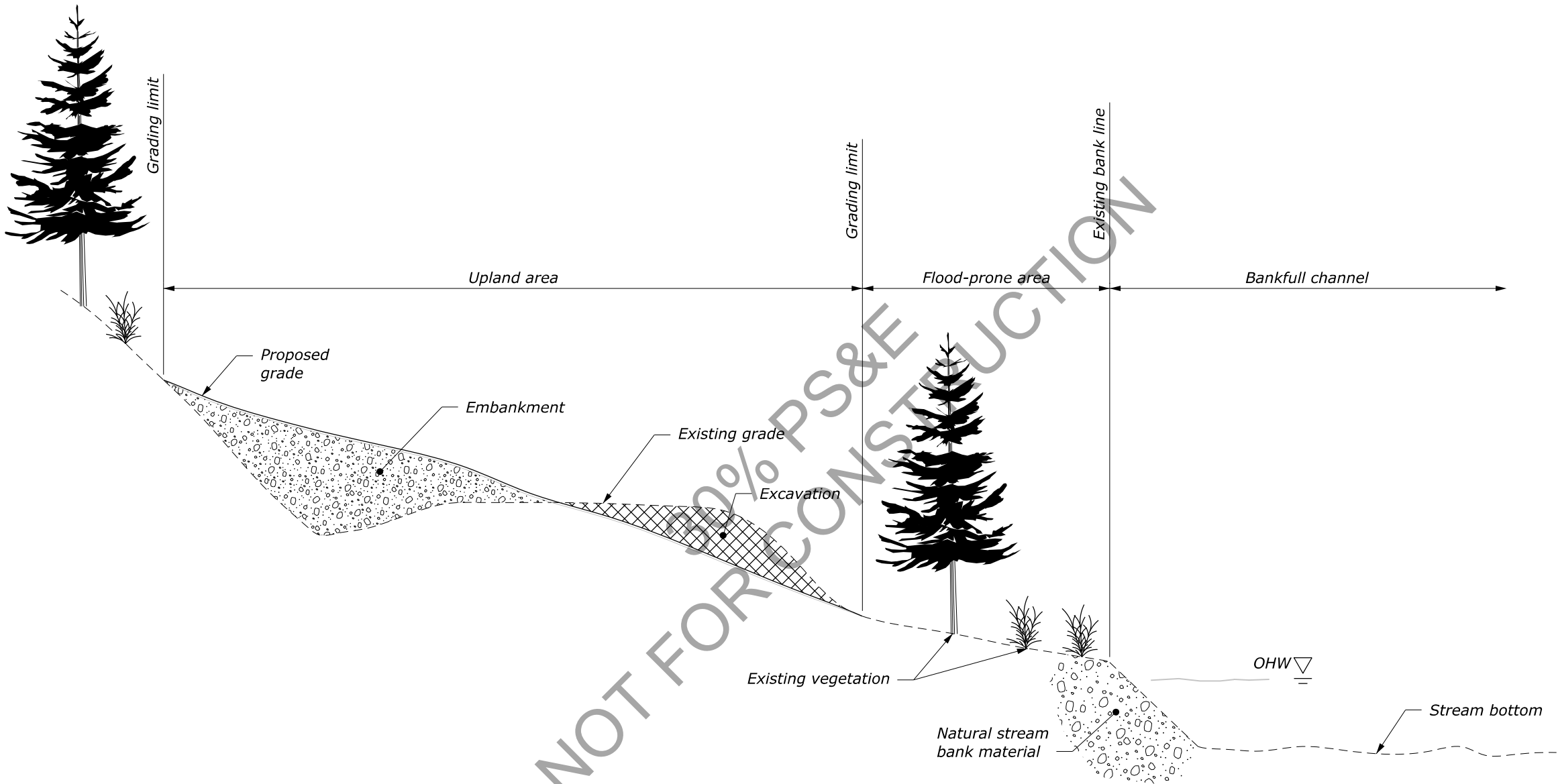
30% PS&E
NOT FOR CONSTRUCTION



Asphalt concrete pavement milling / roadway reconditioning

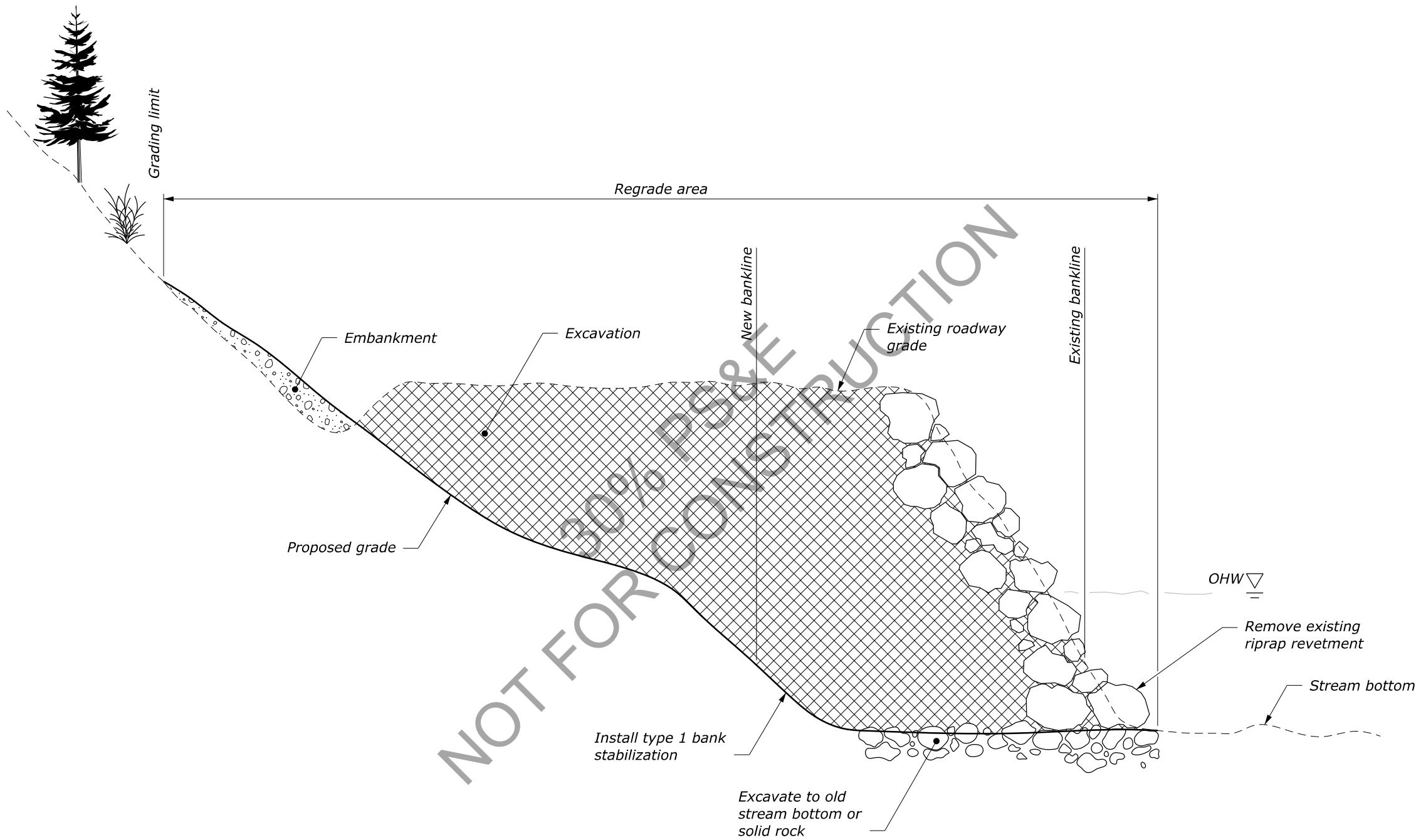
Roadway obliteration

**NORTH ENTRANCE RD.
DECONSTRUCTION
(OGR ALIGNMENT)**



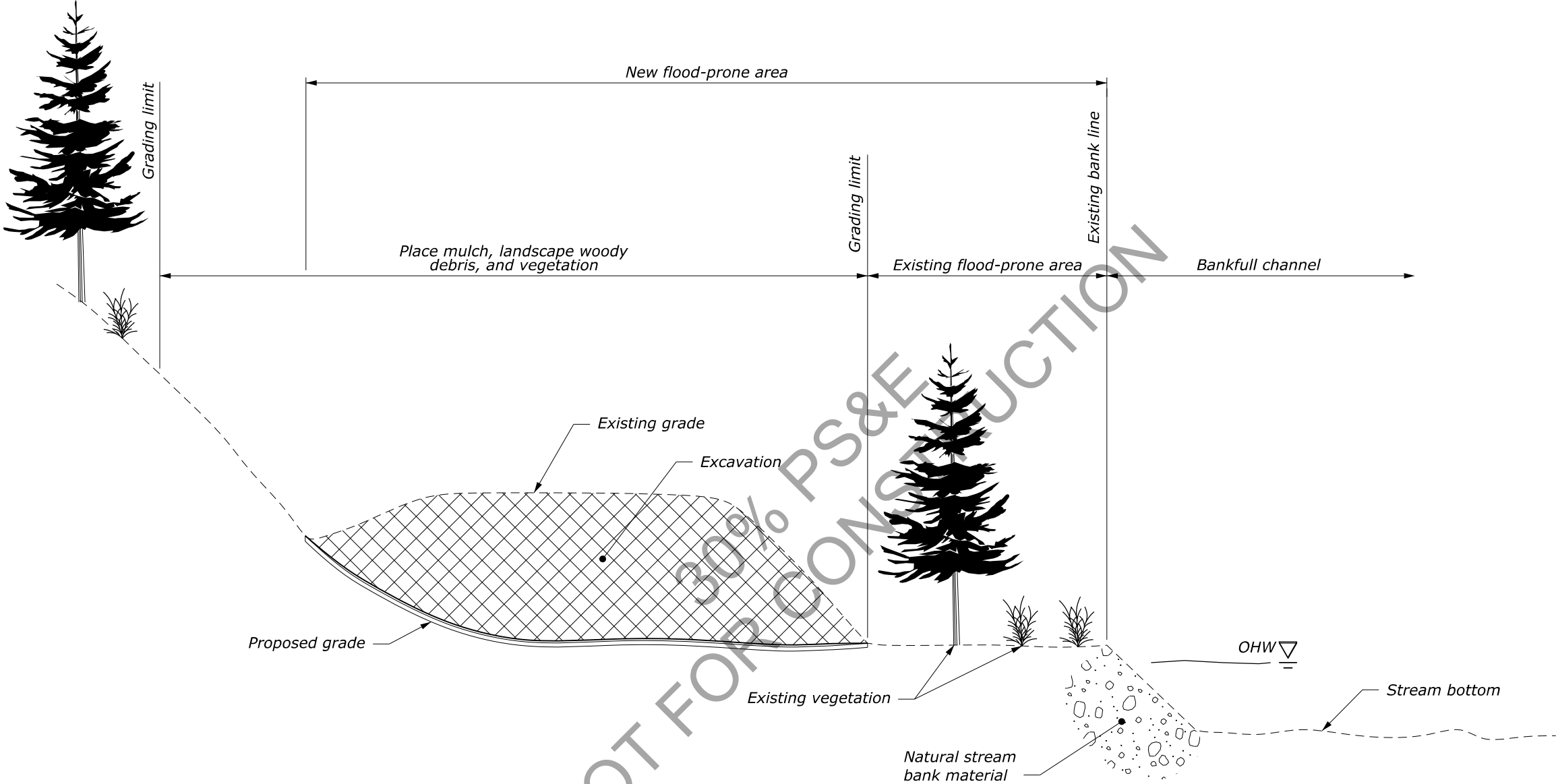
NOTE:
1. Preserve vegetation and bank materials beyond regrade area).
2. Place mulch, landscape woody debris, and vegetation over regrade area above ordinary high water.

BEYOND FLOOD PRONE AREA



NOTE:
1. Place mulch, landscape woody debris, and vegetation over regrade area above ordinary high water.
2. Excavate and remove roadbed material to pre-road ground surface elevation. Verify depth in field.

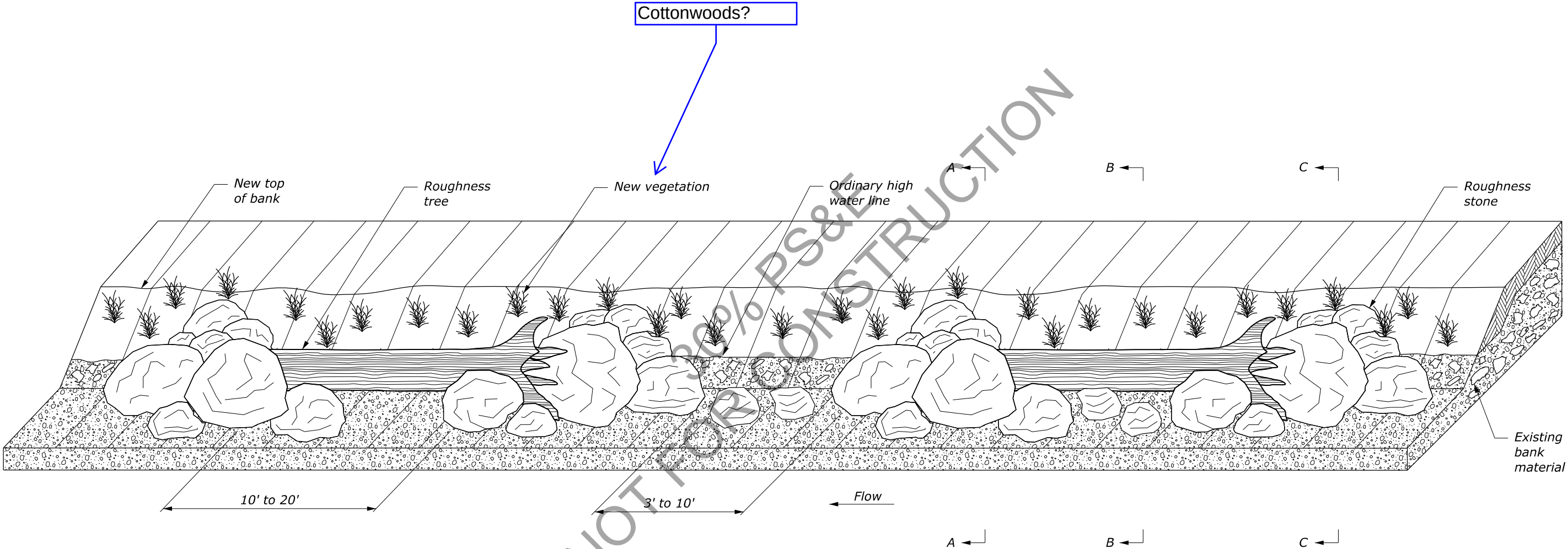
STREAM BANK REALIGNMENT



NOTE:
1. Preserve vegetation and bank materials beyond regrade area.

DEVELOPMENT FLOOD-PRONE
AREA

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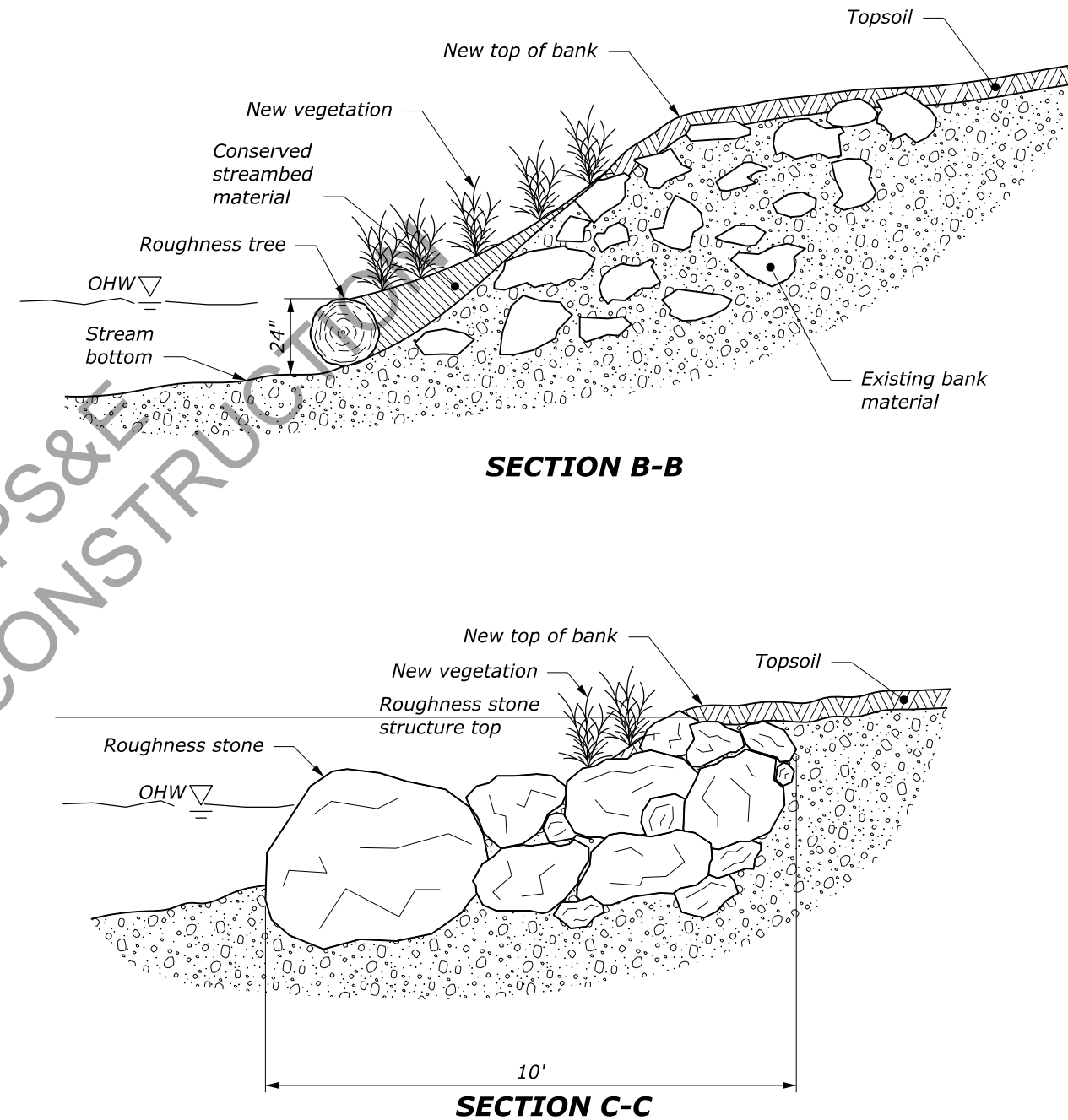
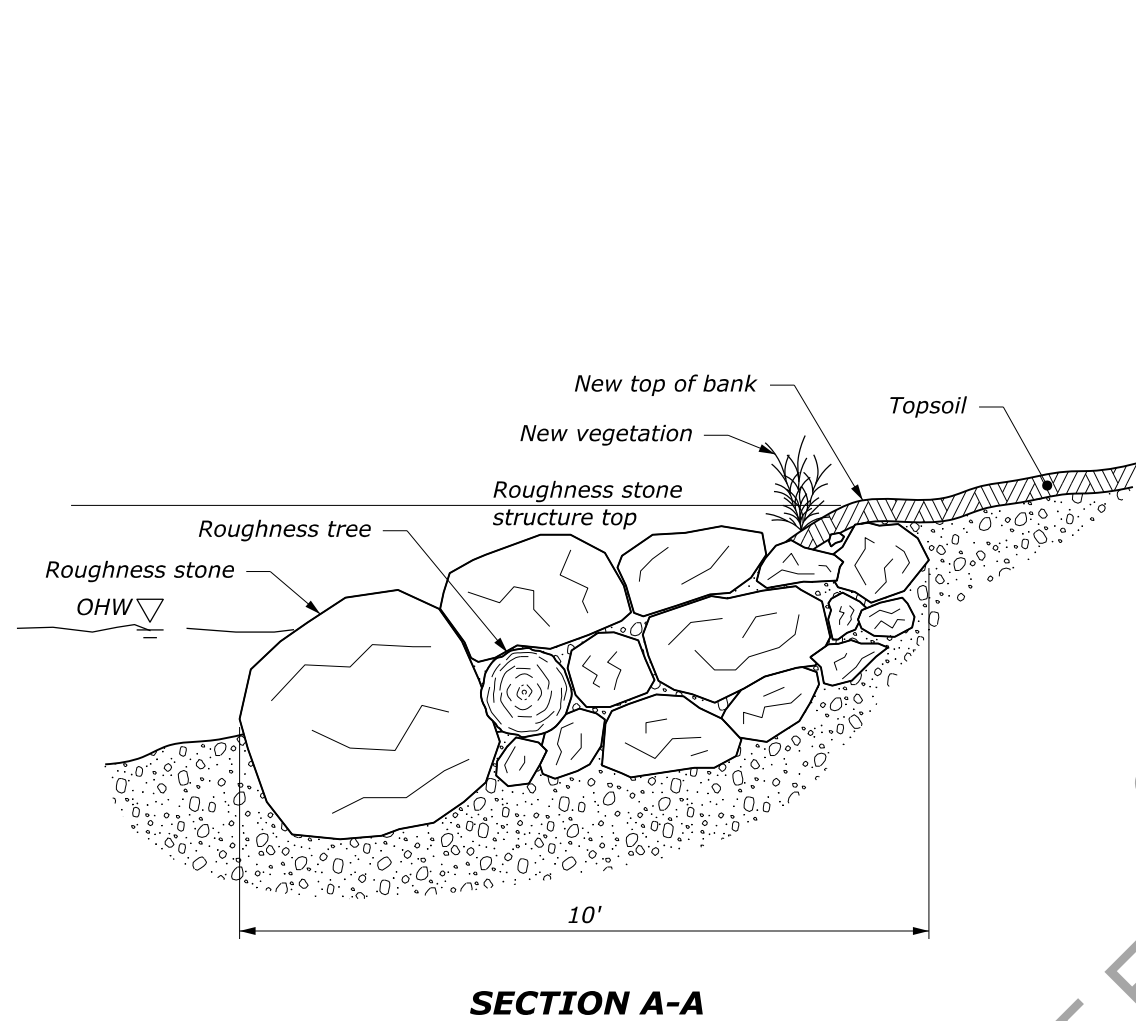


NOTE:
1. Field verify existing bank material gradation. Adjust spacing per CO.

TYPE 1 BANK STABILIZATION
ELEVATION

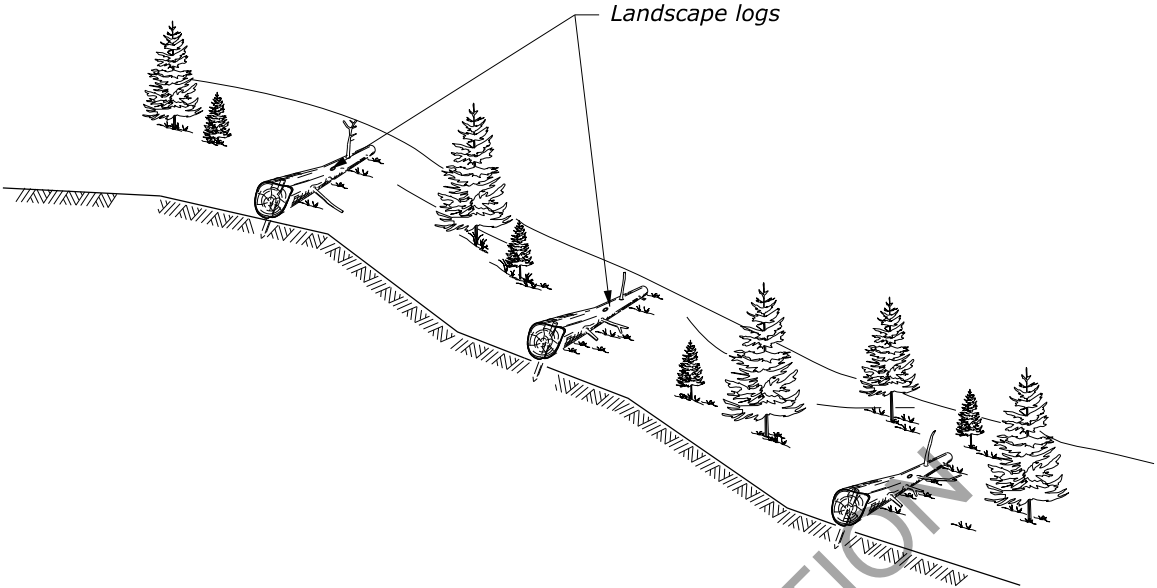
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PROJECT	SHEET NUMBER
MT ERFO NP YELL 2022-1(2)	G.12

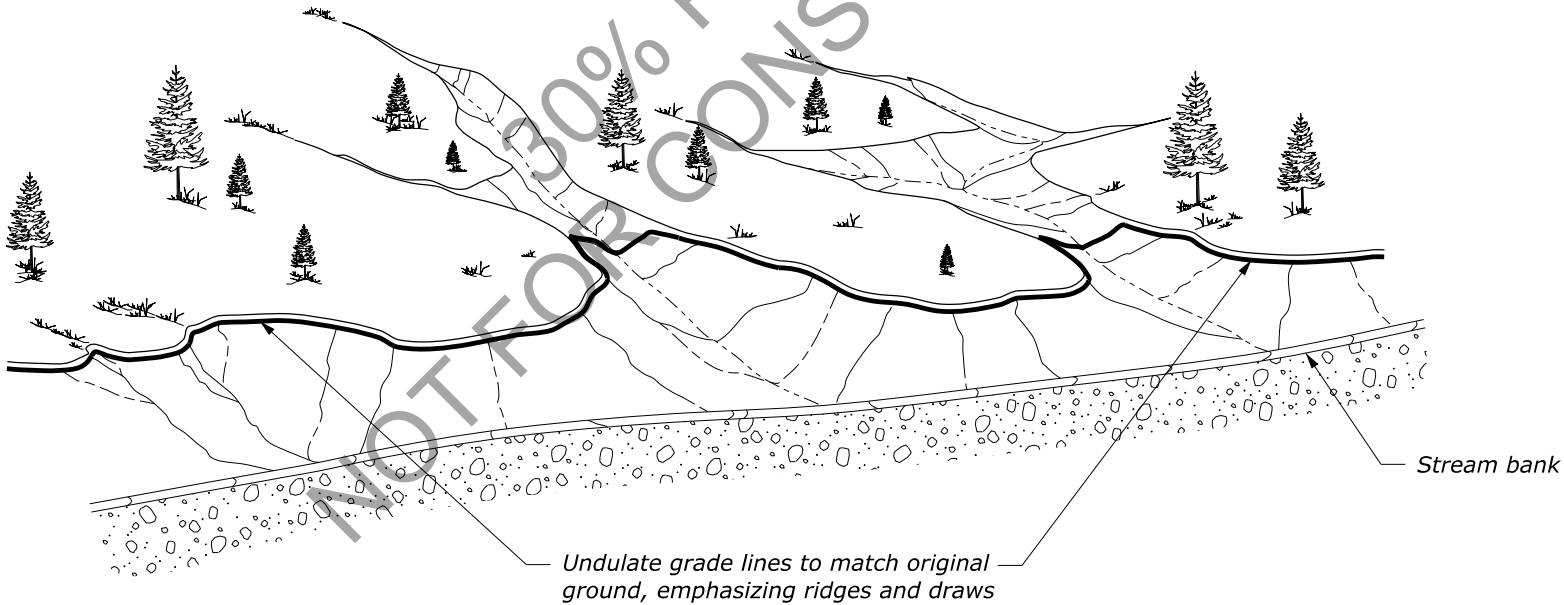


- NOTE:
1. Field verify existing bank material gradation.
 2. Place top of roughness stone at least 3 ft above adjacent floodplain elevations.

TYPE 1 BANK STABILIZATION SECTION AND DETAILS

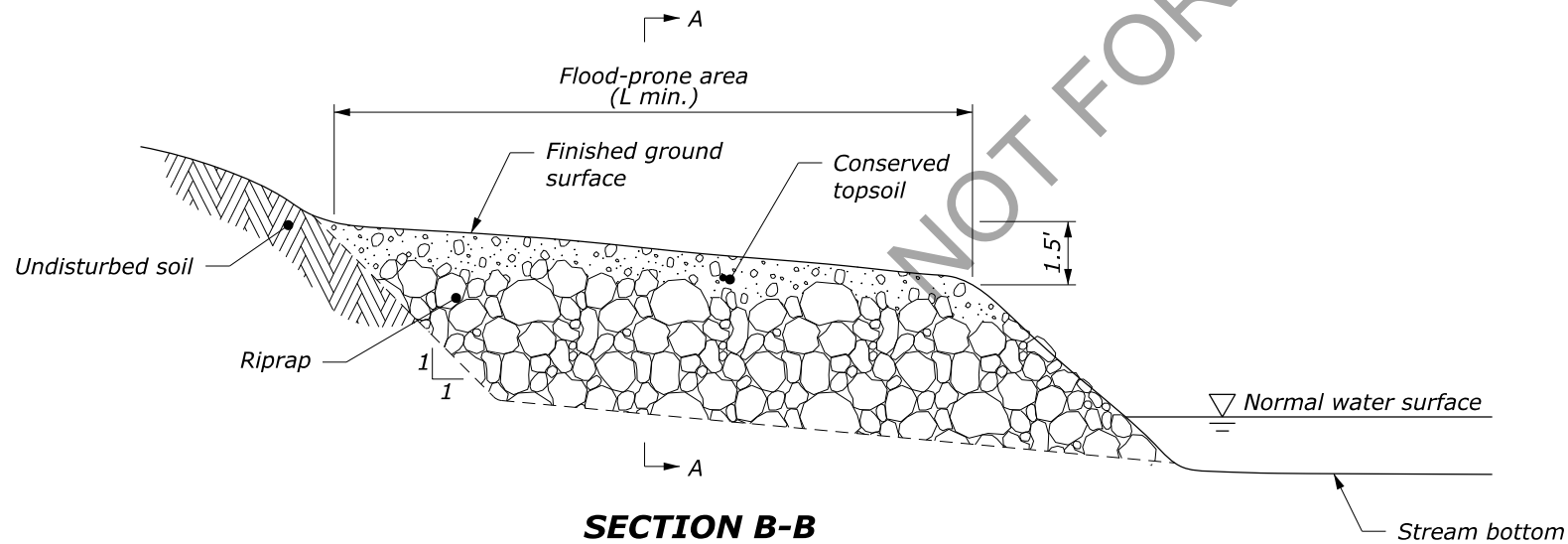
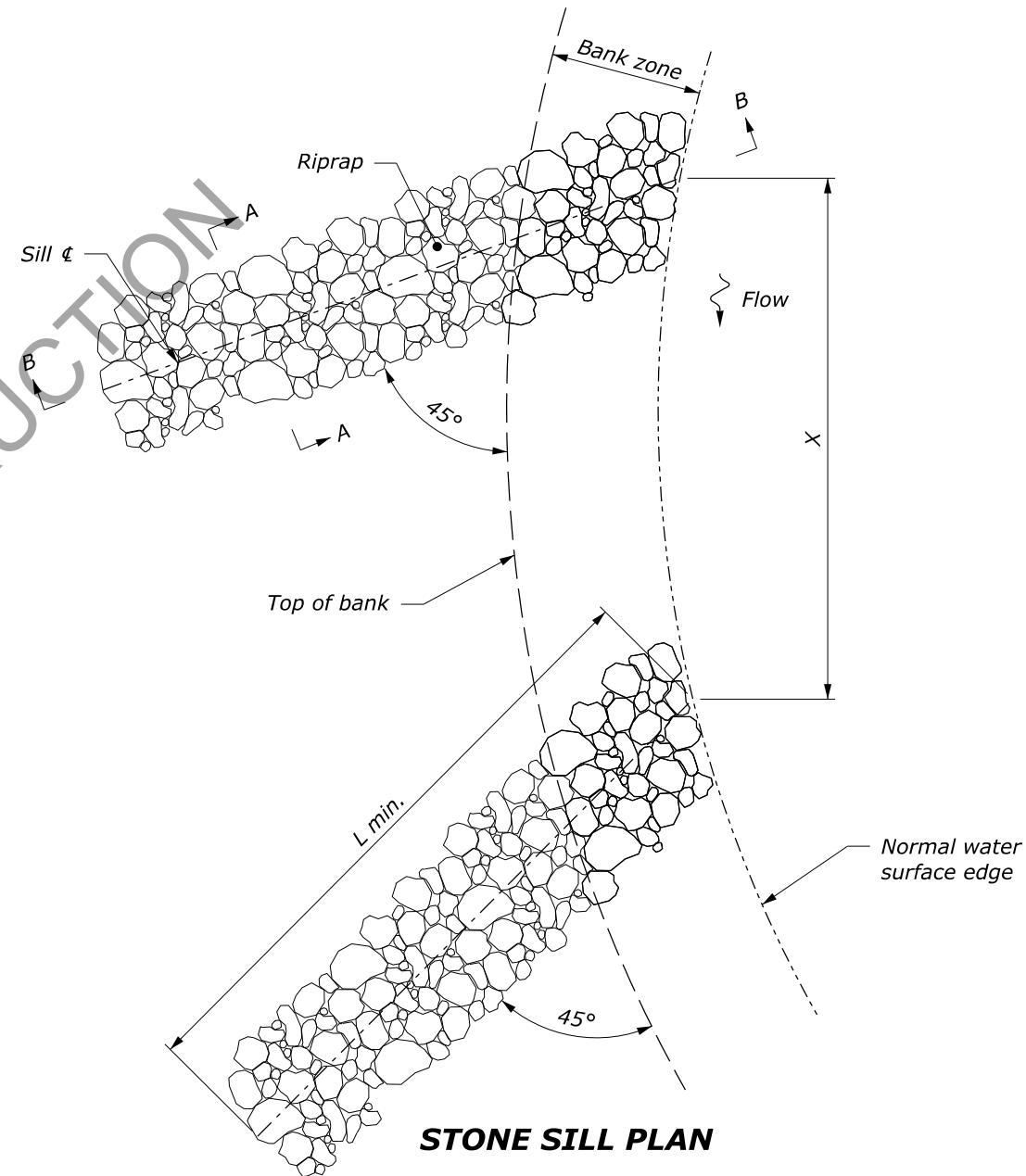
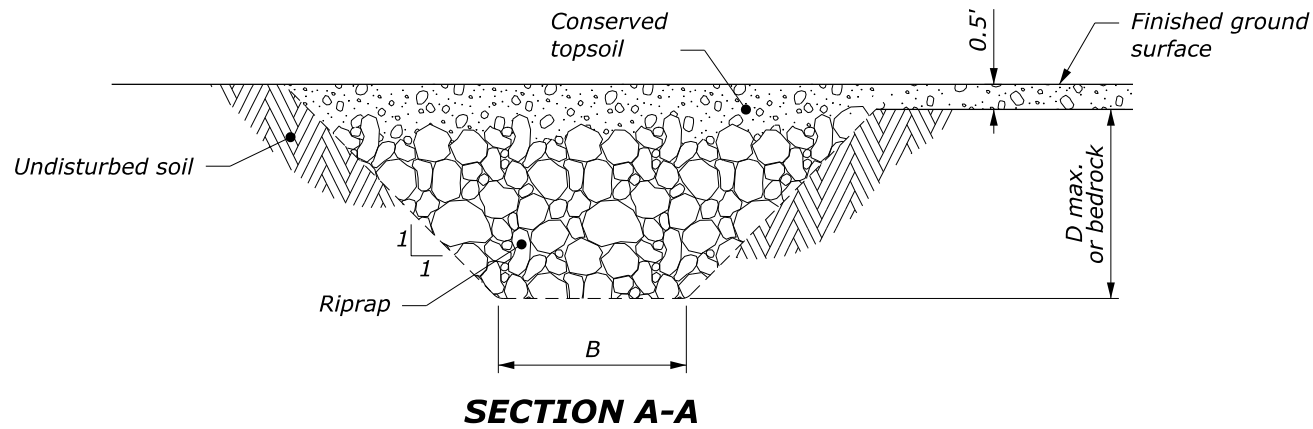


LANDSCAPE LOG TREATMENT
PLAN

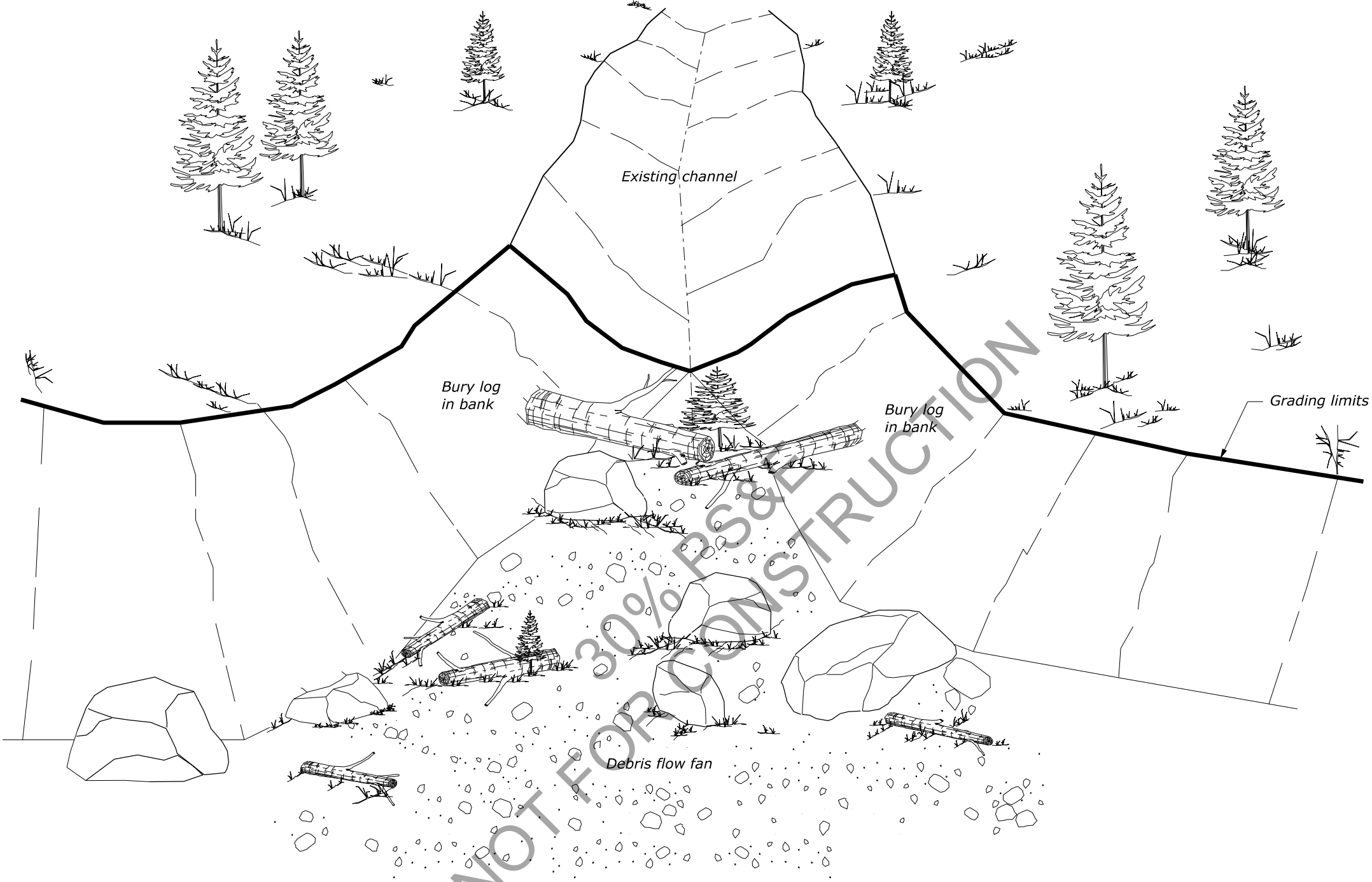


GRADE SLOPE TREATMENT
(TYPICAL)

PROJECT	SHEET NUMBER
MT ERFO NP YELL 2022-1(2)	G.14



STONE SILLS



**DEBRIS FLOW CHANNEL
CONCEPTUAL LANDSCAPE PLAN**

- NOTE:**
- 1. Shape and outlet channel to provide natural appearance.
 - 2. Place logs and boulders to dissipate velocities of future flows.
 - 3. Use excavated materials from the immediate area to create a natural channel.

DEBRIS CONE REDEVELOPMENT

ATTACHMENT F: SIGNED MEMORANDUM OF AGREEMENT

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**MEMORANDUM OF AGREEMENT
BETWEEN THE NATIONAL PARK SERVICE,
YELLOWSTONE NATIONAL PARK
AND**

**THE WYOMING AND MONTANA HISTORIC PRESERVATION OFFICERS
REGARDING THE NERRP
AND THE RCBRP**

WHEREAS, the National Park Service, Yellowstone National Park (NPS/YNP), plans to reconstruct the North Entrance Road between Mammoth Hot Springs, Wyoming and Gardiner, Montana (NERRP); and

WHEREAS, the NPS/YNP plans to replace the damaged Rescue Creek Bridge and construct a new parking area at the Rescue Creek Trail trailhead as part of the Rescue Creek Bridge Replacement Project (RCBRP); and

WHEREAS, the NPS/YNP has prepared an environmental assessment to disclose the potential effects of the NERRP on the human environment and has selected Alternative 2, Center Alignment, as the preferred alignment; and

WHEREAS, the NPS/YNP has defined the area of potential effects (APE) for the NERRP as the limits of disturbance plus a 50-meter (164-foot) buffer on either side of the centerline of the proposed alignment, as well as adjacent areas that may be disturbed during construction (e.g., clearing, grading, and staging); and

WHEREAS, the NPS/YNP has defined the APE for the RCBRP two existing parking areas and the asphalt surfaced road between them along the North Entrance Road, a 50-meter (164-foot) buffer surrounding the area of proposed disturbance for construction of the new bridge, and an off-road track along the bank of the Gardiner River to be used as a path for equipment access to remove the former bridge from the waterway; and

WHEREAS, the NPS/YNP has consulted with the Wyoming and Montana Historic Preservation Officers (SHPO) pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108), and determined that the NERRP will have an adverse effect on archeological site 24YE0072, which is eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, the NPS/YNP has consulted with the Montana SHPO and determined that the RCBRP will have an adverse effect on archeological site 24YE0344 which is eligible for listing in the NRHP; and

WHEREAS, the aforementioned adverse effects to 24YE0072 and 24YE0344 will both be mitigated under this MOA; and

WHEREAS, NPS/YNP has consulted with the Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Blackfeet Tribe, Cheyenne River Sioux Tribe, Chippewa-Cree Indians, Coeur d'Alene Tribe, Comanche Nation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Colville Indian Reservation, Confederated Tribes of the Umatilla Indian Reservation, Crow Creek Sioux Tribe, Eastern Shoshone Tribe, Flandreau Santee Sioux Tribe, Fort Belknap Indian Community, Kiowa Indian Tribe, Kootenai Tribe, Little Shell Tribe of Chippewa Indians, Lower Brule Sioux Tribe, Nez Perce Tribe, Northern Arapaho Tribe, Northern Cheyenne Tribe, Oglala Sioux Tribe, Rosebud Sioux Tribe, Shoshone-

Bannock Tribes, Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, Spirit Lake Tribe, Standing Rock Sioux Tribe, Turtle Mountain Band of Chippewa Indians, and Yankton Sioux Tribe, for which Yellowstone National Park has religious and cultural significance, regarding the effects of the NERRP and the RCBRP (undertakings) on historic properties, and has invited them to sign this memorandum of agreement (MOA) as concurring parties, and NPS/YNP received responses from the Blackfeet Tribe and the Confederated Tribes of the Colville Indian Reservation, indicating their desire to continue consultation; and

WHEREAS, NPS/YNP has consulted with the City of Bozeman, Livingston Historic Commission, the Livingston Historic Preservation Commission, the Park County (Wyoming) Historic Preservation Commission, Teton County (Idaho) Commissioners, and the Teton County (Wyoming) Historic Preservation Board, regarding the effects of the undertakings on historic properties and has invited them to sign this MOA as concurring parties and NPS/YNP received a response from the Park County (Wyoming) Historic Preservation Commission indicating their desire to continue consultation; and

WHEREAS, in accordance with 36 CFR §800.6(a)(1), NPS/YNP has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect determination with specified documentation on March 25, 2026, and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii) on June 3, 2026; and

NOW, THEREFORE, NPS/YNP and the SHPOs agree that the undertakings shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertakings on historic properties:

STIPULATIONS

The NPS/YNP shall ensure that the following measures are carried out:

I. TREATMENT PLAN

A. Preparation of an Archaeological Resources Treatment Plan (ARTP):

1. In consultation with all signatories and concurring parties, YNP has developed and will implement an ARTP for historic properties titled *Archeological Treatment Plan for Yellowstone North Entrance Road Federal Highway Projects*. This document is based on the *Archeological Treatment Plan for Yellowstone Grand Loop Road Federal Highway Projects: Prehistoric Sites* and on the *Addendum to Archeological Treatment Plan for Yellowstone Grand Loop Road Federal Highway Projects: Historical Archeological Resources*. The ARTP has been updated to modern archeological data collection standards and will be provided to all signatories and concurring parties for their review and concurrence. The ARTP outlines mitigation measures to be implemented at archeological sites impacted by the project in accordance with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation*. The ARTP describes:
 - a) The results of previous research relevant to the subject Undertaking and the research questions to be addressed through documentation, with explanation of their relevance and importance within an appropriate historic context;

- b) The specific field and laboratory methods to be used to evaluate cultural material associated with each historic property subject to treatment, and recovery of significant materials and features;
- c) Protocols for unanticipated cultural resource discoveries and treatment of human remains, should they be encountered, in accordance with 36 CFR 79, the Native American Graves Protection and Repatriation (43 CFR 10), as outlined in Stipulation II, below;

B. The review and approval process for the ARTP consisted of the following steps:

- 1. NPS/YNP drafted the ARTP and provided it for review to all MOA Signatories and Concurring Parties. Revisions to the draft ARTP were incorporated into the final ARTP after consultation with all signatories.

C. Standards

- 1. NPS/YNP will initiate implementation of the final, approved ARTP, and ensure completion of data recovery activities before construction activities and in compliance with the unanticipated discovery protocols throughout construction.
- 2. The ARTP will be implemented by or under the supervision of a person, or persons, meeting the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-44739) per Section 112(a)(1)(A) of the National Historic Preservation Act (NHPA) and 36 CFR § 800.2(a)(1) for a Principal Investigator.
- 3. All records and artifacts resulting from treatment, including data recovery, on federal lands shall be curated at an approved repository in accordance with federal regulations (36 CFR Part 79).
- 4. The signatories to this Agreement acknowledge that historic properties covered by this Agreement are subject to the provisions of Section 304 of the National Historic Preservation Act, as amended, relating to the disclosure of archeological site information. All actions and documentation prescribed by this Agreement must be consistent with these sections.

II. DISCOVERY SITUATIONS

- A. If previously unknown cultural resources are exposed by construction activities associated with the undertakings all procedures from the Inadvertent Discoveries section of the ARTP will be followed.

III. COMMUNICATION AMONG PARTIES TO THIS MOA

Communications with the Montana SHPO will be submitted through the Montana Cultural Resource Database portal at <https://svc.mt.gov/adsams/>. Communications with the Wyoming SHPO will be submitted through the WyoTrack portal at <https://shpo.uwyo.edu/>. Electronic mail (e-mail) will serve as the official correspondence method for all communications regarding this MOA and its provisions with concurring parties. It is the responsibility of each MOA Signatory to immediately inform NPS/YNP of any change in name, email address, web address, or phone number for any point-of-contact. NPS/YNP will forward this information to all parties to the MOA by e-mail or through the appropriate web database portal.

IV. CONFIDENTIALITY

To the maximum extent allowed by federal and state law, NPS/YNP will maintain confidentiality

of sensitive information regarding historic properties that could be damaged through looting or disturbance, and/or to help protect a historic property to which a Tribe attaches religious or cultural significance. However, any documents or records NPS/YNP has in its possession are subject to the Freedom of Information Act (FOIA) (5 U.S.C. 552 et. seq.) and its exemptions, as applicable. NPS/YNP shall evaluate whether a FOIA request for records or documents would involve a sensitive historic property, or a historic property to which a Tribe attaches religious or cultural significance, and if such documents contain information that NPS/YNP is authorized to withhold from disclosure by other statutes including Section 304 of the NHPA, as well as ARPA. If so authorized, then NPS/YNP will consult with the Keeper of the National Register and the ACHP regarding withholding the sensitive information. If a tribally sensitive property is involved, NPS/YNP will also consult with the relevant Tribe prior to making a determination in response to a FOIA request.

V. DURATION

This MOA will expire if its terms are not carried out within five (5) years from the date of the completion of NERRP. Prior to such time, NPS/YNP may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation VIII below.

VI. MONITORING AND REPORTING

Each calendar year following the execution of this MOA until it expires or is terminated, NPS/YNP shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in NPS/YNP's efforts to carry out the terms of this MOA.

VII. DISPUTE RESOLUTION

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, NPS/YNP shall consult with such party to resolve the objection. If NPS/YNP determines that such objection cannot be resolved, NPS/YNP will:

- A. Forward all documentation relevant to the dispute, including the NPS/YNP's proposed resolution, to the ACHP. The ACHP shall provide NPS/YNP with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, NPS/YNP shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. NPS/YNP will then proceed according to its final decision.
- B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, NPS/YNP may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, NPS/YNP shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.
- C. NPS/YNP's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

VIII. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

IX. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation VIII, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, NPS/YNP must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. NPS/YNP shall notify the signatories as to the course of action it will pursue.

Execution of this MOA by the NPS/YNP and SHPOs and implementation of its terms evidence that NPS/YNP has taken into account the effects of these undertakings on historic properties and afforded the ACHP an opportunity to comment.

X. ANTI-DEFICIENCY ACT

All requirements set forth in this MOA requiring the expenditure of NPS/YNP funds are expressly subject to the of the Anti-Deficiency Act (31 U.S.C. 1341). NPS/YNP will make a reasonable and good faith effort to secure the necessary funds to implement this MOA in its entirety. If compliance with the Anti-Deficiency Act alters or impairs the NPS/YNP's ability to implement the stipulations of this MOA, NPS/YNP will consult with the SHPO and ACHP in accordance with the amendment and termination procedures in Stipulations VII and VIII respectively.

XI. SUNSET TERMS

This MOA shall remain in effect until 5 years after the completion of the NERRP as outlined in section V, or until it is terminated as outlined in section IX. The National Park Service and the Montana and Wyoming SHPOs shall re-evaluate the MOA every 2 years. The National Park Service shall ensure the MOA will be re-evaluated and amended, to accommodate any changes to the terms. All Signatories will be consulted during the amendment process (See Section VIII).

General Provisions

- A. **Entirety of Agreement.** This MOA, consisting of seven (7) pages, represents the entire and integrated agreement between the Parties and supersedes all prior negotiations, representations and agreements, whether written or oral, regarding compliance with Section 106 of the National Historic Preservation Act.
- B. **Prior Approval.** This MOA shall not be binding upon any party unless this MOA has been reduced to writing before performance begins as described under the terms of this MOA, and unless the MOA is approved as to form by the Attorney General or his representative.
- C. **Severability.** Should any portion of this MOA be judicially determined to be illegal or

unenforceable, the remainder of the MOA shall continue in full force and effect, and any party may renegotiate the terms affected by the severance.

- D. **Sovereign Immunity.** The State of Wyoming, the State of Montana, the WYSHPO, MTSHPO, and the Tribes expressly reserve their sovereign or governmental immunity by entering into this MOA and each fully retains all immunities and defenses provided by law with respect to any action based on or occurring as a result of the MOA.
- E. **Liability.** Each signatory to this MOA shall assume the risk of any liability arising from its own conduct. Each Signatory agrees they are not obligated to insure, defend, or indemnify the other Signatories to this MOA.

Execution of this MOA and implementation of its terms evidence that the National Park Service has taken into account the effects of the undertaking on historic properties.

Signatures. In witness whereof, the Parties to this MOA through their duly authorized representatives have executed this MOA on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this MOA as set forth herein.

The effective date of this MOA is the date of the last Signatory signature affixed to these pages.

SIGNATORIES:

National Park Service/Yellowstone National Park


Cameron H. Sholly, Superintendent

6/25/26
Date

Montana State Historic Preservation Officer


Peter Brown, State Historic Preservation Officer

7/30/2026
Date

Wyoming State Historic Preservation Officer


Sara Sheen, State Historic Preservation Officer

7/30/26
Date

CONCURRING PARTIES:

Blackfeet Tribe of the Blackfeet Indian Reservation of Montana

Rodney Gervais, Chairman

Date

Confederated Tribes of the Colville Indian Reservation

Cody Desautel, Executive Director

Date

Park County Historic Preservation Commission


Laura L. Scheiber, Chair

9/1/26

Date

Approval as to Form:
Wyoming Attorney General's Office


For Megan Pope
Assistant Attorney General

7-22-27

Date

REFERENCES USED IN FONSI AND ATTACHMENTS

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