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April 23, 2025

Draft Recreational Survey Work Plan

REED POINT BRIDGE DERAILMENT NATURAL RESOURCE DAMAGE ASSESSMENT
Reed Point, Montana

Prepared for:
Montana Natural Resource Damage Program
1720 9th Street, PO Box 201425
Helena, Montana

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Prepared by:

Lisa McDonald
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1. Introduction

On June 24, 2023, the Twin Bridges Road railroad bridge collapsed and Montana Rail Link, Inc. rail line cars derailed near Reed Point, Montana, approximately 40 miles west of Billings, Montana (Exhibits 1-1, 1-2, and 1-3). A total of 17 cars derailed, 10 of which entered the Yellowstone River. Rail cars containing asphalt liquified petroleum ("asphalt," 6 cars), molten sulfur (3 cars), and scrap metal (1 car) spilled contents into the river. Approximately 420,000 pounds of asphalt ("oil" as defined by 33 U.S.C. § 2701(23)) were released and approximately 236,714 pounds of asphalt have been recovered to date (Exhibits 1-1 and 1-2). 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.

Figure 1-1. The Twin Bridges Road Railroad Bridge after the derailment.

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

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 Assessment 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*.].

Figure 1-2. Side view of the Twin Bridges Road Railroad Bridge after the derailment.

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

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 a 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.

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 draft Recreational Survey Work Plan (Work Plan). This Work Plan, which is being made available for informal public comment, partially implements the September 2024 Natural Resource Damage Assessment Work Plan (NRDA Work Plan), which was made available for public comment consistent with 15 C.F.R. § 990.14(d). This Work Plan supports NRDP in determining and quantifying injury to recreational services resulting from the discharged asphalt that remains in the environment associated with the incident.

1.1 Review and Comment

The Trustee intends for this Work Plan to communicate the recreational survey approach, so that members of the public, including the responsible party and academic experts, can become engaged and actively participate in, or comment on, the recreational survey approach. Input may also provide the Trustee with new information and ideas that may be incorporated into the assessment.

The informal comment period will last through May 5, 2025, at 11:59 p.m. NRDP will evaluate all of the comments received; however, because of the desired timing for implementation of the survey, NRDP may not be able to respond to the informal comments received and will not be able to provide

an extension to this voluntary comment period. Any comments received by the Trustee will be included in the final version of the Work Plan. Comments may be submitted in writing to:

Via email:
NRDP@mt.gov
Please put, "Reed Point Draft Recreational Survey Work Plan" in the subject line.

Via mail:
Attn: Reed Point Draft Recreational Survey Work Plan
Montana Natural Resource Damage Program
PO Box 201425
Helena, MT 59620-1425

Via fax:
406-444-0236

Exhibit 1-3. Train derailment location.

1.2 Responsible Party/Potentially Liable Person

Pursuant to OPA under 33 U.S.C. § 2701 (32)(B), the identified Responsible Party for this incident is Montana Rail Link, Inc. (MRL). 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 a NOI to Conduct Restoration Planning. Accordingly, on November 20, 2023, the Trustee invited MRL to participate in an NRDA and concurrently provided MRL with a NOI to Conduct Restoration Planning. Federal regulators have approved the early termination of MRL's lease of the former Northern Pacific main line between Jones Junction, Montana, and Sandpoint, Idaho, with BNSF Railway Company resuming operation of the line January 1, 2024; accordingly, this NOI was also provided to BNSF Railway Company.

MRL initially accepted the invitation to participate in the NRDA process; however, there is not currently a funding participation agreement or cooperative agreement between MRL and NRDP.

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 NRDP acts as is representative, 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 natural resource damage assessment process and background on the incident is outlined in the NRDA Work Plan and won't be restated here. This Work Plan focuses on refining the estimates of recreational damages and losses from the train derailment and asphalt spill within the restoration planning phase.

1.5 Organization of the Work Plan

The remainder of this Work Plan is organized as follows. Section 2 presents the proposed assessment approach that the Trustee will use to conduct a recreational survey to anglers and other recreators. The final section contains references cited in the text. The Appendix provides a copy of the draft survey questions.

This Work Plan describes the objectives of the survey, survey design and sampling methods, potential survey questions, methods to administer the survey, roles and responsibilities, how the survey data would be collected and analyzed, and how the survey results will be described in a draft and final report. Any feedback provided during the comments period will be taken into consideration, and NRDP will update and finalize the Work Plan as appropriate.

2. Survey Approach

2.1 Survey Objectives

A recreational survey will be conducted to gather information that reflects recreation users' attitudes, behaviors, perceptions, and beliefs regarding their experiences that cannot be observed directly, specifically their experiences with asphalt that remains in the river after completion of the emergency response. The survey will be focused on several objectives:

1. After the spill when the river was reopened, how often were anglers and other recreators encountering asphalt in the river and shorelines. The survey is designed to determine the likelihood of running into asphalt in the stretches being surveyed.
2. How and what was involved in the asphalt encounter (i.e., asphalt on boats, shoes, visual/aesthetic impacts, etc.)?
3. How were recreators' recreational experiences affected by encountering asphalt?

There will be two methods for deploying the survey, and two versions of the survey will be developed for this effort.

1. Angler survey: Coordinating with the FWP's fishing pressure surveys, an online survey targeting anglers who have fished in the Yellowstone River sections 6A, 5, and 4.

2. Passive intercept survey: An on-line survey accessed through a QR code or link that is posted at the FASs and recreational sites along the Yellowstone River section 6A, 5, and 4 that targets a broader population (anglers and other recreators) who recreate on the Yellowstone River.

Most of the survey questions will be the same between the two versions, with the exception of one additional introductory question for the angler survey to identify anglers who have fished in the affected Yellowstone River sections. This document provides an overview of the steps needed to conduct and analyze the recreational surveys and provide a report on the results. It should be noted that some of the items, especially in the sample design section, are preliminary and are pending additional input and discussion with FWP. Draft survey questions are provided in the Appendix.

This Work Plan has been developed to be scientifically valid and usable in front of the National Pollution Funds Center and/or in court, if necessary, and includes the following considerations:

- Whether the methods are based upon a testable hypothesis. See the objectives listed above.
- The known or potential rate of error associated with the method. The error rate is discussed below in Section 2.2.
- Whether the method has been subject to peer review. During the comment period, the Work Plan, the survey methods, and survey questions will be peer reviewed by at least three academics from Rocky Mountain College and the Institute for Tourism and Recreation Research at the University of Montana. The comment period is discussed in Section 1.1.
- Whether the method is generally accepted in the relevant scientific community. The methods to design, sample, and conduct these surveys have followed standard processes and principles for survey research, as described in Rea and Parker (2014).

2.2 Survey Design and Sampling Methods

This step includes the draft survey, identifying the population and target sample size, and describing how the survey would be administered. The purpose of sampling is to be able to make generalizations about a population based on a scientifically-selected subset of that population. The target population in this case is anglers and other recreational users that have visited Yellowstone River Section 6A and downstream sections of the Yellowstone River (sections 5 and 4) who may have encountered asphalt.

In addition, clear and concise draft survey questions are included for both survey versions. To avoid bias, questions are carefully worded and ordered. While the opportunity for qualitative responses will be provided in the survey, it employs choices where respondents can select if and how they have been affected by the asphalt in the river. Open-ended questions provide nuanced answers but have the disadvantage of requiring more complex data analysis. Please see the Appendix for a working version of the survey instrument.

The survey instrument will be pre-tested with a small group of people to ensure the survey introduction and questions are clear and concise, questions flow in a logical and natural order, and no questions cause issues or offense. In the pre-test, it may be necessary to ask about the length of the survey to ensure that respondents can finish the survey without too much time and effort and that questions don't bias the respondent toward a specific response. Pre-testing will allow testing of the online platform in terms of question skip logic, logging responses, as well as testing the backend database of question response tracking. The pre-test will be completed with a small group of people from FWP and if necessary, from outside FWP (e.g., the consulting firm).

2.2.1 Angling Survey

NRDP will work with Montana's FWP annual fishing pressure survey to identify anglers who live in the region surrounding these three sections of the Yellowstone River. We will target anglers who live in zip codes in the FWP Region 5 (south central Montana). Fishing pressure in Region 5 accounts for approximately 341,500 angler days. We have determined the average number of angler days in Yellowstone River Sections 6A, 5, and 4 based on the past 10 years of FWP fishing pressure survey data, approximately 39,400 angler days (Figure 2-1). Fishing pressure in Yellowstone River sections 6A, 5, and 4 accounts for approximately 11 percent of angler days in Region 5.

Within a month, anglers fish an average of 2.5 days. Over a year, they are estimated to fish on average 8 days per year.[1] Dividing 39,400 angler days by 8 results in an estimated 4,924 average annual anglers who fished in these sections of the Yellowstone River. According to FWP survey data, approximately 87 percent of these angler days are resident anglers from the state of Montana, likely mostly from south central Montana. For the angler survey, 4,924 anglers is the target population from which a random sample would be identified.

[1] These figures will need to be verified by FWP.

Table 2-1: Angler Days and Anglers in Yellowstone River Sections

Yellowstone River Sections	2013	2015	2017	2019	2020	2021	Baseline (Annual Average)
Section 6A	14,906	13,379	16,255	9,583	11,521	6,802	12,074
Section 5	17,267	7,972	7,663	9,495	11,925	9,357	10,613
Section 4	16,410	13,057	12,946	16,477	23,441	17,880	16,702
Subtotal Yellowstone River Sections 6A, 5, and 4	**48,583**	**34,408**	**36,864**	**35,555**	**46,887**	**34,047**	**39,391**
Number of Anglers Fishing in Sections 6A, 5, and 4 (8 days/year)[a]	**6,073**	**4,301**	**4,608**	**4,444**	**5,861**	**4,256**	**4,924**

[a]Figures are pending verification by FWP.

Source: FWP Angler Pressure Survey Summaries, Available: https://fwp.mt.gov/fish/pressure-surveys.

The appropriate sample size to target for random sampling will be based on the following equation (Rea and Parker, 2014):

$$n = \frac{Z^2[p(1-p)]N}{Z^2[p(1-p)] + (N-1)ME^2}$$

Where:

n = sample size

N = population size

Z = Z score for various level of confidence (we propose to use a Z score of ±1.96 for the 95% confidence interval in a two-tailed test)

ME = margin of error in terms of survey data (provided as proportions) (we propose to use ±5%)

p = the true proportion (unknown) so the most conservative approach is to set a p value that results in the highest sample size (p=0.5).

Given a population of approximately 5,000, with 95% confidence interval and a margin of error of ±5%, the sample size is 357 respondents (Rea and Parker, 2014). Based on discussions with the FWP fisheries statistician, we are anticipating a 30 percent response rate to the survey. Montana's FWP fishing pressure survey uses a random sample of anglers that are selected from the state's automated licensing system each month, ensuring a representative cross-section of fishing activity. A random sample of these anglers would be targeted with an initial survey question that would screen for only those Region 5 anglers who have fished on Sections 6A, 5, and 4 of the Yellowstone River. We will work with FWP fisheries statisticians to determine the appropriate number of anglers to sample to obtain a sample size of 357 angler responses.

2.2.2 Passive Intercept Survey

The second survey approach/method is anticipated to be a passive intercept survey, specifically using a QR code or link to a survey posted at FASs in Yellowstone River Sections 6A, 5, and 4. The focus of this passive intercept survey is to obtain input from both anglers and other recreators on encounters with asphalt, and perceptions about recreational experiences. This type of survey approach uses a non-probabilistic sampling approach and cannot be used to be representative of the general population. The survey questions would be the same as those in the Appendix; the exception would be initial questions to describe those recreators responding to the survey through the QR code.

2.3 Survey Administration

The online survey questions would be implemented through an online survey tool, such as Survey Monkey or Qualtrics. FWP fishing pressure survey is administered through Survey Monkey so it may be best to develop the survey through this online system. The random sample of Region 5 anglers will be sent an email with a link to the online survey.

There will be two versions of the survey developed, depending on where the respondents are accessing the survey, although most of the survey questions would be the same. For the angler survey, it will be necessary to monitor the number of responses from the email survey and the QR code survey to facilitate a sample size that supports at least a response of 357 surveys (95% confidence interval and ±5% margin of error). It may be necessary to send follow up/reminder emails to generate a higher response rate.

2.4 Data Collection and Analysis

Online survey tools and database will be used to view and analyze the survey results. It is likely that most of the responses to the questions will be described as a proportion of the sample that answered. For example, 30% of the survey responses have fished in Yellowstone River Sections 6A, 5, and 4. Appropriate statistics will be run on the questions, including:

- Mean
- Variance and standard variation
- Proportion of responses
- Frequency distributions
- Cross tabulation tables (for Likert scales or ordinal responses)

- Chi-squared tests of significance
- Others as warranted

2.5 Reporting of Results

A report will be developed that will include the survey design and development, sampling design, sample size, target population, and other methodological aspects of the survey. The results will be described in the report, including visualizations, charts and graphs to describe the statistics from the survey results. Key objectives from the survey will be directly addressed in the report, including:

- Frequency of encounters with asphalt
- Rating quality of recreational experience if asphalt is encountered

Appendix: Draft Survey Questions

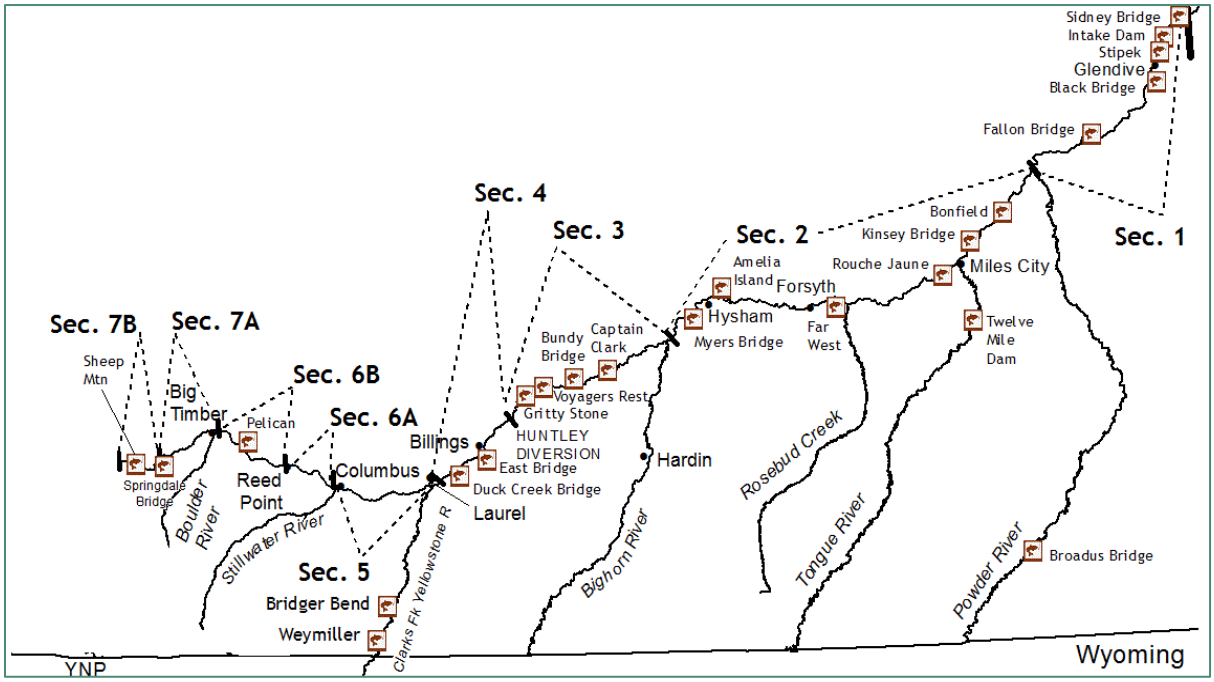
The purpose of the survey is to gain a better understanding of how often anglers and other recreators encountered asphalt following the train derailment and resulting spill of asphalt into the Yellowstone River and how it affected their recreational experience. The following are draft questions to be considered for both the survey instruments. Figure 1 is provided for reference and will need to be included in the final survey instrument.

SCREENING QUESTION

1. [Angler survey] Have you ever recreated on the Yellowstone River in sections 6A, 5, or 4 (Figure 1)?
   - If yes, please advance to question 2.
   - If no, thank you for your time.

1. [Passive intercept survey] Please note on what Sections of the Yellowstone River you are recreating? 6A, 5, or 4 (Figure 1)?
   - Section 6A
   - Section 5
   - Section 4

Figure 1: FWP Yellowstone River Sections



BASELINE EXPERIENCE QUESTION

2. Using Figure 1, please indicate what types of recreational activities you have participated in in Sections 6A, 5, or 4 on the Yellowstone River (check all that apply)?

Activity	Section 6A	Section 5	Section 4
Boat Fishing			
Shore Fishing			
Boat and Shore Fishing			
Rafting (non-angling)			
Paddle Boarding, kayaking, floating (non-angling)			
Swimming			
Walking/Hiking			
Picnicking			
Other, please specify			

3. Prior to 2023, how would you rate your experience recreating in sections 6A, 5 or 4 of the Yellowstone River?

River Section	Recreation Experience Rating
Yellowstone River Section 6A	If possible, will create a drop down menu with the following options 1 – Very satisfied/ very good quality experience 2 – Satisfied/ good quality experience 3 – Neither satisfied or dissatisfied/Adequate quality of experience 4 – Dissatisfied/ poor quality experience 5 – Very dissatisfied/ very poor quality experience
Yellowstone River Section 5	
Yellowstone River Section 4	

Recreational Visits in 2023

4. Did you recreate on the Yellowstone River in sections 6A, 5, or 4 in the summer or fall 2023?
   - Yes, please advance to question 4.
   - No, please advance to question 9

4. Using the table below and Figure 1, please indicate what types of recreational activities you participated in Sections 6A, 5, or 4 on the Yellowstone River in 2023 (check all that apply)?

Activity	Section 6A	Section 5	Section 4
Boat Fishing			
Shore Fishing			
Boat and Shore Fishing			
Rafting (non-angling)			
Paddle Boarding, kayaking, floating (non-angling)			
Swimming			
Walking/Hiking			
Picnicking			
Other, please specify			

5. If you recreated on the Yellowstone River in the summer or fall of 2023, did you encounter asphalt in the river or the shoreline during any of your visits?
   - Yes (proceed to question 6)
   - No (Go to question 8)

6. What percentage of your visits did you encounter asphalt while visiting these sections of the Yellowstone River?

River Section	What percentage of your visits did you encounter asphalt?
Yellowstone River Section 4	If possible, will create a drop down menu with the following options • 100% • 75% - 100% • 50% - 75% • 25% - 50% • Less than 25% • Never
Yellowstone River Section 5	
Yellowstone River Section 6A	

7. How did you encounter asphalt while visiting these sections of the Yellowstone River in 2023 (check all that apply)?

Asphalt Interaction	Section 6A	Section 5	Section 4
Observed in water			
Residue on boat or other flotation device			
Residue on recreational gear or equipment			
Staining of clothes and/or shoes			
Residue on body/hair			
Residue on pets			
Other (please specify)			

8. How would you rate your experience recreating in sections 6A, 5 or 4 of the Yellowstone River in the summer and fall of 2023?

River Section	Recreational Experience Rating
Yellowstone River Section 6A	If possible, will create a drop down menu with the following options 1 – Very satisfied/ very good quality experience 2 – Satisfied/ good quality experience 3 – Neither satisfied or dissatisfied/Adequate quality of experience 4 – Dissatisfied/ poor quality experience 5 – Very dissatisfied/ very poor quality experience
Yellowstone River Section 5	
Yellowstone River Section 4	

Recreation Experience in 2024

9. Did you recreate on the Yellowstone River in sections 6A, 5, or 4 in 2024?
    - Yes, please advance to question 10.
    - No, advance to question 15.

10. Using the table below and Figure 1, please indicate what types of recreational activities you participated in Sections 6A, 5, or 4 on the Yellowstone River in 2024 (check all that apply)?

Activity	Section 6A	Section 5	Section 4
Boat Fishing			
Shore Fishing			
Boat and Shore Fishing			
Rafting (non-angling)			
Paddle Boarding, kayaking, floating (non-angling)			
Swimming			
Walking/Hiking			
Picnicking			
Other, please specify			

11. If you recreated on the Yellowstone in 2024, did you encounter asphalt in the river or the shoreline during any of your visits?
    - Yes (proceed to question 12)
    - No (Go to question 14)

12. What percentage of your visits in 2024 did you encounter asphalt in these sections of the Yellowstone River?

River Section	What percentage of your visits did you encounter asphalt?
Yellowstone River Section 4	If possible, we will create a drop down menu with the following options • 100% • 75% - 100% • 50% - 75% • 25% - 50% • Less than 25% • Never
Yellowstone River Section 5	
Yellowstone River Section 6A	

13. How did you encounter asphalt while visiting these sections of the Yellowstone River in 2024 (check all that apply)?

Asphalt Interaction	Section 6A	Section 5	Section 4
Observed in water			
Residue on boat or other flotation device			
Residue on recreational gear or equipment			
Staining of clothes and/or shoes			
Residue on body/hair			
Residue on pets			
Other (please specify)			

14. How would you rate your experience recreating in sections 6A, 5 or 4 of the Yellowstone River in 2024?

River Section	Recreational Experience Rating
Yellowstone River Section 6A	If possible, will create a drop down menu with the following options 1- Very satisfied/ very good quality experience 2 – Satisfied/ good quality experience 3 – Neither satisfied or dissatisfied/Adequate quality of experience 4 – Dissatisfied/ poor quality experience 5 – Very dissatisfied/ very poor quality experience
Yellowstone River Section 5	
Yellowstone River Section 4	

Recreational Experience in 2025

15. Did you recreate on the Yellowstone River in sections 6A, 5, or 4 in 2025?
    - If yes, please advance to question 16.
    - If no, thank you for your time.

16. Using the table below and Figure 1, please indicate what types of recreational activities you have participated in Sections 6A, 5, or 4 on the Yellowstone River in 2025 (check all that apply)?

Activity	Section 6A	Section 5	Section 4
Boat Fishing			
Shore Fishing			
Boat and Shore Fishing			
Rafting (non-angling)			
Paddle Boarding, kayaking, floating (non-angling)			
Swimming			
Walking/Hiking			
Picnicking			
Other, please specify			

17. Did you encounter asphalt in the river or the shoreline during any of your visits to the Yellowstone River in 2025?
    - Yes (proceed to question 18)
    - No (Go to question 20)

18. What percentage of your visits in 2025 did you encounter asphalt in these sections of the Yellowstone River?

River Section	What percentage of your visits did you encounter asphalt?
Yellowstone River Section 6A	If possible, will create a drop down menu with the following options • 100% • 75% - 100% • 50% - 75% • 25% - 50% • Less than 25% • Never
Yellowstone River Section 5	
Yellowstone River Section 4	

19. How did you encounter asphalt while visiting these sections of the Yellowstone River in 2025 (check all that apply)?

Asphalt Interaction	Section 6A	Section 5	Section 4
Observed in water			
Residue on boat or other flotation device			
Residue on recreational gear or equipment			
Staining of clothes and/or shoes			
Residue on body/hair			
Residue on pets			
Other (please specify)			

20. How would you rate your experience recreating in sections 6A, 5 or 4 of the Yellowstone River in 2025?

River Section	Recreational Experience Rating
Yellowstone River Section 6A	If possible, will create a drop down menu with the following options 1 – Very satisfied/ very good quality experience 2 – Satisfied/ good quality experience 3 – Neither satisfied or dissatisfied/Adequate quality of experience 4 – Dissatisfied/ poor quality experience 5 – Very dissatisfied/ very poor quality experience
Yellowstone River Section 5	
Yellowstone River Section 4	