



Natural Resource Damage Assessment Work Plan

Reed Point Bridge Derailment – Draft



June 10, 2024

Prepared for:

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Acronyms

CECRA	Comprehensive Environmental Cleanup and Responsibility Act
DSAYs	Discounted Service Acre-Years
EPA	U.S. Environmental Protection Agency
FAS	Fishing Access Site
FWP	Montana Fish, Wildlife, and Parks
HEA	Habitat Equivalency Analysis
MCA	Montana Code Annotated
MRL	Montana Rail Link, Inc.
NPS	National Park Service
NCP	National Contingency Plan
NOI	Notice of Intent
NRDA	Natural Resource Damage Assessment
NRDP	Natural Resource Damage Program
OPA	Oil Pollution Act
OWCN	Oiled Wildlife Care Network
SCAT	Shoreline Cleanup and Assessment Technique
USFWS	U.S. Fish and Wildlife Service

1. Introduction

On June 24, 2023, a train operated by Montana Rail Link, Inc. (“MRL”) traversing the Twin Bridges Road railroad bridge approximately 40 miles west of Billings, Montana, derailed (Exhibits 1-1, 1-2, and 1-3). A total of 17 railcars derailed, 10 of which entered the Yellowstone River. Of those entering the river, 6 contained asphalt liquified petroleum (“asphalt”), 3 contained molten sulfur, and 1 contained scrap aluminum. The incident also involved the partial collapse of the railroad bridge.

Approximately 420,000 pounds of asphalt (“oil” as defined by 33 U.S.C. § 2701(23)) were released and an estimated 236,446 pounds of asphalt have been recovered to date. The shoreline and aquatic habitats of the Yellowstone River where the incident took place support a diversity of terrestrial and aquatic biota, as well as recreational activities such as boating and fishing, that were impacted by the incident.

Exhibit 1-1. The Twin Bridges Road railroad bridge after the derailment.

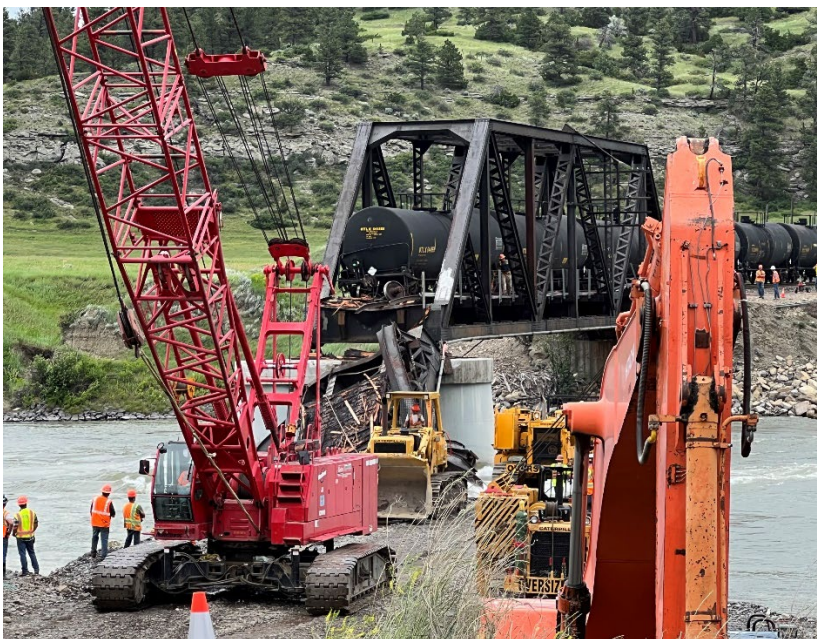


Photo credit: Kaylene Ritter, Abt, July 1, 2023.

Exhibit 1-2. Side view of the Twin Bridges Road railroad bridge after the derailment.



Photo credit: Kaylene Ritter, Abt, July 1, 2023.

Exhibit 1-3. Train derailment location.

The Montana Natural Resource Damage Program (NRDP) is working on behalf of the Trustee of state natural resources at the site, the Governor of the State of Montana, to assess natural resource damages resulting from the spilled asphalt. When used in this Work Plan, “Trustee” generally refers to NRDP acting on behalf of the Trustee, although this Work Plan also describes the legal authority that the Governor has as the natural resource trustee for Montana. The Trustee is authorized under the Oil Pollution Act (OPA) to act on behalf of the public to (1) assess natural resource injuries resulting from a discharge of oil or the substantial threat of a discharge, as well as response activities associated with clean-up of the oil, and (2) develop and implement a plan for restoration, rehabilitation, replacement, or acquisition of the equivalent, of such injured resources [OPA, 33 U.S.C. § 2706 *et seq.*]. Regulations outlining a process for conducting natural resource damage assessments (NRDAs) for the release of oil have been established under OPA [15 C.F.R. § 990 *et seq.*].

Following the OPA regulations, the Trustee conducted a preliminary review of existing data and published a Notice of Intent (NOI) to Conduct Restoration Planning [15 C.F.R. § 990.44]. The Trustee made the determination to proceed with an NRDA, concluding that the incident discharged asphalt into the Yellowstone River, natural resources are likely to have been exposed to and injured by the discharged asphalt, and the data required to perform an assessment can be obtained at a reasonable cost (NRDP, 2023a).

To ensure that the assessment is performed in a planned and systematic manner, and that the methodologies chosen to assess injury are cost-effective, the Trustee has prepared this Work Plan. This Work Plan, which is being made available for public comment, describes the Trustee's proposed plan, consistent with 15 C.F.R. § 990.14(d), for determining and quantifying injury to natural resources and services resulting from the discharged asphalt and response activities associated with the incident.

The Trustee refers to this incident as the Reed Point Bridge Derailment. It is also known as the Stillwater Train Derailment.

1.1 Public Review and Comment

The Trustee intends for this Work Plan to communicate the assessment approach to the public, so that the public can become engaged and actively participate in, or comment on, assessment activities. Public input may also provide the Trustee with new information and ideas that may be incorporated into the assessment.

The public comment period will last for at least 30 days, with a reasonable extension granted if appropriate. Any comments received by the Trustee, together with responses to those comments, will be included as attachments to the final version of the Work Plan. Comments may be submitted in writing to:

Attn: Reed Point NRDA Work Plan
Montana Natural Resource Damage Program
PO Box 201425
Helena, MT 59620-1425

Via fax: 406-444-0236

Or via email:
NRDP@mt.gov

Please put “Reed Point NRDA Work Plan” in the subject line.

Though not required by OPA, NRDP will present the draft Work Plan at a public meeting in Columbus on June 26, 2024, in response to public interest. The public meeting will be advertised in display advertisements in the Billings Gazette and the Stillwater County News. On June 10, 2024, NRDP sent notices of the draft Work Plan comment opportunity to 32 individuals and entities on its mailing list.

The Work Plan may be modified at any stage of the assessment as new information becomes available. Any significant modification to the Work Plan may be made available for additional public comment and review.

1.2 Potentially Responsible Parties

Pursuant to OPA under 33 U.S.C. § 2701 (32)(B), MRL has been identified as a Responsible Party for this incident. MRL is also identified as a potentially liable person pursuant to Montana Code Annotated (MCA), Section 75-10-715. The OPA regulations specify that natural resource trustees should invite the responsible party to participate in the damage assessment process [15 C.F.R. §§ 990.14(c) and 990.44(d)]; additionally, if trustees decide to proceed with an NRDA, they must prepare an NOI to Conduct Restoration Planning. Accordingly, on November 20, 2023, the Trustee invited MRL to participate in an NRDA and concurrently provided MRL with an NOI to Conduct Restoration Planning (NRDP, 2023a). Federal regulators approved MRL's petition to discontinue rail service along the former Northern Pacific main line between Huntley, Montana, and Sandpoint, Idaho, and BNSF Railway Company resumed operations along this line starting January 1, 2024. Accordingly, this NOI was also provided to BNSF Railway Company.

MRL and the Trustee had previously signed an agreement on July 26, 2023, for the Trustee to conduct preassessment screening activities with funding from MRL. MRL accepted the invitation to participate in the NRDA process, and the agreement was modified on March 8, 2024, to provide funding to prepare the Work Plan cooperatively, with the opportunity to meet and confer with MRL at defined points throughout the development. If the Parties do not agree, final decisions on the Work Plan and incorporation of comments will be made by NRDP. MRL and NRDP will also evaluate potential early restoration projects for the site and share new data or information collected by either party. The agreement does not include implementation of the Work Plan; an additional agreement or modification to the agreement would be needed to fund implementation.

1.3 Trusteeship Authority

Pursuant to OPA under 33 U.S.C. § 2706(c)(2), the State Trustee for natural resources is authorized to (1) assess natural resource injuries resulting from a discharge of oil or the substantial threat of a discharge, as well as response activities associated with clean-up of the oil, and (2) develop and implement a plan for restoration, rehabilitation, replacement, or acquisition of the equivalent, of such injured resources. As noted previously, the Governor of the State of Montana is the natural resource Trustee for State resources and acts through NRDP, in accordance with 40 C.F.R. § 300.605 and 33 U.S.C. § 2706(b)(3). In addition to acting as a Trustee for this incident under OPA, the State of Montana is also acting pursuant to its applicable state laws and authorities, including, without limitation, the Comprehensive Environmental Cleanup and Responsibility Act (CECRA), § 75-10-701, MCA, *et seq.*

1.4 Natural Resource Damage Assessment Process

The primary goal of NRDA under OPA is to make the environment and public whole for injuries to natural resources, and services provided by those resources, resulting from incidents involving an oil discharge or substantial threat of an oil discharge [15 C.F.R. §990.10]. Restoration activities under OPA are intended to return injured natural resources and services to their baseline conditions, and to compensate the public for interim losses from the time of the incident until the time resources and services recover to baseline conditions. To meet these goals, the restoration activities need to produce benefits that are related to or have a nexus to the natural resource injuries and service losses resulting from the spill.

To the extent practical, the OPA regulations state that an NRDA should be conducted in coordination with investigations undertaken as part of National Contingency Plan (NCP) response actions [15 C.F.R. §990.21]. The goals of this coordination are to avoid duplication, reduce costs, and achieve dual objectives where practical.

The Trustee intends to follow the guidance provided in the OPA regulations for conducting this NRDA, which the Trustee has called the Reed Point NRDA. The three major phases in the OPA NRDA process are the “preassessment phase,” the “restoration planning phase,” which includes injury determination and quantification and restoration selection, and the “restoration implementation phase.”

The Trustee has completed the preassessment phase for this incident. This Work Plan focuses on the next phase, in particular, injury assessment (injury determination and quantification steps) of the restoration planning phase. Below we provide a brief overview of the three NRDA phases, and in Section 4, we summarize the Trustee’s approach for injury determination and quantification.

1.4.1 Preassessment Phase

The preassessment phase of an NRDA is the first step described in the OPA regulations. In the preassessment phase, natural resource trustees first determine if they have jurisdiction to pursue restoration under OPA [15 C.F.R. § 990.41]. If it is determined a trustee has jurisdiction to pursue restoration under OPA, the trustee then makes a determination on restoration planning [15 C.F.R. §

990.42]. During this phase, natural resource trustees determine if (1) injuries have resulted, or are likely to result, from the incident; (2) response actions have not adequately addressed, or are not expected to address, the injuries resulting from the incident; and (3) feasible primary and/or compensatory restoration actions exist to address the potential injuries. If it is determined that all of the conditions listed above are met, natural resource trustees may then proceed with issuing an NOI to Conduct Restoration Planning.

In June 2023, NRDP, on behalf of the Trustee, began the preassessment phase of the Reed Point NRDA in accordance with 15 C.F.R. Part 990, Subpart D, to determine if the Trustee had jurisdiction to pursue restoration under OPA, and, if so, whether it was appropriate to do so. The Trustee, with NRDP acting on the Governor's behalf, has determined that the State has jurisdiction to pursue restoration under OPA and CECRA, including § 75-10-715(2)(b), MCA.

Pursuant to 15 C.F.R. § 990.42(a), the Trustee prepared an NOI to Conduct Restoration Planning in the fall of 2023. The NOI stated the Trustee's determinations that (1) injuries to natural resources and natural resource services have resulted from the incident; (2) the response actions did not address and are not expected to address all injuries resulting from the discharge of asphalt; and (3) feasible restoration actions exist to address the natural resource injuries and losses, including lost human uses, resulting from the discharges of asphalt.

Based upon these determinations, the Trustee concluded that restoration planning for the incident should proceed. The Trustee provided MRL with the NOI and also made it available to the public pursuant to 15 C.F.R. § 990.44(c) on November 20, 2023.

1.4.2 Restoration Planning Phase

The restoration planning phase of an NRDA is the second step described in the OPA regulations. The purpose of this phase is to provide the trustees with a process to evaluate and quantify potential injuries (injury assessment) and use that information to determine the need and scale of restoration (restoration selection) [15 C.F.R. §990.50].

Injury Assessment

After issuing an NOI to Conduct Restoration Planning, natural resource trustees then determine if injuries to natural resources and/or services have resulted from the incident (injury determination) [15 C.F.R. § 990.51]; if so, they then quantify those injuries (injury quantification) [15 C.F.R. § 990.52]. The goal of injury assessment is to determine the nature, extent, and degree of any injuries to natural resources and services that resulted from the incident. This information will provide a basis for evaluating restoration actions.

Injury Determination

Natural resource trustees must determine if injuries to natural resources and/or services have resulted from the incident. To make this determination, trustees need to determine that natural resources have been exposed to discharged oil and must establish a pathway from the discharge to the natural resources. The trustees also identify injury, establish exposure and pathway, identify injuries resulting from response actions, and select injuries to include in the assessment [15 C.F.R. § 990.51].

The Trustee's approach to injury determination for the Reed Point Bridge Derailment is described in Section 4.1.

Injury Quantification

Natural resource trustees then quantify the degree and spatial and temporal extent of such injuries relative to baseline and may translate that adverse change to a reduction in services provided by the natural resource, or the amount of services lost as a result of the incident [15 C.F.R. §990.52].

The Trustee's approach to injury quantification for the Reed Point Bridge Derailment is described in Section 4.2.

Restoration Selection

If the injury determination and quantification justify restoration, natural resource trustees may proceed with restoration selection. The goal of restoration selection is to consider a reasonable range of restoration alternatives that address one or more specific injury(ies) associated with the incident before selecting their preferred alternative(s). During the restoration selection, the trustees must develop restoration alternatives [15 C.F.R. §990.53], must evaluate the alternatives [15 C.F.R. §990.54], and must develop a restoration plan [15 C.F.R. §990.55].

1.4.3 Restoration Implementation Phase

The restoration implementation phase is the final step in the NRDA process. After the assessment is complete, natural resource trustees close the administrative record [15 C.F.R. §990.61]. A written demand is then presented to the responsible parties [15 C.F.R. §990.62].

As noted above, this Work Plan focuses on the injury assessment – injury determination and quantification steps – of the restoration planning phase.

1.5 Organization of the Work Plan

The remainder of this Work Plan is organized as follows. Section 2 provides an overview of the incident and response. Section 3 describes the Assessment Area and the natural resources within the Assessment Area. Section 4 presents the proposed assessment approach that the Trustee will use to determine and quantify injury to natural resources and service loss. The final section contains references cited in the text.

2. Description of the Incident and Response

In this section we provide an overview of the incident, information on the resulting emergency closure, a description of observed asphalt downstream of the train derailment site, and a summary of wildlife mortalities observed in the field.

2.1 Overview

As a result of the derailment about 420,000 pounds of asphalt were released into the river (NRDP, 2023a; EPA, 2024a), and asphalt was observed on the Yellowstone River's banks more than 130 miles downstream from the incident (NRDP, 2023a; EPA, 2024a; MRL, 2023a). Observed asphalt deposits ranged from deposits spanning multiple feet of shoreline (Exhibit 2-1) to deposits a few centimeters in diameter (Exhibit 2-2). A portion of the river bottom, rocky shorelines (Exhibit 2-3), riparian vegetation (Exhibit 2-4), some backwater quiescent fish nursery habitats, and the surface water (Exhibit 2-5) were affected by the spilled asphalt. In addition, some nearshore habitats were affected by response activities (e.g., staging grounds for the response).

On June 25, the Unified Command (consisting of EPA, MRL, Montana Department of Environmental Quality, and Stillwater Department of Emergency Services) began work to remove the 10 rail cars from the river. All railcars were removed from the river by July 2, and from the east side of the bridge by July 3. The bridge was then reconstructed, with rail transportation resuming after bridge construction completion on July 22 (EPA, 2023h,m).

2.2 Emergency Closures and Staging Areas

On June 24, Stillwater County Department of Emergency Services (DES) directed the Sheriff's department to close all public access to the Stillwater River and Yellowstone River in Stillwater County and have campers leave all sites with direction to not access the waters (DES, 2024). Montana FWP enforcement staff assisted, along with the Sweet Grass County Sheriff's office, to reach all of the Stillwater County sites as quickly as possible to prevent people from floating into the site or the river downstream of the incident (DES, 2024). By mid-morning of June 24, 2023, the public was notified through agency social media posts that the Stillwater River was closed from White Bird Fishing Access Site (FAS) to the confluence of the Yellowstone River, and the Yellowstone River was closed from Pelican FAS to Buffalo Mirage to boaters and floaters and from Twin Bridges Road to Buffalo Mirage for all water and shoreline access (FWP, 2023f; DES, 2024; see Section 3).

Once Unified Command was established, Stillwater DES and Unified Command staff worked with FWP staff to establish the work site, safety zones, and public access restrictions based on conditions. Late on June 25, 2023, the portion of the Stillwater River from Jefferies Landing to White Bird FAS was reopened, and the Yellowstone River from the Stillwater County and Sweet Grass County line downstream to include Indian Fort FAS was reopened. White Bird FAS to the confluence remained closed to downstream boating and floating under these emergency closures from June 24 to June 27, 2023 (FWP, 2023f; DES, 2024). Of note, Swinging Bridge FAS on the Stillwater River was previously closed from flood damage and underwent restoration work from June 16, 2022 through August 23, 2023.

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-1. Asphalt deposits along shoreline. Photos taken approximately 1.5 miles downstream of the train derailment site, on the lee side of an island.



Photo credits: Kaylene Ritter, Abt, July 2, 2023.

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-2. Asphalt deposits a few centimeters in diameter. Top photo taken near Worden, Montana (coordinates 45.97984 N, 108.23328 W); bottom photo taken at Dover, Montana.



Photo credits: Whitewater Rescue Institute, June 27, 2023 (top), U.S. Fish and Wildlife Service, August 22, 2023 (bottom).

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-3. Asphalt deposits along rocky shoreline. Photo taken near Worden, Montana (coordinates 45.97984 N, 108.23328 W).

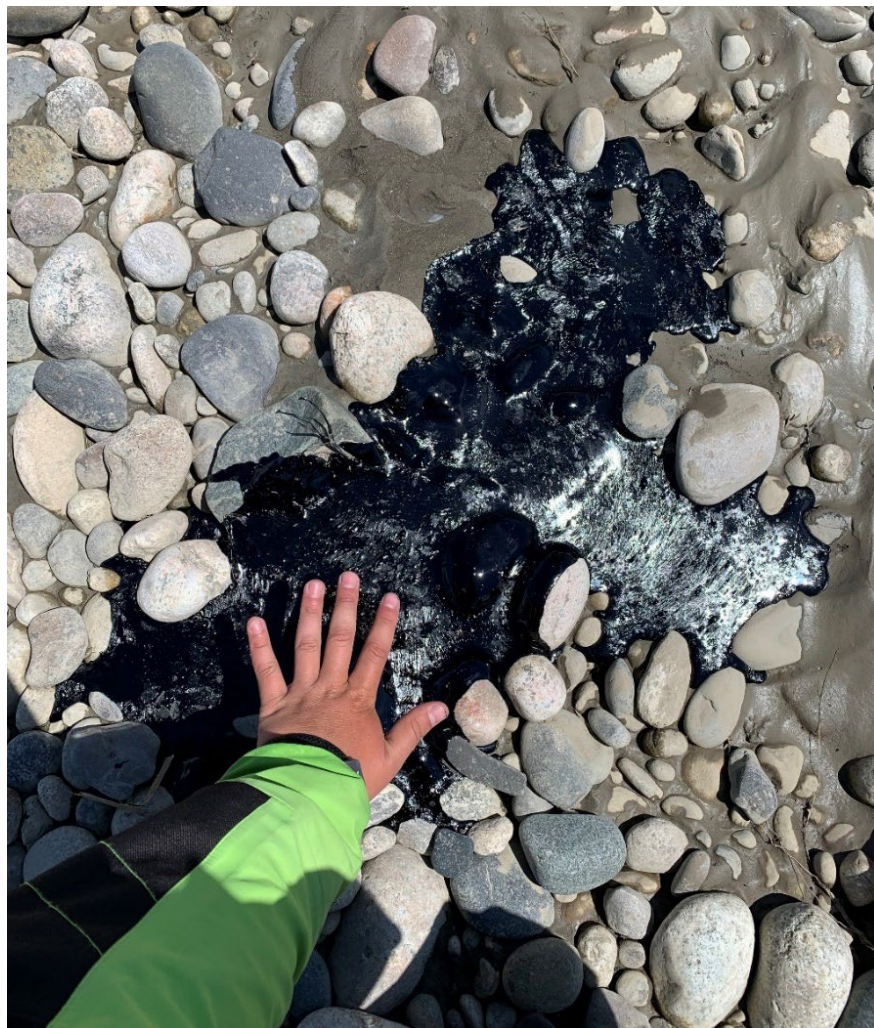


Photo credit: Kaylene Ritter, Abt, July 2, 2023.

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-4. Asphalt deposits along riparian vegetation.



Photo credits: Kaylene Ritter, Abt, July 2, 2023.

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-5. Asphalt deposits in water. Image displays the asphalt breaking into small pieces and spreading downstream. Photo taken near Worden, Montana (coordinates 45.97984 N, 108.23328 W).



Photo credit: Whitewater Rescue Institute, June 27, 2023.

Beginning on June 27, 2023, at 12 p.m., FWP declared an emergency closure on a portion of the Yellowstone River between Reed Point and Columbus, spanning 3.5 river miles (Montana Administrative Register 12-605, 2023a). FWP's emergency closure of the Yellowstone River spanned 2.5 river miles downstream to 1 river mile upstream of the Twin Bridges Road railroad bridge where the derailment occurred (Montana Administrative Register 12-605, 2023a). This portion of the Yellowstone River was deemed unsafe for downstream boating, floating, and shoreline use due to debris from the partial collapse of the Twin Bridges Road railroad bridge and the train derailment into the river (FWP, 2023b; Montana Administrative Register 12-605, 2023a). The closure created a safe upstream distance to prevent accidental boating or floating into the active work site. All prior temporary restrictions and closures related to this incident ceased with the formal closure on June 27 (DES, 2024). This river closure effectively closed the Yellowstone River from Indian Fort FAS to Holmgren FAS for all non-motorized watercraft while allowing motorized watercraft to use areas that were not within the closure area. The closure was rescinded July 29, 2023, and the river was opened for public use (EPA, 2023b).

On June 30, 2023, FWP declared an emergency closure to the public at the Holmgren Ranch FAS (FWP, 2023a), which was used as a worksite and staging area by the assessment and cleanup crew members for the spilled material, resulting in hazardous conditions for the general public (this situation constituted an imminent peril to public health, safety, and welfare; Montana Administrative Register 12-608, 2023b). A special use permit, signed on June 30, 2023, was in place for Holmgren FAS (FWP, 2023e). Thus, public access was not allowed at this location during the closure from June 30 through July 21, 2023 (FWP, 2023c; Montana Administrative Register 12-608, 2023b). Exhibits 2-6 and 2-7 were taken at and upriver of the Holmgren Ranch FAS.

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-6. Signage at the Holmgren Ranch FAS indicating river closure at Twin Bridges (train derailment site).



Photo credit: Kaylene Ritter, Abt, July 2, 2023.

Exhibit 2-7. Signage on the Yellowstone River indicating river closure.



Photo credit: Kaylene Ritter, Abt, July 2, 2023.

Cleanup teams also used the boat ramp at Itch-Kep-Pe Park during the incident response to access the river, closing the ramp to the public on July 8, 2023 (MRL, 2023b). The hand-launch boat ramp near the Highway 78 bridge remained open to watercraft (MRL, 2023b). Itch-Kep-Pe Park boat ramp was reopened to the public on July 21, 2023 (FWP, 2023g). On July 10, 2023, crews began improvement work with heavy machinery at Buffalo Mirage FAS near Laurel in advance of extending cleanup and assessment efforts downstream (MRL, 2023b). Buffalo Mirage was not closed to public use and was used as a transitional area for shoreline cleanup and assessment technique (SCAT) and clean-up boat access (MRL, 2023b). A special use permit, signed on July 17, 2023, was in place for Buffalo Mirage FAS (FWP, 2023d).

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Cleanup teams relocated their base of operation from Holmgren FAS downstream to Riverside Park in Laurel on July 19, 2023 (EPA, 2023a). MRL leased a portion of Riverside Park (the campground) but did not close the boat ramp or the Park to public use. MRL used boat launches for on-river crews and used the Park as a staging area for asphalt material collection (EPA, 2023a; FWP, 2023g). On July 21, 2023, the Holmgren FAS was reopened for public use, though some cleanup resources continued to be staged there for the duration of the response (FWP, 2023c). The stretch of the Yellowstone River that had been closed from 1 mile upstream to 2.5 miles downstream of the derailment was reopened on Saturday, July 29, 2023, by FWP (EPA, 2023b).

Other FWP sites were utilized by SCAT and clean-up teams as staging areas but were not closed to the public during the initial clean-up. Those sites include Duck Creek, Blue Creek, East Bridge, Voyagers Rest, and Captain Clark FASs on the Yellowstone River. The access trail to the gravel bar boat launch area in Voyagers Rest FAS was slightly widened and a limited amount of gravel was added at the transition from the site to the gravel bar. No special use permits were determined to be necessary for use of these sites as the total number of boats and vehicles was expected to be minimal and no overnight use or temporary staging equipment was anticipated to be needed.

2.3 Observed Asphalt Downstream

On June 27, 2023, an initial rapid assessment for asphalt in the river and along shorelines began, with teams observing asphalt material up to 110 miles downstream of the bridge. The rapid assessment extended over 240 miles downstream from the derailment site. Following this rapid assessment, SCAT surveys began on July 2, 2023 (Washington Corporations, 2024). Recovery operations included 50 river response vessels and over 200 responders. Responders traveled over 50,000 river miles from the derailment site (river mile 0) downstream below the confluence with the Big Horn River (river mile 136; Washington Corporations, 2024). SCAT teams surveyed 827 sites from the derailment location to river mile 136. The SCAT crews searched for asphalt, observed the shores and islands in the river for mats and other asphalt material, and mapped the identified locations (EPA, 2023c). These crews documented and reported areas of removable asphalt, as well as areas where asphalt was observed, but removing the asphalt was determined to cause more environmental harm than good (e.g., wildlife nesting locations). Following the SCAT assessment, a cleanup group removed the asphalt material by hand and bagged it for collection. Lastly, a third group transported the collected waste material back to the central staging location (EPA, 2023c).

MRL launched the rpderailment@mtrail.com email on June 27, further allowing the public to report observations. A press release by Unified Command the same day (10:00 a.m.) advised the public of this additional method of reporting observed asphalt. MRL first received a public report on June 27. MRL monitored the email and responded to reports. Emergency asphalt cleanup operations extended into August 2023 (EPA, 2024a). On July 1, 2023, United Command approved guidelines for the removal of actionable asphalt; these guidelines stated, “actionable asphalt on land is defined as an accessible patty or mat that can be efficiently removed by manual techniques with less than approximately 30% entrained in rock and sediment. The objective is to remove as much asphalt as possible without removing native sediment and rock. Actionable asphalt in water is defined as asphalt patties and mats that are visible and accessible where it is efficiently retrieved in one piece with no entrained sediment or rock” (EPA, 2023o). The guidelines also stated that if actionable asphalt cannot be safely removed, it would be left in place to weather naturally and “will be broken and mixed with sediment to enhance weathering and degradation and to reduce the contact risk for wildlife and recreators” (EPA, 2023o). These guidelines were updated in the Proposal for Future SCAT and Shoreline Recovery Guidelines (EPA, 2023e), which was approved by the Unified Command on August 3, 2023. The type and size of asphalt deposits that would be removed by the cleanup crews were defined in this document as:

- deposits that were 50 cm or larger on pebbles

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

- deposits that were 15 cm or larger on sand
- deposits on vegetation or root balls were only removed if the asphalt was extremely thick, sticky, and/or dripping (EPA, 2023e).

On August 7, cleanup crews reached an initial river cleanup end point at 136 miles downstream from the incident site, just below the confluence with the Bighorn River (MRL, 2023a). The Proposal for Future SCAT and Shoreline Recovery Guidelines (EPA, 2023e) document states that cleanup efforts will wind down when three or fewer actionable asphalt areas are found within a “rolling” ten-mile stretch of the river. A single actionable asphalt area was identified in the final 10 miles of cleanup, triggering wind down (MRL, 2023a). Additionally, river operations were scaled down at this time due to low water levels preventing safe boat access to cleanup areas (MRL, 2023a). There may have been asphalt deposited beyond this point that did not trigger the actionable asphalt criteria.

On September 4, the Unified Command approved a Transition Plan (EPA, 2023d), indicating that cleanup had progressed from an emergency response to maintenance operations. The transition plan also included a potential additional cleanup effort in the summer of 2024 (EPA, 2023d).

As noted above, not all observed asphalt was removed from shorelines by the cleanup crews. The intent of the removal criteria was to balance the effects of the released material on the environment against labor efficiencies and the effects of the removal work, such as the increased foot traffic along the shorelines, and removal of native materials from local habitats, such as removal of natural sediment and vegetation. However, this also meant that not all the spilled asphalt was cleaned up, and asphalt remained in the environment, exposing natural resources.

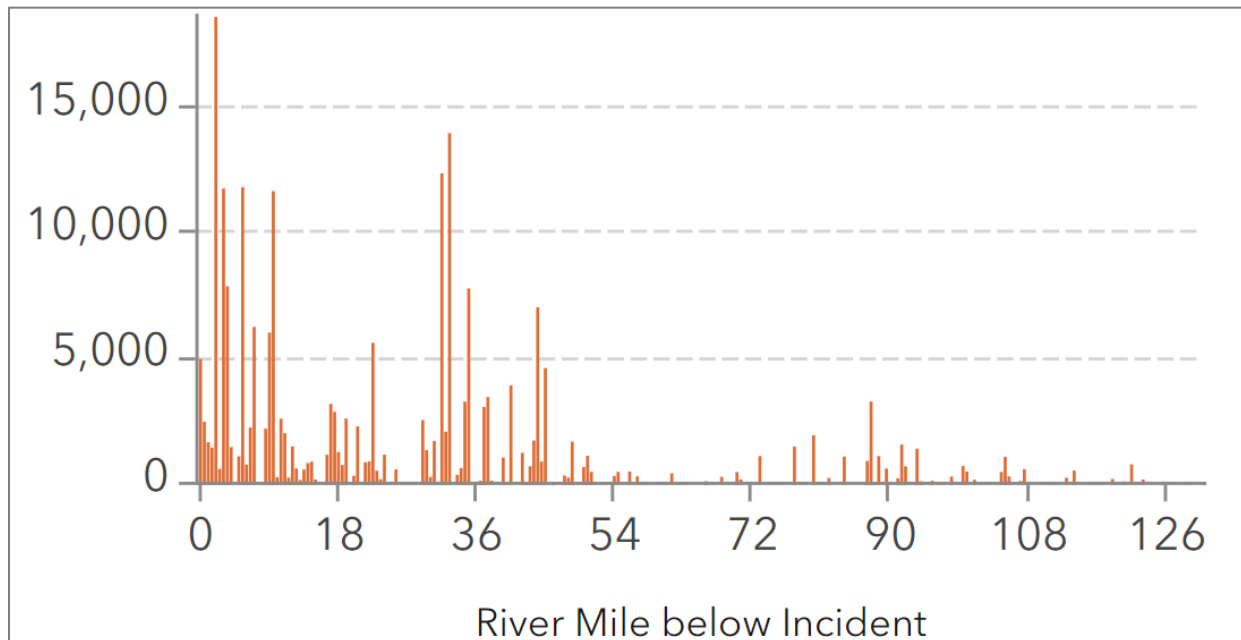
As water levels fell, additional actionable and accessible asphalt became exposed and was reported by NRDP and members of the public. MRL responded to these reports and conducted additional removal operations under the Transition Plan; these operations recovered approximately 3,600 additional pounds of asphalt in 2023 (EPA, 2023f).

By completion of 2023 cleanup activities, an estimated 236,385 pounds of asphalt were recovered, from ~136 river miles (Exhibit 2-8; EPA, 2024a,b; MRL, 2023a). This represents an approximate 60% recovery of the estimated 420,000 pounds spilled into the Yellowstone River at the time of the incident with more than 40% unrecovered at the end of cleanup activities in 2023. This asphalt may represent a combination of observed asphalt that did not meet “actionable” criteria, asphalt that was present within the 136 river miles but not observed by cleanup crews, and any asphalt that may have been transported even farther downstream. The weight of the collected asphalt was estimated by weighing bags of asphalt, followed by visually inspecting the material in the bags to determine a percentage of various debris (e.g., wood, rocks, etc.) in the bags (EPA, 2023d). This percentage was deducted from the overall weight to account for the weight of the various debris that was not asphalt (EPA, 2023d).

On February 16, 2024, the Unified Command released the Phase 2 cleanup plan. According to the Phase 2 cleanup plan, after ice, debris, and water levels permit safe access in the spring, the Phase 2 plan will begin. The Phase 2 cleanup plan also described an early rapid assessment to evaluate the riverbanks and remove any accessible asphalt that may have become visible by shifting river conditions, including shifting sandbars. The rapid assessment was completed in April 2024 and MRL provided NRDP daily updates. Sixty-one pounds of asphalt were recovered during the rapid assessment. After the spring melt, a SCAT survey will occur in the summer of 2024 and cleanup crews will return to the river to collect actionable asphalt (EPA, 2023g).

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-8. Cumulative weight of collected asphalt (in pounds) by river mile.



Source: EPA, 2024b.

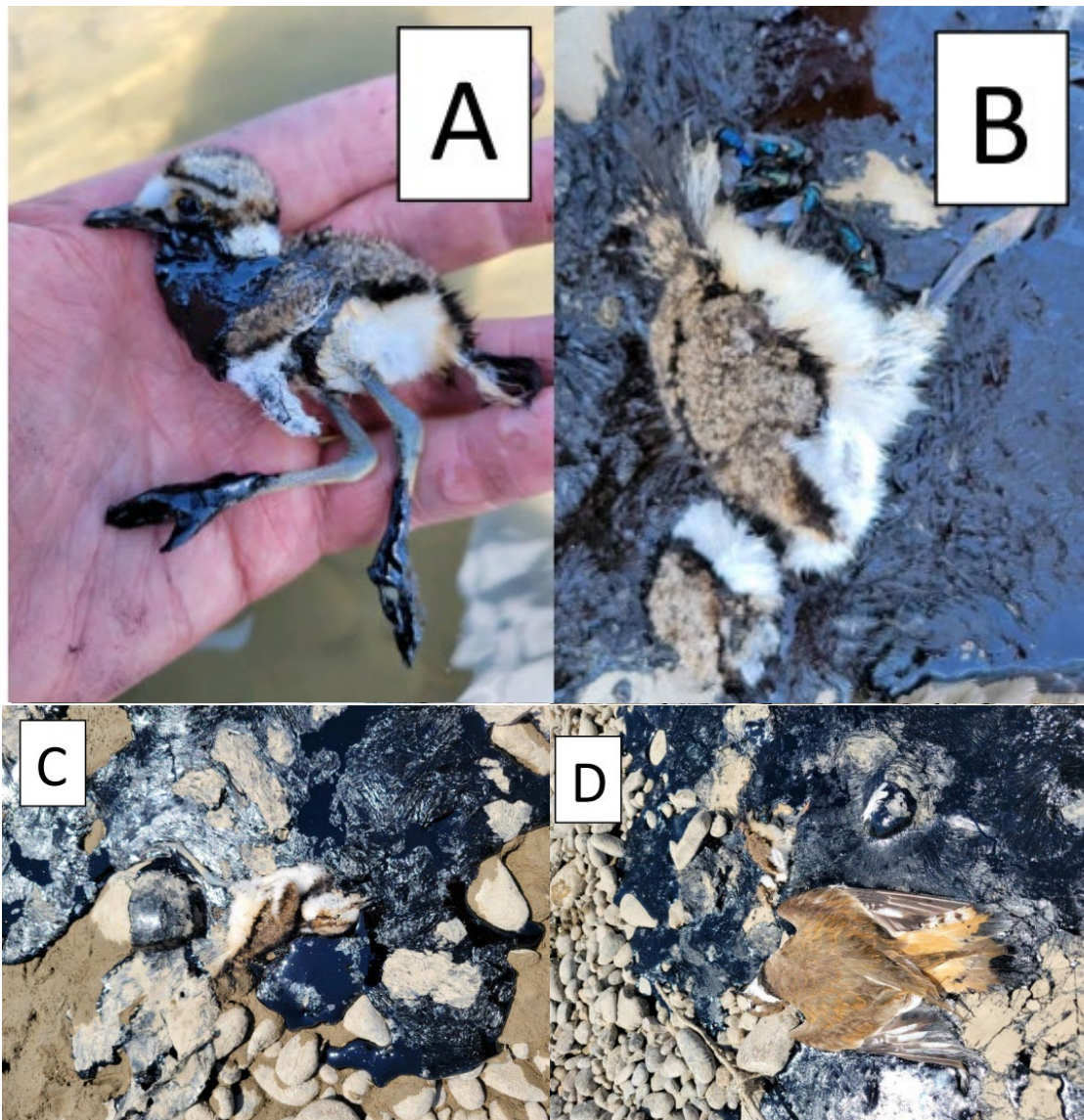
2.4 Wildlife Mortality and Impacts

During response activities, wildlife deaths resulting from asphalt exposure and entrapment were recorded. As part of the assessment, the Trustee will review this information to assess potential injury resulting from the incident. Unified Command received an initial report of a bird affected by asphalt material on July 2, 2023. The Oiled Wildlife Care Network (OWCN) investigated the location and found the bird deceased (EPA, 2023h). The OWCN later observed and collected a second dead animal, a garter snake, impacted by the asphalt material on July 5, 2023 (EPA, 2023i). An additional garter snake was found dead by cleanup crews on July 6, 2023 (EPA, 2023j). A deceased bullsnake and a deceased yellow warbler were found on July 8 (EPA, 2023k). On July 10, 2023, four killdeer heavily coated in asphalt were discovered, three of which were dead and one of which was alive (Exhibit 2-9; EPA, 2023l). The live killdeer chick was taken to the Montana Raptor Conservation Center in Bozeman, but had reportedly died by July 12 (EPA, 2023c). On July 13, 2023, a possible spotted sandpiper mortality/scavenging case was reported in which the bird's feathers remained affixed to a tar mat (Exhibit 2-10; Ostovar, 2023). The precise location of the observation (45.705518, -108.603698) was southwest of downtown Billings on a gravel bank of the Yellowstone River. Adult spotted sandpipers and chicks near the tar mat on the gravel island were reported, in addition to the possible mortality and scavenging, indicating the potential for additional wildlife exposures to the asphalt. As of August 2, the total documented mortalities were nine snakes (EPA, 2023m) and eleven birds (EPA, 2023n).

Estimating avian mortalities from the number of recovered dead carcasses is difficult and requires consideration of the following issues: (1) search coverage; (2) carcass detection rate (Byrd et al., 2009); and (3) carcass removal related to scavenging and other losses (Ford and ZaFonte, 2009; Ostovar, 2023). Searcher efficiency rates for avian carcasses can be highly variable depending on numerous parameters including the spatiotemporal extent of a given stressor, season, habitat, and environmental conditions.

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-9. (A) Asphalt coated alive, (B and C) Asphalt coated deceased killdeer chicks, and (D) Asphalt coated deceased killdeer adult.



Source: Ostovar, 2023.

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

Exhibit 2-10. Tar mat with potential spotted sandpiper mortality/scavenging. The top image displays the tar mat, and the bottom image displays a zoomed in view of the remaining feathers. Location 45.705518, -108.603698 was on a gravel bar southwest of Billings, Montana, on the Yellowstone River.



Source: Ostovar, 2023.

Hundreds of tiger beetles, stoneflies, spiders, crayfish, and other invertebrates were found entrapped in the asphalt mats (Ostovar, 2023). Spiny softshell turtles use the same gravel/sandbar habitat as killdeer and spotted sandpipers. Because the incident and response occurred during the nesting season for spiny softshell turtles, MRL retained Professor Kayhan Ostovar to conduct rapid on-the-ground assessments to identify and mark nesting habitat of turtles to mitigate potential negative impacts of cleanup activities. There were no observations of turtles entrapped in asphalt. Four dead turtles were found downstream of the incident site. However, there were no visual observations of asphalt on the turtles (Ostovar, 2023).

There were no reports of dead fish by survey or SCAT teams. However, on June 29, 2023, in response to the derailment, FWP conducted fish sampling in two locations immediately downstream of the derailment to assess several fish species for physical anomalies (e.g., lesions, abrasions). Lesions and abrasions were found on multiple fish species (FWP Fisheries, 2023). Later, in July, 2023, FWP collected and analyzed fish tissue samples for a number of hazardous substances. The results from the sampling efforts showed elevated levels of phenanthrene, a polycyclic aromatic hydrocarbon (PAH), in the muscle tissue of the mountain whitefish sample collected downstream of the train derailment site, triggering a fish consumption advisory for this species (MT DEQ, 2023a). Many fish collected during this sampling effort also had abrasions and/or lesions by visual observations (FWP Fisheries, 2023).

2. DESCRIPTION OF THE INCIDENT AND RESPONSE

In August 2023, FWP conducted additional fisheries testing both upstream and downstream of the derailment (MT DEQ, 2023b). The sampling results showed elevated levels of various PAHs in multiple fish species, warranting the fish consumption advisory to be expanded to all species in this area.

In September 2023, FWP conducted another fish sampling event. FWP collected fish tissue samples upstream and downstream of the derailment site. PAHs were not detected in these fish tissue samples (Energy Laboratories, 2023). The fish consumption advisory for this stretch of the Yellowstone River was lifted in May 2024 (MT DPHHS, 2024). FWP plans to conduct additional fish tissue sampling in the summer of 2024.

The source of the PAHs is currently unknown. As part of the assessment, the Trustee will review appropriate baseline information and fish data to assess if there is any potential injury resulting from the incident.

3. Description of the Assessment Area

This chapter provides an overview of the Assessment Area. For the purposes of this Work Plan, the Assessment Area is defined by where asphalt (oil) released as a result of the incident may have come to be located and response activities have caused injuries and service losses. This includes upstream areas that were affected by river closures, the location of the incident, and downstream areas affected by the spilled asphalt and response activities, potentially extending approximately 136 miles, and potentially including tributaries, such as the Stillwater River (NRDP, 2023a; MRL, 2023a; DES, 2024; Exhibit 3-1).

Exhibit 3-1. Incident location and furthest downstream observation of asphalt.



3.1 Yellowstone River

The Yellowstone River is a 692-mile-long (1,114 km) tributary of the Missouri River in the Western United States (flowing through northwestern Wyoming, southern and eastern Montana, and northwestern North Dakota; Discovering Montana, 2023). The drainage basin's elevations vary from 1,850 feet at the Yellowstone River's mouth to roughly 13,780 feet in the mountains south of Yellowstone National Park (Zelt et al., 1999). Much of the water stored in the snowpack in the Yellowstone River watershed falls throughout the winter and flows into the river once it melts in late spring and early summer. This results in a low variability in daily mean discharge throughout the year, and an early spring peak (Zelt et al., 1999). The river is characterized as having three broad reaches – upper (cold-water fishery), middle (transition), and lower (warmwater fishery) reaches (Exhibit 3-1). The incident occurred in the upper reach of the river, near the town of Reed Point, Montana; however, actionable asphalt was found up to

3. DESCRIPTION OF THE ASSESSMENT AREA

136 miles downstream, extending into the middle reach of the river (NRDP, 2023a; MRL, 2023a; Exhibit 3-1). Below, we describe the reaches where asphalt was observed.

3.1.1 Upper Reach (Cold-water Fishery)

The Reed Point NRDA bridge derailment site is located within the cold-water fishery reach of the Yellowstone River. From the Montana/Wyoming border to the confluence of the Clarks Fork of the Yellowstone, the upper cold-water fishery reach is 180 miles long, with the incident site located in the lower part of the reach, in Stillwater County (Exhibit 3-1). This stretch of the river is predominately braided (supporting split flow channels around open gravel bars) and anabranching (supporting long side channels divided from the main channel by wooded islands; DTM and AGI, 2009). The riparian cover types of shrub, open timber, and closed timber together account for between 10% and 50% of the cover in the upper reach (DTM and AGI, 2008). Between Columbus and Laurel, there is a comparatively high cover (>35%) on the right bank. The river in this area closely follows a steep bedrock valley wall to the south (DTM and AGI, 2008).

The upper reach provides a cold-water fishery in a largely intact habitat (see Section 3.3). There are no dams or structures that divert water across the Yellowstone River; it flows freely. This reach is the most well-known stretch for trout fishing. The cool, clear, and fast-moving water provides ideal conditions for a variety of trout fishing scenarios (Discovering Montana, 2023). The drainage's flowing waters, which sustain trout populations, are regulated as wild trout fisheries with a focus on natural reproduction and habitat preservation. The Yellowstone River's tributaries are essential for sustaining natural reproduction, giving young trout a place to grow, and supplying cool summer streamflow. In addition to trout species, the Yellowstone River sustains and nurtures a vast array of both native and introduced fish species due to its free-flowing character, inherent hydrograph, and natural habitat conditions.

3.1.2 Middle Reach (Transition)

The upper section of this reach (the upper transition reach) of the Yellowstone River has a low gradient, and the rocky bottoms common in the upstream portions of the river gradually give way to sand and mud (FWP, 2021a). This section begins at the confluence of the Clarks Fork with the Yellowstone River and flows west to east for approximately 27.4 river miles to the Huntley Dam (or about 10 miles east of Billings; Exhibit 3-1). The transition reach signifies the area where a cold-water river with a trout predominance gives way to a warmwater river. In low water years, the reach above Billings can reach temperatures in the mid-70s °F, while the lower end of the reach above the Bighorn River (warmwater fishery) can reach temperatures in the mid- to high-80s °F (FWP, 2021a). While the number of cool-water and warmwater fish increases (e.g., catfish, bass, and sauger), the number of trout begins to decline along this reach. There is a healthy mountain whitefish, brown trout, and rainbow trout fishery in this reach (see Section 3.3; FWP, 2021a).

The lower section of this reach (the lower transition reach) begins at the Huntley Dam and flows east to Ranchers Ditch Diversion Dam, which is about 2.5 miles downstream of the mouth of the Bighorn River (i.e., the furthest downstream observation of asphalt; MRL, 2023a; FWP, 2021a). This section of the Yellowstone River is variable, ranging from straight to braided (DTM and AGI, 2009). The river is mostly contained by high sandstone bluffs that enclose the entire stretch as it flows through a broad valley. The substrate of the channel is largely made up of gravel and cobbles, which create numerous islands and bars. The river in this section features a dynamic channel that continuously redistributes sediments from the floodplain (FWP, 2021a). Sediment is transported by all tributaries that enter this section of the Yellowstone River. As a result, the turbidity of the middle Yellowstone River is naturally high (FWP, 2021a).

Below the Huntley Dam, the river begins the transition into a warmwater fishery, and native channel catfish, sauger, and burbot coexist with non-native smallmouth bass and walleye (see Section 3.3). FWP staff have, on occasion, seen other game species, such as largemouth bass, crappie, and northern pike.

3. DESCRIPTION OF THE ASSESSMENT AREA

There are some nongame species that offer fishing opportunities, like freshwater drum and goldeye (see Section 3.3; FWP, 2021a). As the middle and lower sections of this reach merge, the river flow becomes slower and murkier (Discovering Montana, 2023).

3.2 Habitat

The Assessment Area has both aquatic and shoreline (including vegetated and unvegetated) habitats. The river provides aquatic habitats for multiple fish and wildlife species (described further below). Vegetated and unvegetated shorelines provide various habitat functions to aquatic and terrestrial food webs (NRDP, 2023a). For example, vegetated habitats are essential for providing food, shade, and shelter to fish and other aquatic species. In the river, riparian vegetation contributes to the geomorphic complexity, which draws a variety of biota and maintains water quality by lowering the quantity of sediments and nutrients that enter the river from overland flow. The Yellowstone River provides food and water for terrestrial wildlife, including birds, mammals, and amphibians. These species also utilize the riparian habitats that the river supports. The vegetation is an overstory of riparian forests dominated by narrowleaf cottonwood (*Populus angustifolia*) and plains cottonwood (*Populus deltoides*) along the river (Jones and Hansen, 2009).

3.3 Biota

The Assessment Area contains various terrestrial and aquatic biota, including fish, birds, reptiles, native mussels, and benthic invertebrates (NRDP, 2023a). Below is a description of fish, birds, and reptiles found in the Assessment Area.

3.3.1 Fish

The upper reach of the Yellowstone River (i.e., cold-water fishery; see Section 3.1.1) is known for its popular sport fishery, including rainbow trout, brown trout, and native Yellowstone cutthroat trout (FWP, 2021b; National Park Service [NPS], 2024). Mountain whitefish, burbot, smallmouth bass, and several species of native and non-native nongame fish are also found in this reach (FWP, 2021b; NPS, 2024).

The middle reach of the Yellowstone River (see Section 3.1.2) is a transition zone from the trout-dominated cold-water fishery to the warmwater fishery (FWP, 2021a). This reach of the river is highly diverse and contains approximately 40 fish species, 28 of which are native (FWP, 2021a). The upper parts of the middle reach include a rainbow trout, brown trout, and mountain whitefish fishery (FWP, 2021a,b). Below the Huntley Dam, the river begins to transition into a warmwater fishery where the community shifts to native channel catfish, sauger, and burbot and non-native smallmouth bass and walleye with the occasional sighting of northern pike, largemouth bass, and crappie (FWP, 2021a). This reach also includes nongame species such as goldeye and freshwater drum (FWP, 2021a).

3.3.2 Birds

The Assessment Area is home to numerous species of birds and their habitats, including the bald eagle (federally protected by the Bald and Golden Eagle Protection Act), ospreys, waterfowl, shorebirds, riparian songbirds, and raptors (NRDP, 2023a). Bald eagles were previously listed as an endangered and threatened species, and therefore have been monitored since their delisting. The osprey is also monitored because of the decline of one of their primary food sources (the cutthroat trout; NPS, 2019). The Yellowstone River is home to resident aquatic, migratory, and semiaquatic birds from spring through summer. These species breed and nest in riverine and floodplain habitats, forage for food in the river, raise their young, and then migrate out of the region in the fall. Consequently, it is likely that these species were present when the spill occurred.

3. DESCRIPTION OF THE ASSESSMENT AREA

3.3.3 Reptiles

Reptiles, including snakes and turtles and their habitats, are also found in the Assessment Area. Some species of snakes that have been observed in the Assessment Area include bullsnakes and garter snakes (EPA, 2023i,j,k). Bullsnakes are found in open areas at lower elevations (NPS, 2020a), whereas garter snakes are associated with water (NPS, 2020b; NPS, 2023).

The Yellowstone River within the Assessment Area is also home to turtles such as the spiny softshell turtle (*Apalone spinifera*; NPS, 2015). Large rivers and river impoundments are two of the habitats preferred by spiny softshell turtles. They are found in soft or muddy bottoms with submerged brush, as well as open banks of sand or mud. Spiny softshell turtles can stay underwater for up to five hours and exchange gases with the water through their skin. Depending on their home range, they can be active from April to October, and burrow into the ground for the winter. These turtles can live to the age of 50 (NPS, 2015). Spiny softshell turtles and their nesting sites were observed in the Assessment Area (Ostovar, 2023).

3.3.4 Sensitive Species

Several sensitive species may also be present in the Assessment Area. In Stillwater County, the Montana National Heritage Program identifies 72 species of concern: 10 mammals, 45 birds, 5 reptiles, 3 amphibians, 7 fish, and 2 invertebrates (Montana National Heritage Program, 2024). The USFWS has identified five threatened species in Stillwater County (Table 3-1).

Table 3-1. Listed threatened species of conservation concern in Stillwater County.

Common Name	Scientific Name	Status
Grizzly Bear	<i>Ursus arctos horribilis</i>	Listed threatened
Canada lynx	<i>Lynx canadensis</i>	Listed threatened
North American wolverine	<i>Gulo gulo luscus</i>	Listed threatened
Red knot	<i>Calidris canutus rufa</i>	Listed threatened
Whitebark pine	<i>Pinus albicaulis</i>	Listed threatened

Source: USFWS, 2024; Center for Biological Diversity, 2024.

3.4 Recreation Use in the Assessment Area

The Assessment Area provides a variety of recreational opportunities. In addition to fishing, other popular boating activities that occur within the Assessment Area include drift boating, rafting, jet boating, kayaking, canoeing, and recreational floating. Shoreline activities include shoreline fishing, swimming, hiking, bird watching, rock hounding, and other activities.

FASs and other recreational access areas in the potentially affected sections of the Yellowstone and Stillwater Rivers are presented in Table 3-2. FASs on the Yellowstone and Stillwater Rivers were closed for varying time periods related to the incident, as described in greater detail in Section 2.2. The FASs are utilized by anglers, as well as many other types of recreators (e.g., rafters, floaters, hikers, birders, rock hounds, etc.) to access the water and shorelines for recreational activities. In addition to official access points, other locations are used by the public to access the river (the incident site).

3. DESCRIPTION OF THE ASSESSMENT AREA

Table 3-2. Yellowstone and Stillwater River fishing and recreational access sites.

Riverfront Fishing and Recreational Access Sites	River Section	Coordinates/Location	Recreation Facilities
Yellowstone River			
Otter Creek (FWP)	Section 6B (Reed Point Bridge to Boulder River)	45.85508 -109.91574	Toilet, primitive campsites, concrete boat ramp
Pelican (FWP)		45.75276 -109.76764	Toilet, primitive campsites, concrete boat ramp
Bratten (FWP)		45.71669 -109.63017	Toilet, primitive campsites, gravel boat ramp
Indian Fort (FWP) and Reed Point		45.71537 -109.54857	Toilet, primitive campsites, gravel boat ramp
Twin Bridges (where derailment occurred)	Section 6A (Stillwater River to Reed Point Bridge)	45.686823 -109.438606	Popular access point for boating and angling
Holmgren Ranch (FWP)		45.66329 -109.34832	Concrete boat ramp
Itch-Kep-Pe-Park (City of Columbus)	Section 5 (Clarks Fork Fiver to Stillwater River)	45.628437 -109.250976	Tent and trailer camping, restrooms, drinking water, boat launch
Homestead Isle (FWP)		45.60623 -108.87823	No facilities
Buffalo Mirage (FWP)		45.61277 -108.84205	Toilet, gravel boat ramp
Riverside Park (City of Laurel)		45.65378 -108.75728	RV and tent camping, toilets, showers, picnic area
Duck Creek (FWP) ¹	Section 4 (Huntley Diversion to Clarks Fork River)	45.68696 -108.64225	Toilet, concrete ramp
Riverfront Park (City of Billings)		7332 S Billings Blvd, Billings, Montana	Barbeque grills, horseshoe courts, jogging trails, natural area, picnic sites and shelters, and restrooms
South Hills (FWP)		45.74304 -108.50976	No facilities
Coulson Park (City of Billings)		Chelene St., Billings, Montana	Historic site, jogging trails, natural area, and boat ramp
East Bridge (FWP)		45.79656 -108.46824	Concrete ramp
Two Moon Park (Yellowstone River Parks Association)		850 Two Moon Park Rd, Billings, Montana	Toilet, trails
Stillwater River			
Buffalo Jump (FWP)	Section 2 (Headwaters to Nye)	45.43636 -109.79713	Toilet, hand launch, primitive campsite
Moraine (FWP)	Section 1 (Nye to Confluence with Yellowstone River)	45.46296 -109.75635	Toilet, hand launch, primitive campsite
Castle Rock (FWP)		45.47303 -109.74104	Toilet, hand launch, primitive campsite
Cliff Swallow (FWP)		45.51492 -109.63208	Fishing pier/platform, toilet, hand launch primitive campsite
Absaroka		45.52867 -109.46833	Toilet, hand launch
Jeffrey's Landing (FWP)		45.53753 -109.41899	Toilet
Whitebird (FWP)		45.57523 -109.33702	Toilet, primitive campsite, ramp (gravel)
Swinging Bridge (FWP) ²		45.58431 -109.33162	Toilet, hand launch, primitive campsite
Fireman's Point (FWP)		45.61715 -109.29626	Raft slide launch, toilet

Source: FWP, 2024b,c; Google Maps.

Note: The FAS and recreation areas are presented in order from upstream to downstream.

¹ Duck Creek FAS was not closed or damaged in the 2022 flood; however, the river channel at this site prior to 2022 had been migrating away from the boat launch. The boat launch area is currently closed to motorized vehicles as it no longer provides sufficient access to the river, although walk-in access is allowed beyond the boat launch area. The closure is expected to remain in place until the river stage increases.

² FAS had remaining damage in 2023 after a 2022 flood and was closed until August 2023; all other FWP FASs were operational and in use prior to the incident.

3. DESCRIPTION OF THE ASSESSMENT AREA

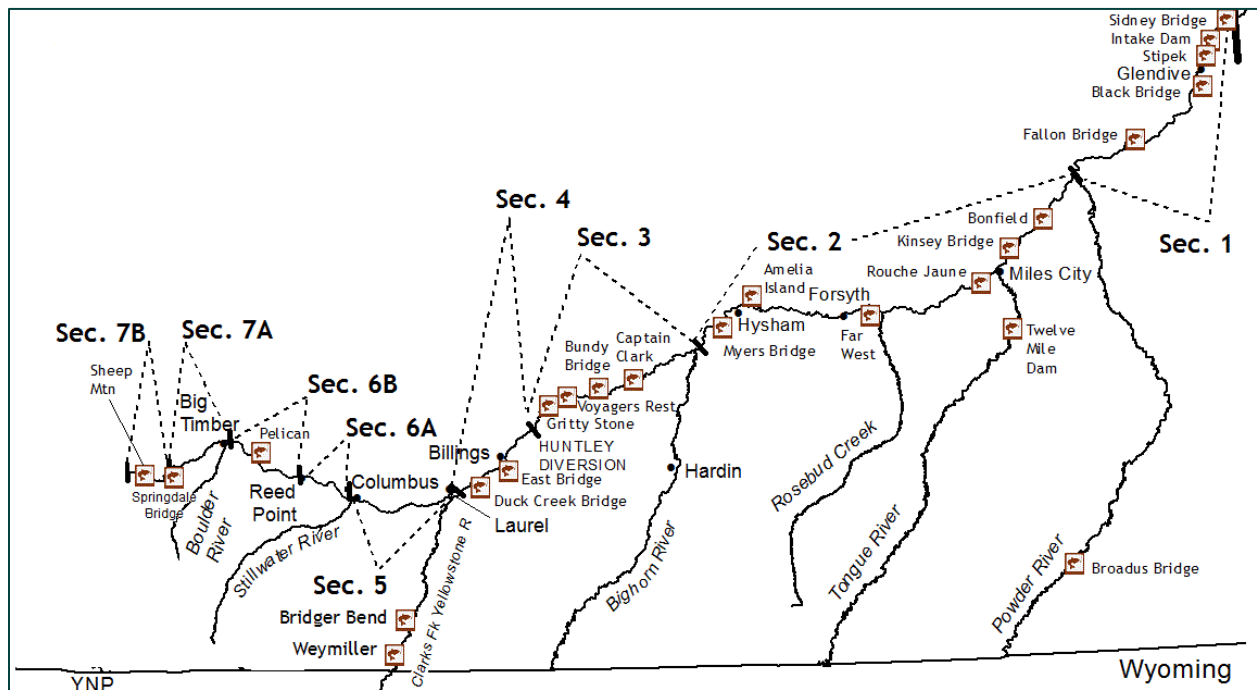
3.4.1 Recreational Angling

Based upon information collected by FWP, the Yellowstone and Stillwater Rivers draw considerable anglers within river reaches potentially affected by the incident. FWP collects information on monthly fishing pressure (angler days) through surveys generally conducted in alternating years (Exhibits 3-2 and 3-3). FWP reports the following information based upon data collected in the surveys: the number of anglers by month and section of the river; whether anglers are resident or non-resident; how the river is accessed for fishing (boating or shoreline); angler satisfaction and crowding; and percent of anglers that use outfitter services.

Fishing pressure data from recent survey years for the Yellowstone and Stillwater River leading up to the incident, including 2013, 2015, 2017, 2019, 2020, and 2021, are provided in Table 3-3. The year of the incident was also a data collection year, and FWP is currently processing the 2023 data. Exhibits 3-2 and 3-3 show FWP's river sections used in the surveys that correspond to the data in Table 3-3.

Data from FWP also show the proportion of shore anglers, boating anglers, and both for the Yellowstone River for the years 2017, 2019, 2020, and 2021 for all months. Boating anglers are more prevalent in the upstream sections 6A and 6B than shore anglers, while shore anglers are more prevalent in the downstream sections (4 and 5) than boating anglers (Table 3-4). Many outfitters provide services in these reaches of the Yellowstone River, including guided fishing and whitewater rafting trips. The most recent data available on guided trips from the FWP biannual survey for these sections of the Yellowstone River is from 2013. Yellowstone River sections 4, 5, 6A, and 6B indicate that outfitters accounted for 1%, 2%, 0%, and 22% of the angling trips, respectively, in 2013 for these sections of the Yellowstone River (FWP, 2023h).

Exhibit 3-2. Yellowstone River sections used for FWP angler surveys.



3. DESCRIPTION OF THE ASSESSMENT AREA

Exhibit 3-3. Stillwater River sections used for FWP angler surveys.

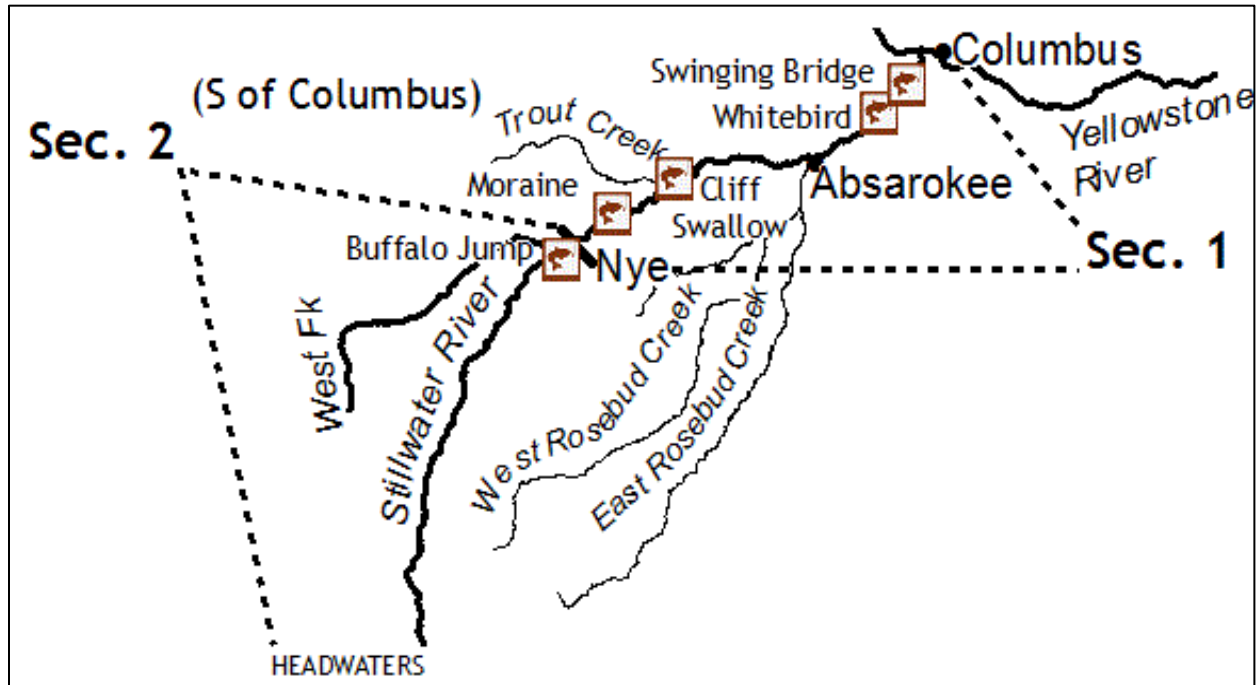


Table 3-3. Yellowstone River monthly fishing pressure (angler days).

River Section	Month	2013	2015	2017	2019	2020	2021	Average Monthly Fishing Pressure*	Percent Resident Anglers*
Yellowstone River									
Section 6B (Reed Point Bridge to Boulder River)	June	1,935	608	-	-	191	743	869	87%
	July	4,590	1,187	1,567	1,989	1,400	4,820	2,592	54%
	August	4,883	1,632	1,929	978	5,118	1,331	2,645	64%
	September	2,142	1,789	3,421	1,120	2,771	3,304	2,425	57%
	October	1,694	739	744	1,218	2,039	-	1,287	68%
	November	718	-	-	-	729	251	566	64%
Section 6A (Stillwater River to Reed Point Bridge)	June	2,197	696	653	84	861	809	883	100%
	July	2,899	2,122	1,056	2,246	1,885	371	1,763	75%
	August	4,684	1,389	5,816	3,986	1,776	1,857	3,251	80%
	September	2,092	1,114	2,218	423	3,339	1,207	1,732	74%
	October	603	296	1,858	601	773	269	733	103%
	November	193	190	3,122	1,694	-	-	1,300	100%
Section 5 (Clarks Fork Fiver to Stillwater River)	June	863	957	816	253	1,795	793	913	93%
	July	2,063	2,285	1,195	2,295	915	3,160	1,985	94%
	August	2,463	1,237	1,149	2,030	1,964	1,078	1,654	81%
	September	4,584	2,064	1,390	2,071	3,080	402	2,265	71%
	October	3,128	-	1,115	412	493		1,287	61%
	November	579	-	-	1,271	1,063	515	857	93%

3. DESCRIPTION OF THE ASSESSMENT AREA

River Section	Month	2013	2015	2017	2019	2020	2021	Average Monthly Fishing Pressure*	Percent Resident Anglers*
Section 4 (Huntley Diversion to Clarks Fork River)	June	2,397	3,218	3,122	2,442	6,033	5,054	3,711	94%
	July	3,200	969	1,394	5,272	2,484	2,445	2,627	97%
	August	1,765	937	-	1,634	5,016	3,234	2,517	88%
	September	2,712	1,219	1,004	2,430	3,171	836	1,895	86%
	October	273	1,434	1,486	-	839	-	1,008	90%
	November	193	570	-	-	-	1,292	685	76%
Stillwater River									
Section 2 (Nye to Headwaters)	June	1,020	1,477	4,465	2,404	2,397	2,313	2,346	81%
	July	2,633	4,354	4,847	2,559	2,855	3,740	3,498	49%
	August	2,853	1,494	5,186	3,620	4,046	757	2,993	78%
	September	881	1,647	1,436	435	3,778	3,618	1,966	40%
	October	1,047	-	1,115	378	3,077	575	1,238	112%
	November	-	1,468	-	830	1,458	-	1,252	75%
Section 1 (Nye to Confluence with Yellowstone River)	June	4,165	3,992	1,305	4,028	3,422	1,503	3,069	88%
	July	6,084	2,285	8,087	6,876	8,438	4,858	6,105	75%
	August	10,410	5,300	8,785	7,925	8,890	5,344	7,776	75%
	September	5,824	5,873	2,475	1,610	4,276	1,529	3,598	69%
	October	273	200	3,346	1,373	1,399	2,283	1,479	67%
	November	324	1,987	365	2,753	2,392	3,408	1,872	109%

Source: FWP, 2023h,j. *Note: Fishing pressure data were averaged using the following years: 2013, 2015, 2017, 2019, 2020, and 2021. Due to averaging, some percentages add to greater than 100%.

Table 3-4. Portion of shore, boat, and shore and boat Yellowstone River anglers.

Yellowstone River Section	Shore	Boat	Shore and Boat
Section 6B (Reed Point Bridge to Boulder River)	22%	51%	27%
Section 6A (Stillwater River to Reed Point Bridge)	30%	48%	22%
Section 5 (Clarks Fork River to Stillwater River)	51%	34%	15%
Section 4 (Huntley Diversion to Clarks Fork River)	83%	9%	7%

Source: FWP, 2023i. Note: Totals may not add to 100% due to rounding.

3.4.2 Other Recreational Activities

As noted above, in addition to fishing, other popular boating activities that occur within the Assessment Area include non-angling boating such as rafting, jet boating, kayaking, canoeing, and recreational floating. Non-angling shoreline activities include swimming, hiking, bird watching, rock hounding, picnicking, camping, and other activities. A substantial proportion of the public access to FASs is for these other non-angling boating and shoreline activities (Grau and Schultz, 2018; Nickerson and Grau, 2020; Skaar and Oschell, 2018).

4. Approach to the Injury Assessment

This section describes the Trustee’s proposed approach to conducting the injury assessment. In Section 4.1, we describe how the Trustee proposes to determine if injuries to natural resources and/or services have resulted from the incident (injury determination) [15 C.F.R. §990.51]. In Section 4.2, we describe how the Trustee proposes to quantify those injuries (injury quantification) [15 C.F.R. §990.52]. The goal of injury assessment is to determine the nature, extent, and degree of any injuries to natural resources and services that resulted from the incident. The information will provide a basis for evaluating restoration actions, including to determine the need for and scale of restoration actions (restoration selection). See 15 C.F.R. § 990.50. The assessment will utilize assessment procedures that meet the requirements of 15 C.F.R. § 990.27.

4.1 Injury Determination

This section describes how the Trustee proposes to determine if injuries to natural resources and/or services have resulted from the incident (injury determination) [15 C.F.R. §990.51]. Consistent with 15 C.F.R. § 990.51(b), the Trustee will determine that an injury has occurred and will evaluate whether: (1) the definition of injury has been met, i.e., whether there is “...an observable or measurable adverse change in a natural resource or impairment of a natural resource service. Injury may occur directly or indirectly to a natural resource and/or service” [15 C.F.R. § 990.30]; and (2) (i) An injured natural resource has been exposed to the discharged oil, and a pathway can be established from the discharge to the exposed natural resource; or (ii) An injury to a natural resource or impairment of a natural resource service has occurred as a result of response actions. The Trustee anticipates focusing on injury to public services (recreational) and ecological injuries in this assessment. The steps in the injury determination process that the Trustee intends to implement are described below, in the order presented in the OPA regulations:

- Identifying Injury [15 C.F.R. § 990.51(c)]
- Establishing Exposure and Pathway [15 C.F.R. § 990.51(d)]
- Injuries Resulting from Response Actions or Incidents Involving a Substantial Threat of a Discharge [15 C.F.R. § 990.51(e)]
- Selection of Injuries to Include in the Assessment [15 C.F.R. § 990.51(f)]

4.1.1 Identifying Injury

Under 15 C.F.R. § 990.51(c), natural resource trustees determine whether an injury, as defined in § 990.30, has occurred. If so, trustees then identify the nature of the injury. Potential categories of injury include, but are not limited to, adverse changes in survival, growth, and reproduction; health, physiology and biological condition; behavior; community composition; ecological processes and functions; physical and chemical habitat quality or structure; and public services.

Injury to Public Services (Recreational Use)

The Trustee intends to determine the degree to which injuries to public services (recreational use) occurred as a result of the incident and response activities. Types of recreational uses within the Assessment Area that may have been injured include fishing, boating, rafting, kayaking, floating, swimming, and other recreational activities. As described in Section 2, 3.5 river miles of the river were closed to the public immediately after the train derailment, due to safety concerns as a result of the incident. In addition, the Holmgren Ranch FAS, which is the only FAS between the derailment location and Columbus (4.3 river miles downstream), was used as a staging ground during the incident response and was also closed to the public. The boat ramp at Itch-Kep-Pe Park in the city of Columbus was also closed to the public after the incident to accommodate the launching of boats for the assessment and clean

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up teams. In addition, the Stillwater River was closed from the Whitebird FAS to the Fireman's Point FAS for a number of days after the incident, ensuring boaters would not access the Yellowstone River. These closures and response activities limited access to the affected reaches for recreational use. Further, recreators may have continued to avoid the area even after the closed reach and Holmgren Ranch FAS were reopened, due to concerns over the potential impacts of asphalt remaining in the environment.

To make a determination of injuries to public services, the Trustee anticipates relying primarily on existing data. For example, the Trustee intends to utilize fishing pressure data collected by FWP to determine recreational fishing injuries. As noted in Section 3, approximately every two years the State of Montana conducts a fishing survey and produces estimates of fishing pressure by water body and month (FWP, 2024b). Table 3-3 provides these data for sections of the river within the Assessment Area for years prior to the incident (2013–2021). FWP also conducted the survey in 2023; processing of the data is ongoing. The Trustee intends to compare data from pre-incident years to the incident year to help make a determination of recreational fishing injuries.

If necessary to determine injury, the Trustee may also collect additional qualitative data to supplement the FWP fishing effort data. For example, the Trustee may conduct a qualitative survey targeting anglers and other recreators residing in areas near the Yellowstone River to determine whether potential Yellowstone River anglers would identify the incident as a factor in their choice of fishing locations during the summer and fall of 2023. The survey may also seek to obtain information on non-angling boaters, recreational floaters, and swimmers who also would have been affected by the incident and for which state quantitative data is not available. The Trustee may also seek to conduct interviews with outfitters who guide trips on the affected sections of the Yellowstone River.

The survey would likely be administered through an online platform, and the State of Montana would contact a sample of anglers in the State via email who recently visited the Yellowstone River to provide a link to the survey. The Trustee would seek to obtain a sample of anglers to ensure that survey responses are representative of the population of anglers using these sections of the Yellowstone River.

Injury to Ecological Resources

Potential categories of injury to natural resources that the Trustee anticipates assessing include, but are not limited to, adverse changes in survival, reproduction and growth of biological resources; ecological processes and functions; and physical and chemical habitat quality or structure. The Trustee may also consider additional categories of injury as the assessment proceeds, if warranted by analysis of the data and information collected after the incident.

Trustees may confirm injury using multiple approaches. The Trustee plans to develop an estimate of the total footprint that was physically covered by the asphalt along the river, thus degrading the physical habitat quality. The Trustee would estimate this footprint based on the total amount of asphalt spilled into the river; SCAT observations, including consideration of the estimated amount of asphalt removed during response operations; and other physical measurements of the asphalt (deposit thickness on different surfaces, etc.). Specifically, ephemeral data has already been collected on the thickness of asphalt found on various surfaces (sand, rocks, etc.) and the weight of various thicknesses of the asphalt (NRDP, 2023b). These data can be used to convert the pounds of asphalt unrecovered by response and thus remaining in the environment into an area covered by the asphalt. The Trustee may develop these estimates for the different affected reaches of the Yellowstone River (cold-water, transition, warmwater reaches), and by habitat type, such as shoreline/riparian areas and in-river aquatic areas.

The Trustee also anticipates assessing response-related injury. This will include, but may not be limited to, assessing impacts to habitat at the incident site due to heavy equipment use, use of nearby areas as staging grounds, and channel excavation at Buffalo Mirage FAS which limited powerboat access. It will also include assessment of impacts to habitat at the Holmgren Ranch FAS, which was also used as a

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staging ground, and any other response-related ancillary injury to natural resources. The Trustee will evaluate available information to determine the baseline condition of areas potentially impacted by response prior to response activity, such as FWP site visit notes dated June 28, 2023 (FWP, 2023k).

Additionally, after the derailment, extensive riprap was placed on approximately 1,000 feet of riverbank above the derailment site; it contained materials that are not allowed in riprap, such as metal from the incident and rebar (FWP, 2024a). As part of the assessment, the Trustee will review appropriate documentation and information to determine how response actions may have resulted in additional injuries to ecological resources.

A limited number of environmental samples (surface water, sediment, soil, fish tissue) were collected as a part of the incident response and preassessment activities; these samples were analyzed for asphalt constituents. The Trustee plans to review these data as a part of the injury assessment. If appropriate, the Trustee may compare any measured concentrations of asphalt constituents in the Assessment Area to reference concentrations, relevant standards, and adverse effects levels to assess injury for potentially affected natural resources (e.g., aquatic and terrestrial biota). If this approach is taken, appropriate reference sites will be selected that have similar characteristics as the affected reaches, but for the spill.

If the implementation of these approaches demonstrates that they do not adequately determine and quantify injury, the Trustee may develop additional assessment approaches.

4.1.2 Establishing Exposure and Pathway

Under 15 C.F.R. § 990.51(d), natural resource trustees establish if natural resources were exposed to asphalt (oil) from the incident and estimate the amount and spatial and temporal extent of the exposure. In this step, natural resource trustees also determine whether there is a pathway linking the incident to the injuries. According to 15 C.F.R. § 990.51(d), pathways may include, but are not limited to, the sequence of events by which the discharged oil was transported from the incident and either came into direct physical contact with a natural resource or caused an indirect injury.

SCAT data, photographic documentation, wildlife mortality observations, environmental samples, and other information collected during the preassessment phase and incident response (see Section 2) confirm that natural resources were exposed to the spilled asphalt. The Trustee intends to utilize these data and observations, along with reasonable assumptions to fill any gaps in information, to estimate the amount, as well as the spatial and temporal extent of the exposure. The Trustee anticipates utilizing these data and observations to link the incident to the injuries. For example, photographic documentation and incident reports (see Section 2) confirm that asphalt was spilled from the derailed train cars into the Yellowstone River and transported downstream and deposited onto the riverbed and onto the shoreline. SCAT data and wildlife mortality observations link the spilled asphalt to injuries to vegetation, wildlife, and ecological habitats that were coated and injured by the asphalt.

4.1.3 Injuries Resulting from Response Actions or Incidents Involving a Substantial Threat of a Discharge

Consistent with 15 C.F.R. § 990.51(e), the Trustee will incorporate the effects of response actions into the assessment and determine if an injury or impairment of natural resources and services has occurred as a result of the incident. For example, as described above, the Trustee intends to determine injury to recreational use as a result of the incident and response actions. The Trustee also intends to determine injury to natural resources as a result of response actions. Amongst other impacts from response, the Trustee intends to assess the impacts of staging grounds.

4.1.4 Selection of Injuries to Include in the Assessment

Consistent with 15 C.F.R. § 990.51(f), the Trustee has selected potential injuries to include in the assessment. The Trustee anticipates focusing on public service (recreational) and ecological injuries in this assessment. The Trustee has considered the factors in 15 C.F.R. § 990.50, in identifying these:

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- The natural resources and services of concern
- The procedures available to evaluate and quantify injury, and associated time and cost requirements
- The evidence indicating exposure
- The pathway from the incident to the natural resource and/or service of concern
- The adverse change or impairment that constitutes injury
- The evidence indicating injury
- The mechanism by which injury occurred
- The potential degree, and spatial and temporal extent of the injury
- The potential natural recovery period
- The kinds of primary and/or compensatory restoration actions that are feasible.

The Trustee will continue to evaluate the above factors as part of performing the assessment, to ensure that the injuries finally selected for assessment are consistent with the regulations.

4.2 *Injury Quantification*

In addition to determining whether injuries have resulted from the incident, the OPA regulations specify that trustees need to quantify the degree and spatial and temporal extent of such injuries relative to baseline [15 C.F.R. §990.52].

The regulations further state that natural resource trustees may quantify injuries by (1) the degree, and spatial and temporal extent of the injury to a natural resource; (2) the degree, and spatial and temporal extent of injury to a natural resource, with subsequent translation of that adverse change to a reduction in services provided by the natural resource; or (3) the amount of services lost as a result of the incident [15 C.F.R. §990.52]. The Trustee plans on quantifying public services (recreational uses) and ecological injuries in this assessment, through a combination of (1), (2), and (3). The Trustee will also look at natural recovery, quantitatively or qualitatively. This will include an estimate of the time for natural recovery without restoration, but including all response actions already taken and to be taken in the summer of 2024, which is anticipated to be the last phase of response. The Trustee will evaluate all available information in determining baseline conditions.

4.2.1 **Public Services (Recreational Use)**

The Trustee plans to quantify public services injury and damages using a “benefits transfer” approach. Benefits transfer can be defined as “the transfer of existing economic values estimated in one context to estimate economic values in a different context... In the case of natural resource and environmental policies and projects, benefits transfer involves transferring value estimates from a ‘study site’ to a ‘policy site’ where sites can vary across geographic space and or time” (Bergstrom and De Civita, 1999, p. 79).

The advantage of the benefits transfer methodology is that the costs of conducting an original study are avoided, and thus it can be a cost-effective methodology. It is a widely used methodology in the field of economics, and there is a well-developed base of scientific literature on the topic (Rosenberger and Loomis, 2001; Loomis, 2005; Rosenberger et al., 2017). Benefits transfer is an accepted methodology under Federal regulations, where it is referred to as the “valuation scaling” method [15 C.F.R. §990.53].

To conduct a benefits transfer, a unit dollar value (e.g., dollars per day of recreational fishing) from studies in the literature is applied to the lost recreational days that occurred at the site as a result of the incident. The studies estimate the values of recreation use (i.e., dollars per day) by type of activity; these

are estimates of what economists call consumer surplus. Consumer surplus is the economic value of a recreation activity above what must be paid by the recreationist to enjoy the activity. Consumer surplus values are generally estimated through revealed preference data (for example, travel cost methods) or directly using stated preference methods (i.e., where people state their maximum net willingness to pay within constructed market conditions; Rosenberger et al., 2017).

To quantify recreational fishing injuries and damages due to the train derailment using a benefits transfer approach, the Trustee anticipates basing the number of lost fishing days on the FWP fishing effort survey data (see Section 4.1.1 above) and multiplying this number by a value per day derived from the literature, such as from Rosenberger et al. (2017). Rosenberger et al. (2017) developed economic values of recreation benefits for 14 outdoor recreational activities, including fishing, at a regional level (Montana is in Region 1). These values use a meta-analysis approach of 342 studies (2,709 estimates of recreational activity values) from the Recreation Use Value Database, which includes recreation economic value studies spanning 1958 to 2015 conducted in the United States and Canada. The Trustee may adjust the average fishing values reported in Rosenberger et al. (2017) into current dollars and may further adjust them to account for any site-specific factors, such as the use of outfitters and anglers traveling from out of state, which may increase the value per day.

The Trustee will also evaluate other categories of recreational use, such as non-angling boating/rafting, and may take a similar benefits transfer approach to quantify injury and damages if there is sufficient data and information. The analysis will account for the fact that some FASs were damaged and closed due to flooding in 2022. However, all FASs were reopened in 2023 with the exception of Swinging Bridge FAS on the Stillwater River, which was closed at the time of the derailment incident.

4.2.2 Ecological

The Trustee plans to quantify ecological injury, service loss, and damages using a service-to-service equivalency approach. Specifically, the Trustee plans on using a Habitat Equivalency Analysis (HEA) to quantify losses and damages resulting from the incident. HEA is commonly used to quantify losses resulting from oil spills or impacts from response activities (Allen et al., 2005; Cacela et al., 2005; NOAA, 2006). The implicit assumption of HEA is that the public can be compensated with direct service-to-service scaling, where the services provided by proposed restoration actions are of similar type, quality, and value as the services lost because of the injury (Allen et al., 2005; NOAA, 2006).

Because it is not possible to measure every service that habitats provide, certain quantifiable metric(s) are selected to determine service loss from injuries and equivalent service gain from restoration. Metrics can be based on biological data, such as the density of certain animals or plants; or toxicological data, such as the magnitude of exceedance of a toxic threshold. In this case, the Trustee anticipates basing service loss on degraded habitat quality and function, due to smothering by the spilled asphalt, but appropriate metric(s) for evaluating service losses and gains will be finalized as part of the assessment.

HEA also considers the value of natural resources and services over time. The value to the public of natural resources and services in the past is not equivalent to the value in the future. In HEA, future years are discounted, placing a lower value on benefits that take longer to accrue. When scaling in HEA, a discount rate is used to ensure that injuries and restoration that occur at different points in time are compared on an equal basis.

The information required to quantify the ecological loss (or “debit”) includes:

- Time period of injury, including an evaluation of the effect of response activities and consideration of natural recovery of the resources
- Spatial extent of injury

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- Quantification of lost services (based on specific service metrics) over space and time compared to baseline conditions
- A discount rate (typically 3% per year).

The Trustee currently plans on using existing data and information collected during the response, including all response data that may become available as the assessment is implemented (e.g., available data from upcoming Phase 2 SCAT activities), and preassessment to develop inputs for the HEA.

Debits are commonly expressed in units that describe space, time, and the discount rate. For each year of injury to a habitat, the injured area is calculated (e.g., in acres), multiplied by the service loss (using the selected metric), and converted to a present value by applying the discount rate. This results in an estimate of habitat injury for each year in discounted service acres. Then the discounted service acres for all years are summed to calculate a single estimate of injury over time in discounted service acre-years (DSAYs).

Quantifying habitat service gain (or “credit”) from restoration is similar to quantifying debit, except that service *increases* from habitat restoration are estimated (using the same metric used to calculate debit), rather than service *losses* from injuries. Service increases are typically measured per unit of restoration (e.g., per acre). For each year of restored habitat services provided, the restored habitat is multiplied by the service increase and the present value factor is based on a 3% annual discount rate. The discounted service acres per year are summed to provide a total estimate of service gains in units of DSAYs per acre of restored habitat. The debit (DSAYs) is divided by the unit credit of restored habitat (DSAYs per acre) to determine the total quantity of restoration required (acres) to offset the injuries. The Trustee may multiply the acres of restoration required by a unit cost of restoration to determine natural resource damages in dollars.

4.3 Incorporation of Response Data

The Trustee recognizes that additional response data (e.g., Phase 2 SCAT information) may become available while this draft Work Plan is being finalized or after it is finalized while the Assessment is being performed. The Assessment will incorporate available response data into the injury determination and quantification.

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