Preliminary Engineering Scan Memorandum

To: Shane Stack, P.E., Missoula County Public Works Director
Erik Dickson, P.E., Assistant Director/County Engineer
From: Jacob Roske, P.E.
Date: 12/13/2024
Re: Kraft Creek Road Bridge – Preliminary Engineering Scan

1. Background Information

This memorandum presents the findings of a preliminary scan that has been performed to explore the replacement of the existing bridge. This scan focuses on identifying key scope, schedule, and budget aspects of a potential bridge replacement project.

The findings of this memo are preliminary in nature as a formal analysis has not been performed. High level desktop review has been performed for applicable disciplines and a site visit was performed by DJ&A on November 19, 2024. This work is completed as part of preliminary engineering services authorized under a Professional Services Agreement between DJ&A and Missoula County (signed 11/14/24).

2. Project Description

The Kraft Creek Road Bridge crosses the Swan River three miles south of Condon at milepost 0.55 of Kraft Creek Road, west of Highway 83. The existing bridge was constructed in 1954 and is a single lane timber bridge that is roughly 101-feet long, consisting of four main spans over timber pile bents. The existing structure is located at:

- Kraft Creek Road Bridge (Structure #: 03778) – Latitude/Longitude: (47.46259, -113.68539)

3. Existing Conditions

3.1. Existing Bridge & Roadway

The following table provides information on the existing structure and roadway:

Roadway Width:	20 ft	**Deck Width:**	16.1 ft
Roadway Surface:	Gravel	**Clearance Width:**	14.4 ft
Bridge Material:	Timber	**Railing Type:**	W-Beam w/ Timber Posts
Bridge Length:	101 ft	**Approach Railing:**	40 ft Runs
Number of Spans:	4	**Abutment Type:**	Timber Pile

The National Bridge Inventory (NBI) lists the bridge's condition as follows:

Bridge Condition:	F - Fair
Deck Condition Rating (58):	7 – Good Condition
Superstructure Condition Rating (59):	7 – Good Condition
Substructure Condition Rating (60):	6 – Satisfactory Condition
Channel Protection Condition Rating (61):	8 – Stable Channel Protection
Bridge Railings (36A):	0 – Does not meet current standards
Bridge Guardrail Ends (36D):	0 – Does not meet current standards

Observations from the site visit confirmed these findings with the structure generally appearing to be in fair condition with obvious signs of aging and some minor rot/deterioration in some of the timber members. The bridge is constructed on an approximate +1.5% grade with the roadway also gradually climbing through the project site. See **Figures 1 - 4** for photos of the existing structure.

3.2. Stream

The bridge crosses the Swan River. The stream generally meanders through the general area with large, oxbow curves. The bridge is at the apex of a large oxbow curve that is preceded by the river running parallel and in close proximity to the road approximately 1000 ft before the bridge. See **Figure 5** for an aerial image of the bridge location and the stream. See **Figures 6 & 7** for upstream and downstream photos of the stream. The bridge is not centered on the stream and rather has about 30' of bank at Abutment 1 that appears to provide some floodplain connectivity and roughly 5' of bank at Abutment 2. No major signs of erosion or scour are observed with 30-50' of vegetated floodplain being observed river right and established trees near the bank at river left. The stream had an observed bankfull width of roughly 80'.

3.3. Environmental Resources

The environmental resources that were observed on site and verified in a desktop review are summarized herein. An environmental scan memo is included in the appendices which contains a more detailed summary of the resources identified within the project site.

The bridge is located in the Headwaters Swan River watershed. The Swan River is categorized as perennial and the groundwater of the area is part of the Seeley-Swan subarea groundwater aquifer. The bridge is located within a special flood hazard area as designated by FEMA. The wetlands of the project area are classified as Freshwater Forested/Shrub and Palustrine Emergent wetlands with forested riparian areas. These conditions were observed both around and on the project site with lodgepole pine being the primary tree species which are growing directly adjacent to the stream. See **Figure 8** for a photo of the typical riparian zone that was observed. Special status biological species that have designated critical habitat within the project area include Canada Lynx and Bull Trout, as well as the presence of Bald Eagles. Migratory bird nests were observed on the underside of the structure. The bridge is older than 50 years and therefore may be eligible for the National Register of Historic Places. Prime, unique, or farmland of statewide importance was not found within the project area. There are also no Section 4(f) or 6(f) properties found within the project area but Kraft Creek Road does provide access to such properties located on the Flathead National Forest.

3.4. Geological & Geotechnical

No geotechnical investigation was performed at the site, but a site visit and geological desktop review were performed. Results of these efforts show that the project site is located in an area of alluvium deposits which were apparent as the creek bottom consisted of cobbles, boulders, gravel, sand, and silt. See **Figure 9** for a photo of the observed stream substrate. Geologic mapping shows the alluvial deposits are underlain by the Helena Formation which consists of beds of limestone interbedded with dolomite, siltite, and argillite. No major signs of clay or silt deposits were observed.

3.5. Roadway Safety

The roadway visually appears to be adequately designed for its use with ample sight distance, sufficient shoulders, and acceptable cut and fill slopes. The road is posted to 30 mph speed limit in close proximity

to the bridge. The bridge railing does not appear to have been designed for traffic loading but is in fair condition. Approach railing off the bridge consists of an approximately 40' long section of rail that terminates in a flared end shoe. Both leading terminals have been struck with obvious signs of damage. There are no obvious signs of heavy usage by alternative transportation on the bridge, however it can be reasonably assumed that the bridge sees occasional foot traffic by fisherman and hikers, as well as mountain bike usage. See **Figures 10 & 11** for photos of this damage.

3.6. Utilities, Right of Way & Alternate Access

Utilities were observed in the vicinity of the bridge. Missoula Electric Cooperative overhead powerlines run roughly parallel to the bridge offset approximately 20' from the centerline of the road. Telecommunication cables were observed to also be installed on the power poles and they are assumed to also be running underground and through a steel conduit connected to the downstream edge of the bridge. A fiberoptic/communication pedestal was also located near the northwest corner of the bridge. No obvious signs of natural gas were observed, and it was later confirmed with NorthWestern Energy that no natural gas infrastructure is near the bridge. See **Figure 12** for a photo of the observed utilities.

Private property signs were observed near the project site as well as non-continuous fence lines on both sides of the road. The road nearly follows the property line between two different private land owners to the north and south of the bridge. Preliminary right of way (RW) desktop review of online public records shows the road is an existing county RW over United States Forest Service (USFS) easements. There are also 2 strips of county RW that are 20' wide on each side of the property line that overlap the main section in some areas. This equates to approximately 80' of RW in the vicinity of the bridge with the exact location and extents needing survey verification. After desktop review, it is assumed that the Swan River is not considered a navigable waterway at this location and a DNRC permit/easement is therefore not expected.

Desktop review shows there are no current alternate public access routes that connect Kraft Creek Road to other access points crossing the Swan River. However, it appears that there are private roads to both the north and south of the bridge that connect the roadway system with Glacier Creek Road and Pineridge Road, which both have independent bridge crossings over the Swan River. A detour to the north through Glacier Creek Road would be on the order of six miles while a detour to the south through Pineridge road would be on the order of three miles. Both routes would require coordination with multiple landowners.

4. Proposed Conditions

4.1. Bridge Type, Size, and Location

See **Appendix A** for a schematic depiction of the assumed bridge layout. It is assumed that the new bridge will be designed and constructed in accordance with current AASHTO and MDT standards.

Type

The bridge type is assumed to be prestressed concrete founded on steel piles. Prestressed concrete will require less maintenance than steel and will help provide a structure with greater longevity.

Size

The bridge size that is assumed at this time is a 117' span with a 24' wide travel way. A clear span will eliminate the need to perform work inside the ordinary high-water mark and simplify permitting. The increased deck width will accommodate (2)-10' lanes with (2)-2' shoulders, providing continuity to the existing roadway.

Location

The bridge location is assumed to be in the same location as the existing bridge with an assumed temporary detour structure being required to the south of the existing bridge (upstream). The new Abutment 1 will be founded close to the existing location with the majority of the additional length of the new structure being applied past the existing Abutment 2 location. Establishing temporary detour access through private land would likely be more straightforward than a temporary bridge crossing, but it is not possible to guarantee that an alternate route can effectively be established at this point.

4.2. Hydrologic and Hydraulic Considerations

A preliminary desktop review of FEMA flood data and field measurements shows the existing bridge provides roughly 2'-11" of freeboard for the hundred-year (Q100) flood event. At normal bankfull conditions, the water level essentially comes in contact with Abutment 2. This condition is not advisable for floodplain continuity, scour mitigation, facilitating terrestrial aquatic organism passage, or accommodating the river's current directional projection towards the outside of the oxbow curve. Therefore, it is recommended that additional bridge length be provided at Abutment 2. It is also recommended that revetment and armoring be incorporated at both abutments with additional effort placed on the banks of Abutment 2 due to the apparent geomorphic trend of the river to move outwards towards the abutment. The assumed superstructure will be roughly 4.5' deep and the current superstructure is roughly 25" deep. Assuming a design to provide a minimum of 2' of freeboard, this would translate to raising the existing road by a minimum of 1.5'. This scan currently shows the road being raised around 2.25' to better match the existing low chord, as the bridge has ample past flood performance history at this elevation. Additional freeboard can be advantageous in forested environments like this due to the potential for woody debris. The bridge low chord elevation and its effects on raising the road will be further analyzed in the bridge design as the effects on Right of Way for expanding roadway prisms must also be considered. See **Appendix B** for a memorandum summarizing the preliminary H&H desktop review.

4.3. Environmental Considerations

Montana DNRC's joint permit application will be used to reduce the number of separate permit applications required. The joint permit application will provide coverage for the following permits which are anticipated for this project:

- US Army Corps of Engineers (USACE) (federal government) - Section 404 permit
- MT Department of Environmental Quality (state government) - Section 401 permit
- MT Department of Environmental Quality (state government) - 318 (turbidity) Authorization
- MT Fish, Wildlife, and Parks (state government) - SPA 124 permit
- MT DNRC (state government) - Navigable river land use license or easement
- County Floodplain Administrators (local government) - Floodplain permits

Additional information needed to properly complete a joint permit application for this project includes detailed aquatic resource delineation and mapping meeting USACE standards.

Storm water permits will also be required at the state and county level and will be the contractor's responsibility during construction.

It is anticipated that consultation will be required with USFWS to fulfill biological resource requirements for applicable endangered species. It is expected that consultation will not require preparation of Biological Assessments with the anticipation of the project tiering to existing formal Biological Opinion documents.

Consultation with SHPO will be required due to the age of the bridge and a Class I cultural resources assessment and Class III cultural resources survey will need to be performed to comply with Section 106 of the National Historic Preservation Act.

It is likely that this project is eligible for a Categorical Exclusion (CE) for the required level of environmental document under state (MEPA) and federal (NEPA) requirements as it classifies as a bridge replacement project. See **Appendix C** for a memorandum which summarizes the environmental scan performed for this project and provides additional details.

4.4. Geotechnical Considerations

Site observations and desktop review show that the site and the assumed bridge type would lend well to driven pile foundations. The larger span of the bridge and potential of utilizing integral/semi-integral concepts lends well to driving h-pile or steel pipe piles. Based on similar bridge foundation designs conducted by our geotechnical partner and their knowledge of the area, they anticipate a conservative maximum length of the piles to be 75 to 80’ from the bottom of the pile cap. It is recommended that a minimum of one exploratory drilling be bored at each abutment location on the order of 100’ deep to inform final foundation design recommendations. See **Appendix D** for a memorandum which summarizes the geotechnical scan performed for this project.

4.5. Safety Considerations

The straight geometry of the existing road with no immediate adjacent intersections allows for the inclusion of approach railing without the need for exceptions or variances. Increasing the bridge travel width to 24’ will improve safety for vehicles and the occasional foot/bike traffic it sees and reduce the likelihood of impacts to the approach railing like that which is observed in the existing condition.

4.6. Utility, ROW & Alternate Access Considerations

The existing telecommunications line will need to be removed from the existing bridge and likely be moved to either the new structure or below the stream. The overhead powerlines are in close vicinity and will be a safety consideration during construction but should not need to be moved with the current assumed layout. However, it is possible that the contractor’s means and methods could require the need to deenergize the lines for roughly one day during girder erection. Future utility needs should also be considered in the design process.

The existing right of way is likely wide enough if the bridge is replaced in its current position. A certificate of survey should be completed to determine the exact location of the right of way. Construction easements will likely be required if temporary bypass bridge structures are required.

Alternate detour routes in lieu of a temporary bypass bridge may be explored; however, it is likely to be a cumbersome process with multiple owners being affected by the routes to both the north and south. See **Appendix E** for summaries of two potential detour routes that have been prepared by Missoula County could be considered.

4.7. Construction Considerations

Prestressed decked bulb tee girders regularly span from 65’ to 150’ and also eliminate the need to cast a concrete deck onsite, reducing field labor and construction schedule. Steel pile foundations will provide safeguards against scour and avoid costly deep excavations with tall cast-in-place concrete wall abutments. The contractor will require access to both sides of the stream and will utilize the bypass or detour routes accordingly. Instream work is not currently proposed with the exception of removal of existing timber piles from the water way.

5. Project Cost and Schedule

The bridge replacement project is estimated to cost $3,762,000 which includes engineering, construction, and contingency. See **Appendix F** for a Rough Order of Magnitude (ROM) cost estimate of the assumed bridge replacement project.

Assuming a successful grant award notification in June 2025, it is feasible that the bridge construction could be completed as early as fall of 2028 with project closeout in 2029. See **Appendix G** for a high-level estimate of the project schedule.

Figures

Figure 1- Existing Bridge and Roadway: Bridge Elevation

Figure 2 – Existing Bridge and Roadway: Typical Bridge Abutment

Figure 3 – Existing Bridge and Roadway: Typical Bridge Pier

Figure 4 – Existing Bridge and Roadway: Bridge Deck

Figure 5 - Stream: Bridge Location

Figure 6 – Stream: Upstream View of Swan River

Figure 7 – Stream: Downstream View of Swan River

Figure 8 - Environmental Resources: Typical Riparian Zone

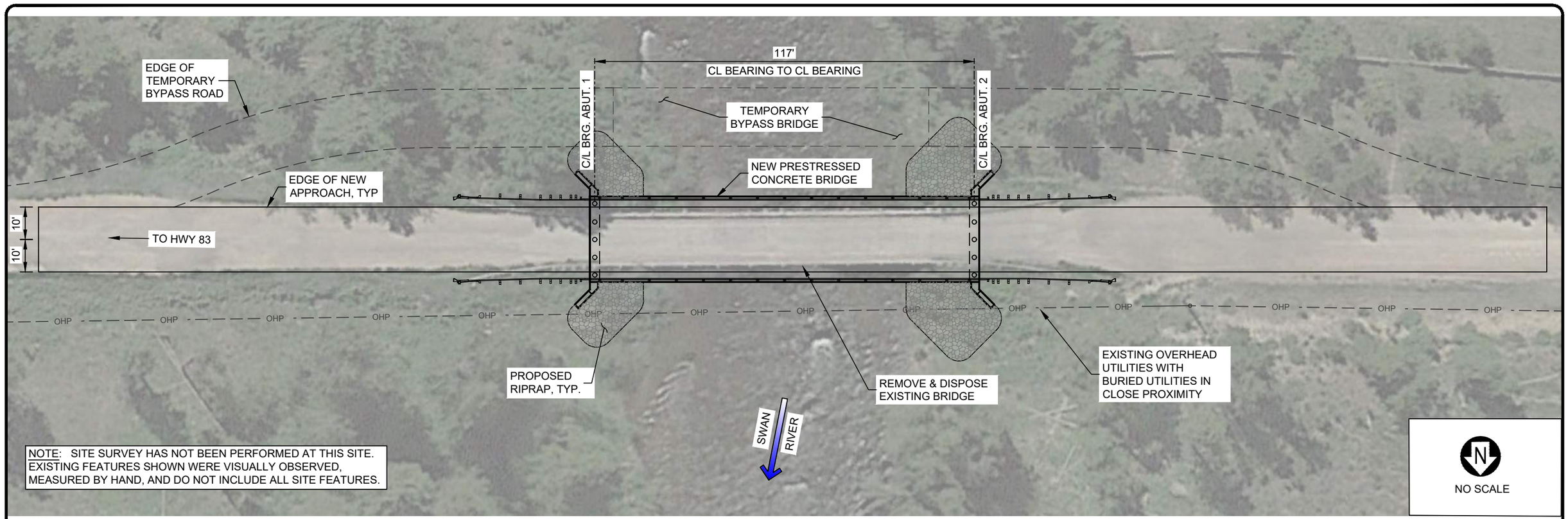
Figure 9 – Geological and Geotechnical: Stream Substrate

Figure 10 – Roadway Safety: NE Corner Damaged Approach Rail Terminal

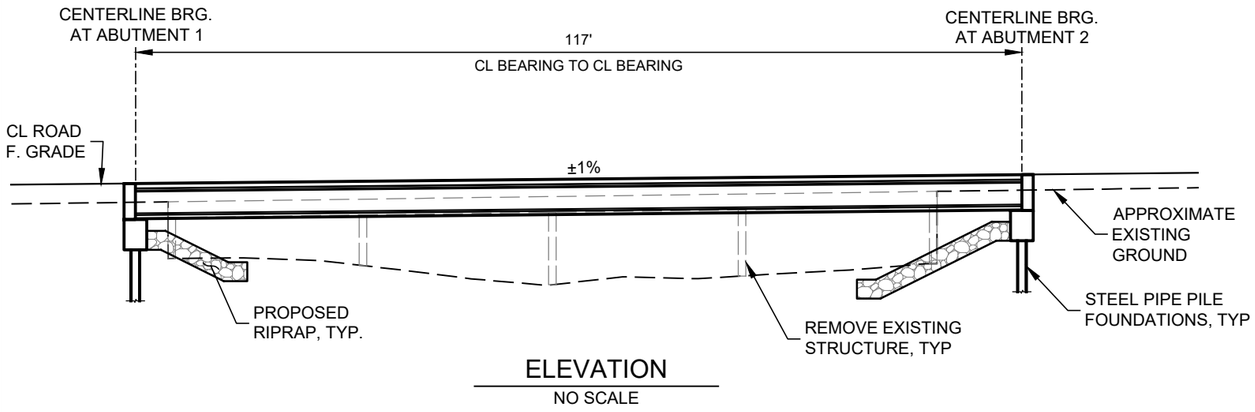
Figure 11 – Roadway Safety: SW Corner Damaged Approach Rail Terminal

Figure 12 – Utilities, ROW & Alternate Access: Existing Utilities

Appendix A: Schematic Bridge Layout



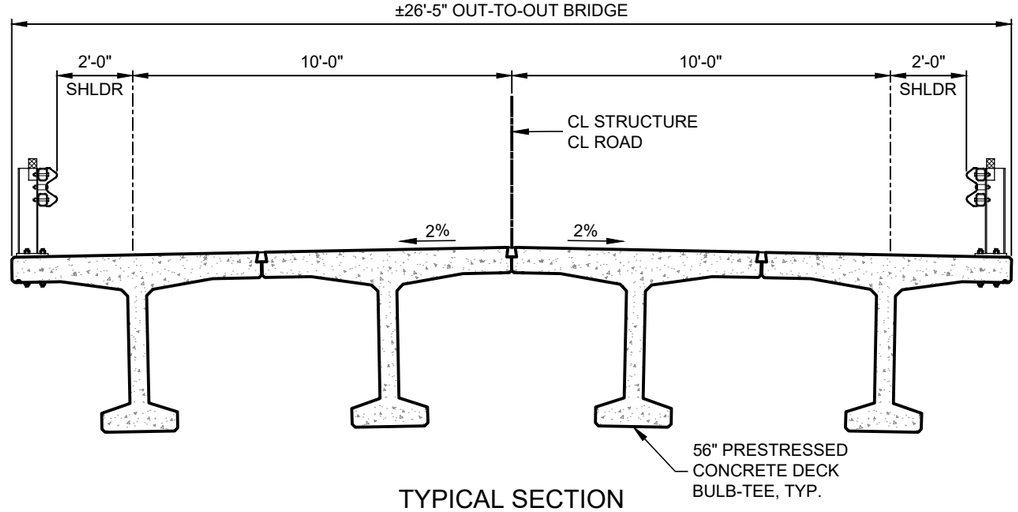
PLAN



ELEVATION

NO SCALE

NOTE: ELEVATION SHOWN IS APPROXIMATE.



TYPICAL SECTION

NO SCALE

REVISION	DATE	DESCRIPTION
-	-	-

DESIGNER JWR PROJ. NO. 7593
DRAWN JWR DATE 11/27/24
CHECKED AW SURVEYED -

DJ&A ENGINEERS PLANNERS SURVEYORS

KRAFT CREEK ROAD BRIDGE REPLACEMENT
MISSOULA COUNTY

SCHEMATIC LAYOUT

SHEET 1 OF 1

Appendix B: Hydrologic and Hydraulic Scan Memo

2000 Maple Street
Missoula, MT 59808
406.721.4320
djanda.com

Memo

To: Missoula County
From: DJ&A, P.C.
Date: November, 2024
Re: Missoula County Bridge Scans – Kraft Creek Road Bridge

DJ&A has performed a high-level hydrologic and hydraulic (H&H) scan to inform the future replacement of Kraft Creek Road Bridge crossing on the Swan River. Field measurements and observations were conducted in November, 2024. This memo provides a summary of site conditions, preliminary analysis, and recommendations. Supporting documents, including field notes, a USGS StreamStats report, FEMA Floodway Map and profiles for the Swan River, and HY-8 modeling outputs, are attached.

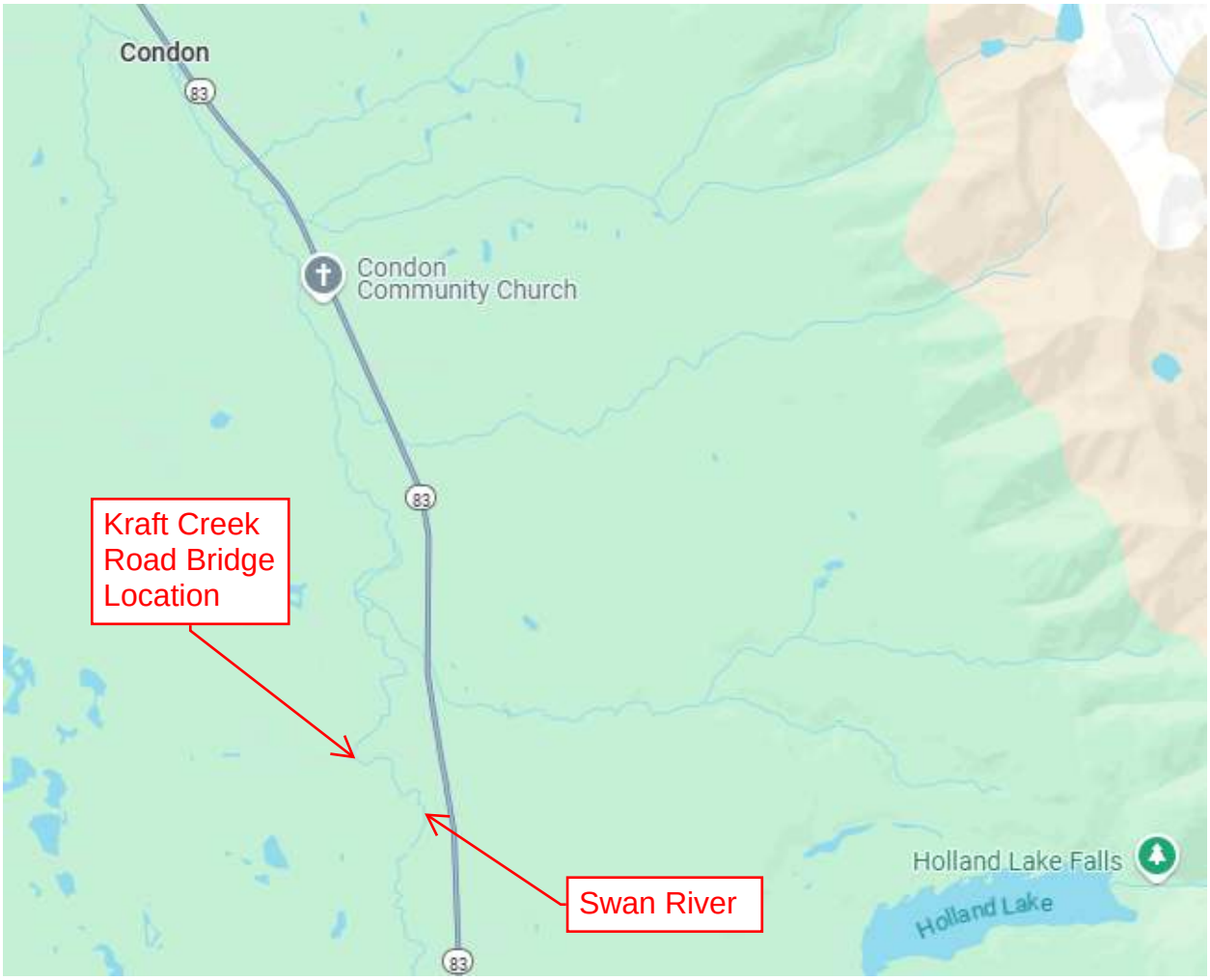


Figure 1: Vicinity Map

Site Description:

The Kraft Creek Road Bridge, located 0.55 miles west of Highway 83 on Kraft Creek Road near Condon, Montana, ia a 101-foot span timber bridge. The bridge consisting of four main spans crosses over the Swan River on an oxbow curve in the river. The outside bank is closer to the bridge abutment than on the inside of the river curve. The site is within a forested riparian area characterized by lodgepole pines, grasses and shrubs.

Figure 2: Kraft Creek Road Bridge

Key Site Features:

- Bridge opening: ~100 feet
- Bankfull: ~ 75 feet wide, 2.8 feet deep
- Substrate: Predominantly gravel and rounded cobbles
- Scour evidence: There are no significant signs of scour.

Preliminary Analysis and Assumptions:

HY-8, a tool primarily designed for modeling culverts, was utilized in this study to conduct a high-level preliminary hydrologic and hydraulic analysis for the bridge site. Discharge values were sourced from USGS StreamStats and compared with additional data from gage stations and FEMA resources to ensure conservatism in the analysis (Tables 1 and 2). Manning's n roughness coefficient used for HY-8 calculations was 0.045 for the Swan River, found in Table 13 from FEMA, *Flood Insurance Study*, Volume 1 of 3.

Table 1: Peak Discharges for the Swan River

Storm Event	Swan River at Kraft Creek Rd Bridge (StreamStats)
2-year	1,140 cfs
100-year	2,600 cfs

Table 2: Other discharge rates calculated for this site (not used for hydraulic modeling)

Storm Event	Swan River at Kraft Creek Rd Bridge	Notes
2-year	1,191 cfs	From USGS 12369200 – drainage area comparison
2-year	1,218 cfs	From USGS 12369250 – drainage area comparison
100-year	2,280 cfs	From FEMA (at confluence with Holland Creek)

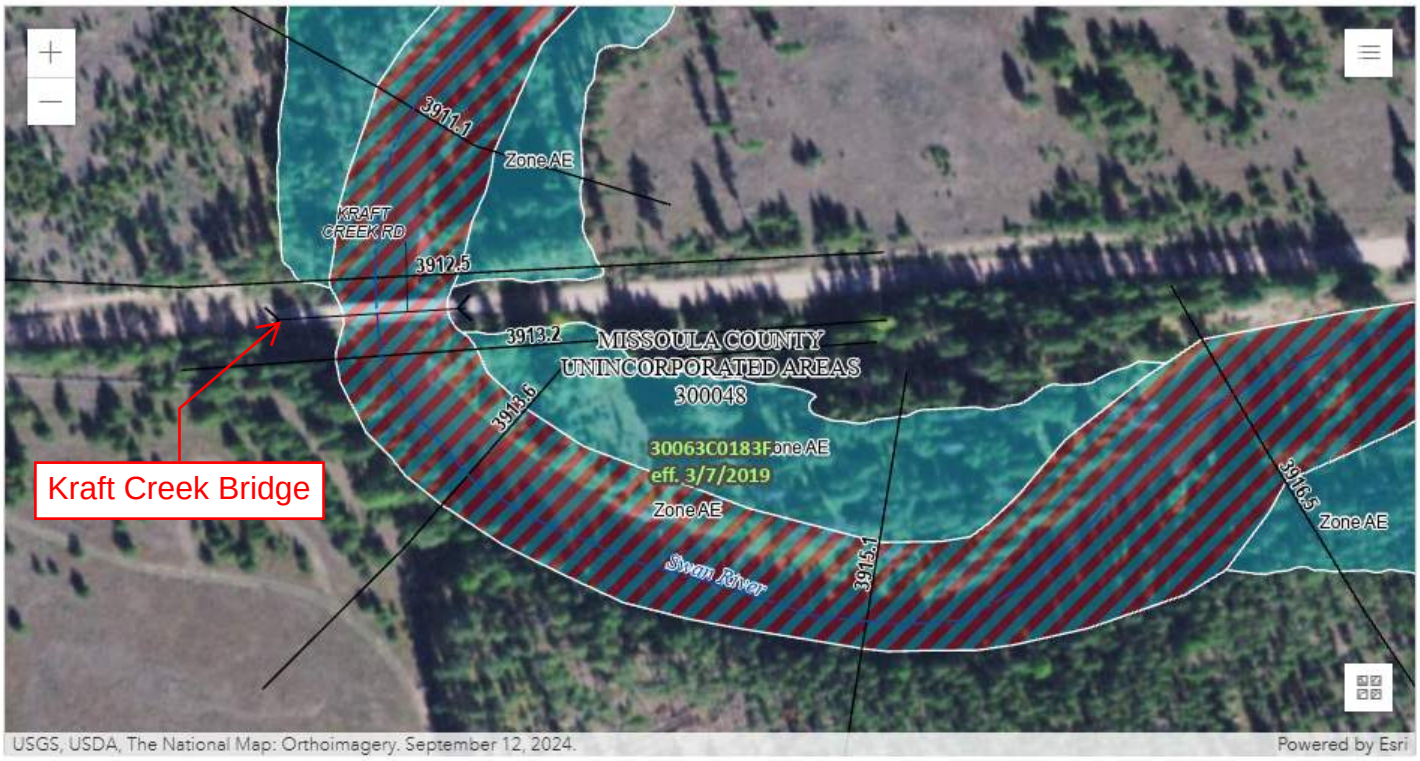
Findings:

From FEMA flood data and rough HY-8 modeling of the existing conditions, the existing bridge meets minimum freeboard requirements of 2-feet. FEMA Q100 elevations and HY-8 model show similar results, indicating approximately 2 feet and 11 inches of freeboard for the existing structure. From FEMA floodplain map, the existing structure is outside of the Regulatory Floodway (Zone AE), shown in the map attached to this document. Looking upstream at the bridge, water on the right side appears to encroach on Abutment 2 at the high-water mark (Figure 3). There is room at this crossing to lengthen the bridge to the west to increase the bridge opening area, improving hydraulic function and to match conditions on the left side of the river, for high water events. The right bank, located on the outside of a curve in the river will likely need to be armored to prevent the stream from migrating further out towards the abutment to mitigate the potential for scour. The proposed modifications to lengthen the bridge aim to achieve a "no-rise" certification, ensuring that water surface elevations during a 100-year flood event would likely remain unchanged. This adjustment would enhance the bridge's resilience to flooding while maintaining compliance with floodplain management requirements.

Figure 3: Abutment 2

Attached documents include FEMA floodway map and flood profiles for the Swan River at the Kraft Creek Road Bridge location, USGS StreamStats report, and HY-8 report for the existing conditions.

Figure 4: Google Earth areal image of bridge location



PIN
Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
Selected FloodMap Boundary
Digital Data Available
No Digital Data Available
Unmapped

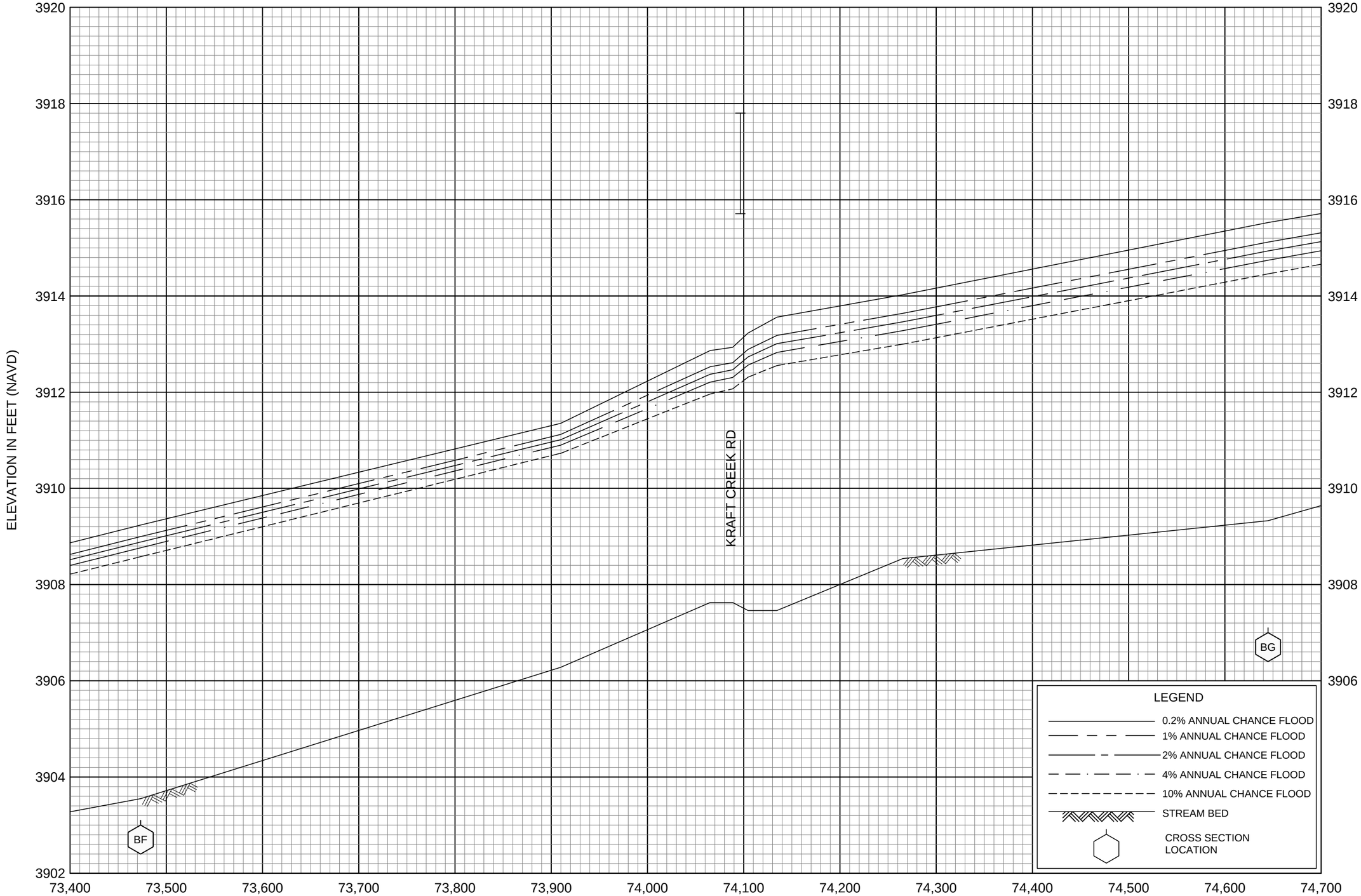
OTHER AREAS
NO SCREEN Area of Minimal Flood Hazard Zone X
Effective LOMRs
Area of Undetermined Flood Hazard Zone D
Otherwise Protected Area
Coastal Barrier Resource System Area

SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE) Zone A, V, A99
With BFE or Depth
Regulatory Floodway Zone AE, AO, AH, VE, AR

OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
Future Conditions 1% Annual Chance Flood Hazard Zone X
Area with Reduced Flood Risk due to Levee. See Notes. Zone X
Area with Flood Risk due to Levee Zone D

OTHER FEATURES
20.2 Cross Sections with 1% Annual Chance
17.5 Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature

GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall



FLOOD PROFILES

SWAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MISSOULA COUNTY, MT

AND INCORPORATED COMMUNITIES

166P

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AV	61,399	82	299	7.6	3,833.1	3,833.1	3,833.3	0.2
AW	62,446	206	483	4.7	3,840.6	3,840.6	3,841.0	0.4
AX	63,577	166	348	6.6	3,848.5	3,848.5	3,848.6	0.1
AY	64,987	288[2]	585	3.9	3,861.3	3,861.3	3,861.5	0.2
AZ	66,140	173	486	4.7	3,869.3	3,869.3	3,869.8	0.5
BA	67,478	180[2]	470	4.8	3,878.6	3,878.6	3,879.0	0.4
BB	68,448	240	619	3.7	3,884.6	3,884.6	3,885.0	0.4
BC	70,028	244[2]	475	4.8	3,892.2	3,892.2	3,892.7	0.5
BD	71,244	201	598	3.8	3,899.8	3,899.8	3,900.3	0.5
BE	72,369	155	591	3.9	3,904.9	3,904.9	3,905.2	0.3
BF	73,473	160	515	4.4	3,909.0	3,909.0	3,909.4	0.4
BG	74,645	95	403	5.7	3,915.1	3,915.1	3,915.2	0.1
BH	75,870	322	963	2.4	3,918.6	3,918.6	3,919.1	0.5
BI	77,103	506	1,209	1.9	3,920.6	3,920.6	3,920.9	0.3
BJ	78,540	620	916	2.5	3,922.1	3,922.1	3,922.3	0.2
BK	79,960	668[2]	1,145	2.0	3,924.8	3,924.8	3,925.2	0.4
BL	81,436	370	859	2.7	3,929.8	3,929.8	3,930.3	0.5
BM	82,852	377	932	2.4	3,933.7	3,933.7	3,934.1	0.4
BN	84,053	177	523	4.4	3,939.1	3,939.1	3,939.5	0.4
BO	85,177	251	769	3.0	3,943.9	3,943.9	3,944.4	0.5
BP	86,365	315	678	3.4	3,949.3	3,949.3	3,949.8	0.5
BQ	87,454	241	424	3.8	3,953.8	3,953.8	3,954.2	0.4
BR	88,140	152	396	4.1	3,958.2	3,958.2	3,958.5	0.3
BS	89,355	89	370	4.4	3,966.5	3,966.5	3,966.8	0.3

[1]Feet above Lake/Missoula County Line

[2]Floodway top width includes width of high ground area

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

MISSOULA COUNTY, MONTANA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SWAN RIVER

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Bitterrroot River	0.033 – 0.043	0.050 - 0.110
Blackfoot River	0.032 – 0.042	0.045 - 0.060
Clark Fork	0.024 – 0.060	0.032 - 0.090
Clearwater River	0.038	0.04 - 0.13
DS Glacier Split	0.055	0.07 - 0.1
Glacier Rd Split	0.05 – 0.1	0.05 - 0.1
Grant Creek	.060 – .080	0.080 - 0.125
Guest R Split	0.05	0.08 - 0.1
Honeysuckle Drainage Swale	0.035	0.035
Kauffman Split	0.05	0.06 - 0.1
La Valle Creek	0.045	0.07 - 0.08
Lolo Creek	0.036 – 0.047	0.050 - 0.095
Lower Grant Creek	0.025 – 0.035	0.035 - 0.065
Miller Creek	.040 - .045	0.050 - 0.055
Pattee Creek	0.030 – 0.031	0.045 - 0.050
Rattlesnake Creek	0.045 – 0.080	0.050 - 0.125
Rock Creek	0.040 – 0.100	0.045 - 0.110
Swan River	0.045 - 0.05	0.05 - 0.1

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Product.

Table 14: Summary of Coastal Analyses
[Not Applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

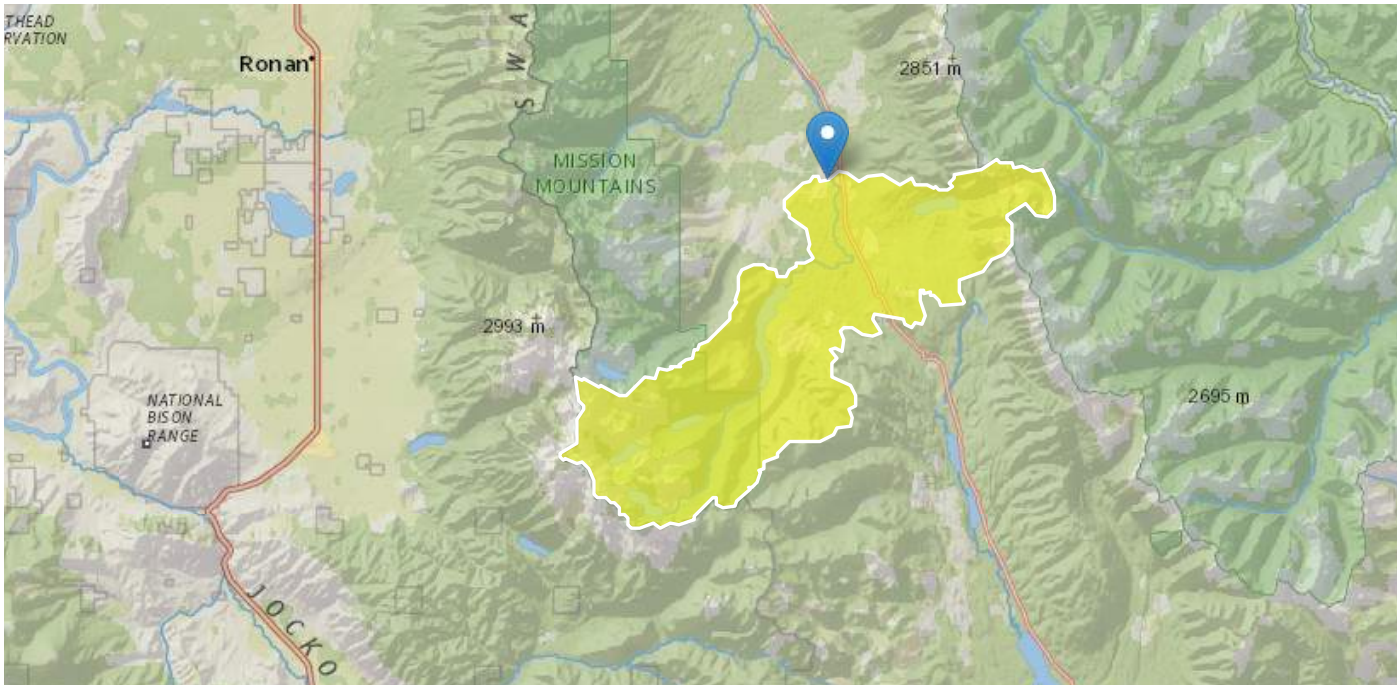
This section is not applicable to this Flood Risk Product.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas
[Not Applicable to this Flood Risk Project]

Table 15: Tide Gage Analysis Specifics
[Not Applicable to this Flood Risk Project]

StreamStats Report

Region ID: MT
Workspace ID: MT20241118193440890000
Clicked Point (Latitude, Longitude): 47.46252, -113.68530
Time: 2024-11-18 12:35:11 -0700



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CHANWD_RS	Channel width determined from remotely sensed data sources, including aerial imagery	0	feet
CONTDA	Area that contributes flow to a point on a stream	99.4	square miles
DRNAREA	Area that drains to a point on a stream	99.4	square miles
FOREST	Percentage of area covered by forest	76.1	percent
PRECIP	Mean Annual Precipitation	44.76	inches
SLOP50_30M	Percent area with slopes greater than 50 percent from 30-meter DEM.	19	percent
WACTCH	Width of active channel	0	feet
WBANKFULL	Width of channel at bankfull	0	feet

Peak-Flow Statistics

Peak-Flow Statistics Parameters [W Region BasinC 2015 5019F]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	99.4	square miles	0.6	2470
PRECIP	Mean Annual Precipitation	44.76	inches	14.6	62.1
FOREST	Percent Forest	76.1	percent	20.4	99.1

Peak-Flow Statistics Parameters [W Region Active Channel SIR 2020 5142]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
WACTCH	Width Of Active Channel	0	feet	3	213

Peak-Flow Statistics Parameters [W Region Bankfull SIR 2020 5142]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
WBANKFULL	Width Of Bankfull Channel	0	feet	5	246

Peak-Flow Statistics Parameters [W Region Aerial Photo SIR 2020 5142]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CHANWD_RS	Channel_Width_remotely_sensed	0	feet	2.3	203.8

Peak-Flow Statistics Flow Report [W Region BasinC 2015 5019F]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
66.7-percent AEP flood	997	ft^3/s	406	2450	59.4
50-percent AEP flood	1140	ft^3/s	480	2710	56.5
42.9-percent AEP flood	1210	ft^3/s	514	2850	55.7
20-percent AEP flood	1510	ft^3/s	663	3440	53.4
10-percent AEP flood	1830	ft^3/s	810	4130	52.8
4-percent AEP flood	2120	ft^3/s	937	4790	53.2
2-percent AEP flood	2360	ft^3/s	1020	5440	54.2
1-percent AEP flood	2600	ft^3/s	1110	6110	56
0.5-percent AEP flood	2840	ft^3/s	1180	6850	58
0.2-percent AEP flood	3080	ft^3/s	1220	7760	61.4

Peak-Flow Statistics Disclaimers [W Region Active Channel SIR 2020 5142]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Peak-Flow Statistics Flow Report [W Region Active Channel SIR 2020 5142]

Statistic	Value	Unit
Active chan width 66.7 percent AEP flood	0	ft^3/s
Active Channel Width 50-percent AEP flood	0	ft^3/s
Active chan width 42.9 percent AEP flood	0	ft^3/s
Active Channel Width 20-percent AEP flood	0	ft^3/s
Active Channel Width 10-percent AEP flood	0	ft^3/s
Active Channel Width 4-percent AEP flood	0	ft^3/s
Active Channel Width 2-percent AEP flood	0	ft^3/s
Active Channel Width 1-percent AEP flood	0	ft^3/s
Active Channel Width 0.5-percent AEP flood	0	ft^3/s
Active Channel Width 0.2-percent AEP flood	0	ft^3/s

Peak-Flow Statistics Disclaimers [W Region Bankfull SIR 2020 5142]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Peak-Flow Statistics Flow Report [W Region Bankfull SIR 2020 5142]

Statistic	Value	Unit
Bankfull width 66.7 percent AEP flood	0	ft^3/s
Bankfull Width 50-percent AEP flood	0	ft^3/s
Bankfull width 42.9 percent AEP flood	0	ft^3/s
Bankfull Width 20-percent AEP flood	0	ft^3/s
Bankfull Width 10-percent AEP flood	0	ft^3/s
Bankfull Width 4-percent AEP flood	0	ft^3/s
Bankfull Width 2-percent AEP flood	0	ft^3/s
Bankfull Width 1-percent AEP flood	0	ft^3/s
Bankfull Width 0.5-percent AEP flood	0	ft^3/s
Bankfull Width 0.2-percent AEP flood	0	ft^3/s

Peak-Flow Statistics Disclaimers [W Region Aerial Photo SIR 2020 5142]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Peak-Flow Statistics Flow Report [W Region Aerial Photo SIR 2020 5142]

Statistic	Value	Unit
Rem sens chan width 66.7 percent AEP fld	0	ft^3/s
Rem_sens_chan_width_50_percent_AEP_flood	0	ft^3/s
Rem sens chan width 42.9 percent AEP fld	0	ft^3/s
Rem_sens_chan_width_20_percent_AEP_flood	0	ft^3/s
Rem_sens_chan_width_10_percent_AEP_flood	0	ft^3/s
Rem_sens_chan_width_4_percent_AEP_flood	0	ft^3/s
Rem_sens_chan_width_2_percent_AEP_flood	0	ft^3/s
Rem_sens_chan_width_1_percent_AEP_flood	0	ft^3/s
Rem_sens_chan_width_0_5_pct_AEP_flood	0	ft^3/s
Rem_sens_chan_width_0_2_pct_AEP_flood	0	ft^3/s

Peak-Flow Statistics Flow Report [Area-Averaged]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
66.7-percent AEP flood	997	ft^3/s	406	2450	59.4
50-percent AEP flood	1140	ft^3/s	480	2710	56.5
42.9-percent AEP flood	1210	ft^3/s	514	2850	55.7
20-percent AEP flood	1510	ft^3/s	663	3440	53.4
10-percent AEP flood	1830	ft^3/s	810	4130	52.8
4-percent AEP flood	2120	ft^3/s	937	4790	53.2
2-percent AEP flood	2360	ft^3/s	1020	5440	54.2
1-percent AEP flood	2600	ft^3/s	1110	6110	56
0.5-percent AEP flood	2840	ft^3/s	1180	6850	58
0.2-percent AEP flood	3080	ft^3/s	1220	7760	61.4
Active chan width 66.7 percent AEP flood	0	ft^3/s			
Active Channel Width 50-percent AEP flood	0	ft^3/s			
Active chan width 42.9 percent AEP flood	0	ft^3/s			
Active Channel Width 20-percent AEP flood	0	ft^3/s			
Active Channel Width 10-percent AEP flood	0	ft^3/s			
Active Channel Width 4-percent AEP flood	0	ft^3/s			
Active Channel Width 2-percent AEP flood	0	ft^3/s			
Active Channel Width 1-percent AEP flood	0	ft^3/s			
Active Channel Width 0.5-percent AEP flood	0	ft^3/s			
Active Channel Width 0.2-percent AEP flood	0	ft^3/s			

Statistic	Value	Unit	PIL	PIU	ASEp
Bankfull width 66.7 percent AEP flood	0	ft^3/s			
Bankfull Width 50-percent AEP flood	0	ft^3/s			
Bankfull width 42.9 percent AEP flood	0	ft^3/s			
Bankfull Width 20-percent AEP flood	0	ft^3/s			
Bankfull Width 10-percent AEP flood	0	ft^3/s			
Bankfull Width 4-percent AEP flood	0	ft^3/s			
Bankfull Width 2-percent AEP flood	0	ft^3/s			
Bankfull Width 1-percent AEP flood	0	ft^3/s			
Bankfull Width 0.5-percent AEP flood	0	ft^3/s			
Bankfull Width 0.2-percent AEP flood	0	ft^3/s			
Rem sens chan width 66.7 percent AEP fld	0	ft^3/s			
Rem_sens_chan_width_50_percent_AEP_flood	0	ft^3/s			
Rem sens chan width 42.9 percent AEP fld	0	ft^3/s			
Rem_sens_chan_width_20_percent_AEP_flood	0	ft^3/s			
Rem_sens_chan_width_10_percent_AEP_flood	0	ft^3/s			
Rem_sens_chan_width_4_percent_AEP_flood	0	ft^3/s			
Rem_sens_chan_width_2_percent_AEP_flood	0	ft^3/s			
Rem_sens_chan_width_1_percent_AEP_flood	0	ft^3/s			
Rem_sens_chan_width_0_5_pct_AEP_flood	0	ft^3/s			
Rem_sens_chan_width_0_2_pct_AEP_flood	0	ft^3/s			

Peak-Flow Statistics Citations

Sando, Roy, Sando, S.K., McCarthy, P.M., and Dutton, D.M.,2016, Methods for estimating peak-flow frequencies at ungaged sites in Montana based on data through water year 2011: U.S. Geological Survey Scientific Investigations Report 2015–5019–F, 30 p. (https://doi.org/10.3133/sir20155019)

Chase, K.J., Sando, R., Armstrong, D.W., and McCarthy, P., 2021, Regional regression equations based on channel-width characteristics to estimate peak-flow frequencies at ungaged sites in Montana using peak-flow frequency data through water year 2011 (ver. 1.1, September 2021): U.S. Geological Survey Scientific Investigations Report 2020–5142, 49 p. (https://doi.org/10.3133/sir20205142)

Low-Flow Statistics

Low-Flow Statistics Parameters [W Region LowFlow GLS 2015 5019G]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	99.4	square miles	6.4	2520
SLOP50_30M	Slopes_gt_50pct_from_30m_DEM	19	percent	1.87	67.5

Low-Flow Statistics Flow Report [W Region LowFlow GLS 2015 5019G]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
7 Day 10 Year Low Flow	13.4	ft^3/s	4.84	37.1	68.5

Low-Flow Statistics Citations

McCarthy, P.M., Sando, Roy, Sando, S.K., and Dutton, D.M.,2016, Methods for estimating streamflow characteristics at ungaged sites in western Montana based on data through water year 2009: U.S. Geological Survey Scientific Investigations Report 2015–5019–G, 19 p. (https://doi.org/10.3133/sir20155019)

Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 13]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	99.4	square miles	0.1	10000

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 13]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	95700	ft^3/s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (https://pubs.usgs.gov/wsp/1887/report.pdf)

Channel-width Methods Weighting

No method weighting results returned.

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 500.00 cfs

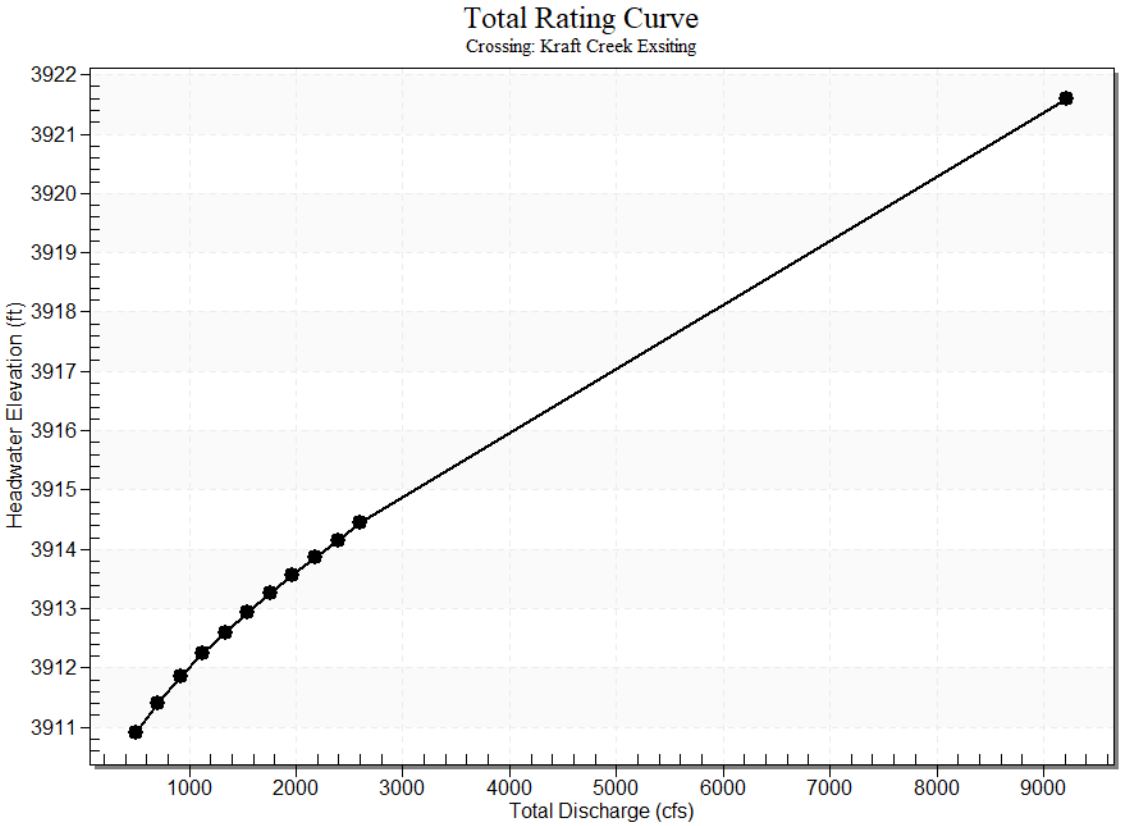
Design Flow: 2600.00 cfs

Maximum Flow: 2600.00 cfs

Table 1 - Summary of Culvert Flows at Crossing: Kraft Creek Exsiting

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
3910.91	500.00	500.00	0.00	1
3911.41	710.00	710.00	0.00	1
3911.85	920.00	920.00	0.00	1
3912.24	1130.00	1130.00	0.00	1
3912.59	1340.00	1340.00	0.00	1
3912.93	1550.00	1550.00	0.00	1
3913.25	1760.00	1760.00	0.00	1
3913.56	1970.00	1970.00	0.00	1
3913.86	2180.00	2180.00	0.00	1
3914.16	2390.00	2390.00	0.00	1
3914.44	2600.00	2600.00	0.00	1
3919.99	7479.00	7479.00	0.00	Overtopping

Rating Curve Plot for Crossing: Kraft Creek Exsiting



Culvert Data: Culvert 1

Table 1 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
500.00 cfs	500.00 cfs	3910.91	2.53	3.363	2-M2c	3.09	2.41	2.41	2.01	5.97	3.88
710.00 cfs	710.00 cfs	3911.41	2.87	3.861	2-M2c	3.51	2.73	2.73	2.48	6.53	4.41
920.00 cfs	920.00 cfs	3911.85	3.16	4.302	2-M2c	3.88	2.99	2.99	2.89	7.02	4.84
1130.00 cfs	1130.00 cfs	3912.24	3.41	4.689	3-M2t	4.17	3.23	3.24	3.26	7.41	5.21

1340.00 cfs	1340.00 cfs	3912.59	3.65	5.044	3-M2t	4.43	3.45	3.58	3.60	7.30	5.53
1550.00 cfs	1550.00 cfs	3912.93	3.91	5.379	3-M2t	4.68	3.70	3.90	3.92	7.19	5.82
1760.00 cfs	1760.00 cfs	3913.25	4.10	5.701	3-M2t	4.92	3.87	4.21	4.23	7.16	6.08
1970.00 cfs	1970.00 cfs	3913.56	4.28	6.011	3-M2t	5.15	4.04	4.49	4.51	7.17	6.32
2180.00 cfs	2180.00 cfs	3913.86	4.46	6.312	3-M2t	5.36	4.20	4.77	4.79	7.22	6.54
2390.00 cfs	2390.00 cfs	3914.16	4.63	6.605	3-M2t	5.57	4.36	5.03	5.05	7.28	6.75
2600.00 cfs	2600.00 cfs	3914.44	4.80	6.891	3-M2t	5.77	4.51	5.28	5.30	7.35	6.94

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

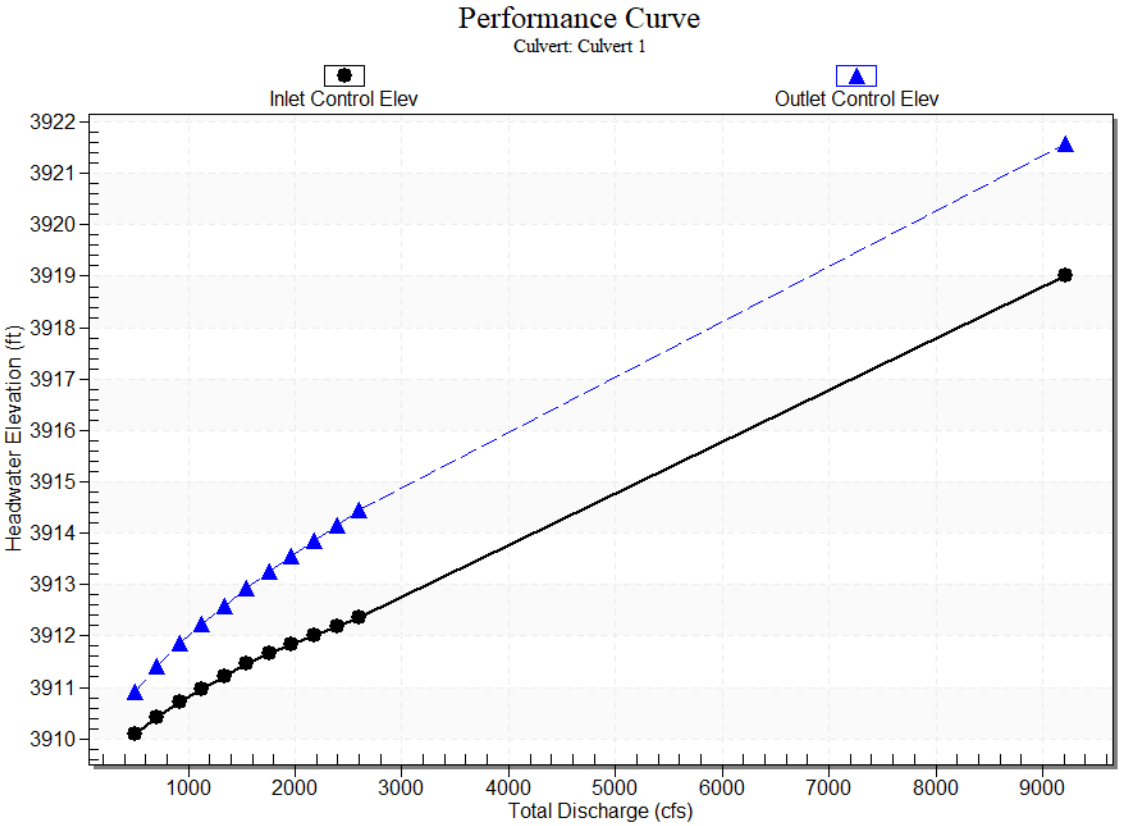
Inlet Elevation (invert): 3907.55 ft,

Outlet Elevation (invert): 3907.45 ft

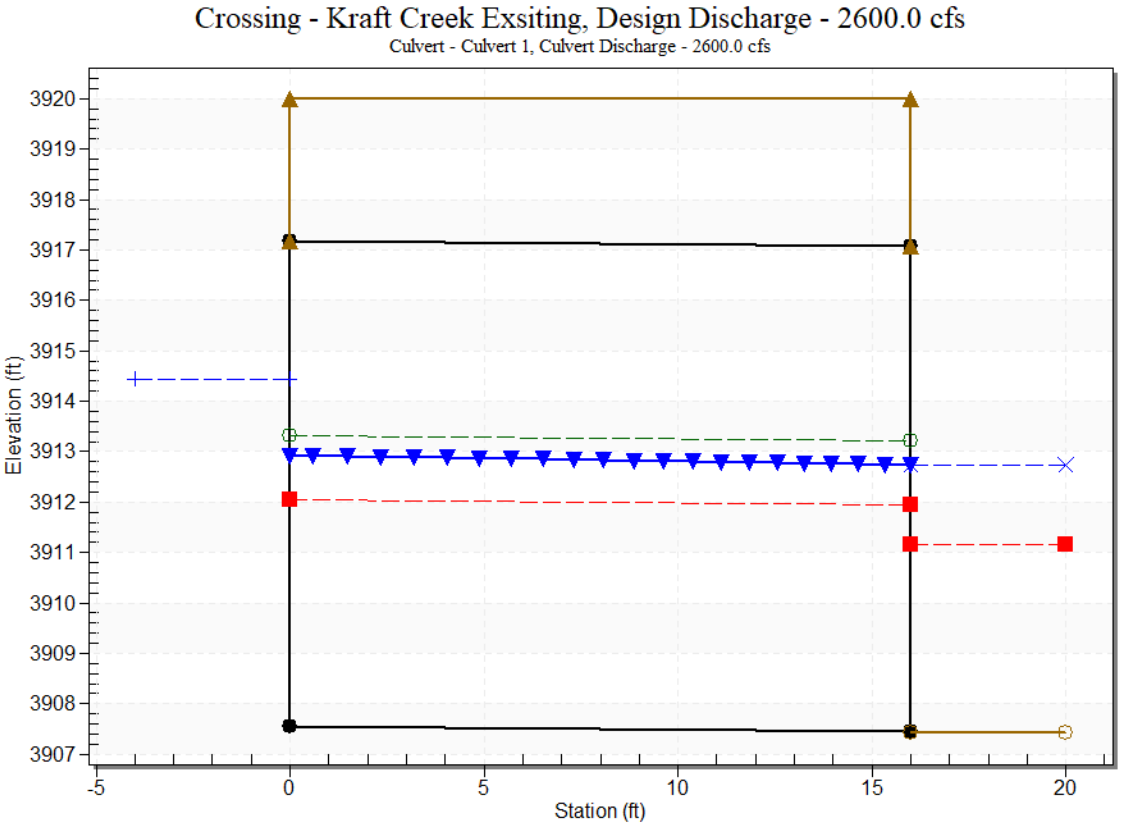
Culvert Length: 16.00 ft,

Culvert Slope: 0.0063

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 3907.55 ft

Outlet Station: 16.00 ft

Outlet Elevation: 3907.45 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: User Defined

Barrel Span: 100.00 ft

Barrel Rise: 9.62 ft

Barrel Material: Corrugated Metal Riveted or Welded

Embedment: 0.00 in

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 0.0450 (bottom)

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Tailwater Data for Crossing: Kraft Creek Exsiting

Table 2 - Downstream Channel Rating Curve (Crossing: Kraft Creek Exsiting)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
500.00	3909.44	2.01	3.88	0.75	0.50
710.00	3909.91	2.48	4.41	0.93	0.51
920.00	3910.32	2.89	4.84	1.08	0.52
1130.00	3910.69	3.26	5.21	1.22	0.53
1340.00	3911.03	3.60	5.53	1.35	0.54
1550.00	3911.35	3.92	5.82	1.47	0.55
1760.00	3911.66	4.23	6.08	1.58	0.55
1970.00	3911.94	4.51	6.32	1.69	0.56
2180.00	3912.22	4.79	6.54	1.79	0.56
2390.00	3912.48	5.05	6.75	1.89	0.57
2600.00	3912.73	5.30	6.94	1.99	0.57

Tailwater Channel Data - Kraft Creek Exsiting

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 60.00 ft

Side Slope (H:V): 2.00 (_:1)

Channel Slope: 0.0060

Channel Manning's n: 0.0450

Channel Invert Elevation: 3907.43 ft

Roadway Data for Crossing: Kraft Creek Exsiting

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 200.00 ft

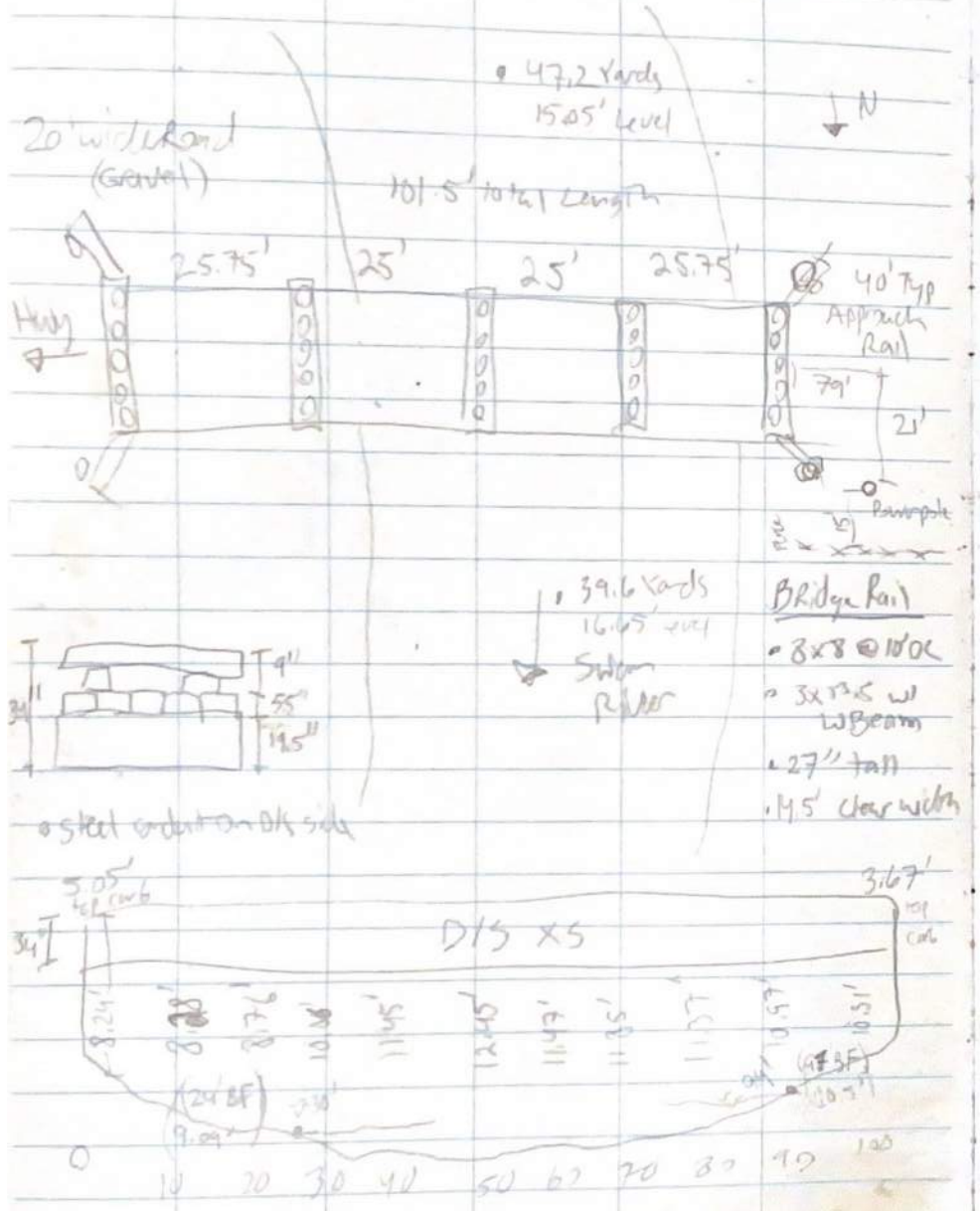
Crest Elevation: 3919.99 ft

Roadway Surface: Paved

Roadway Top Width: 16.00 ft

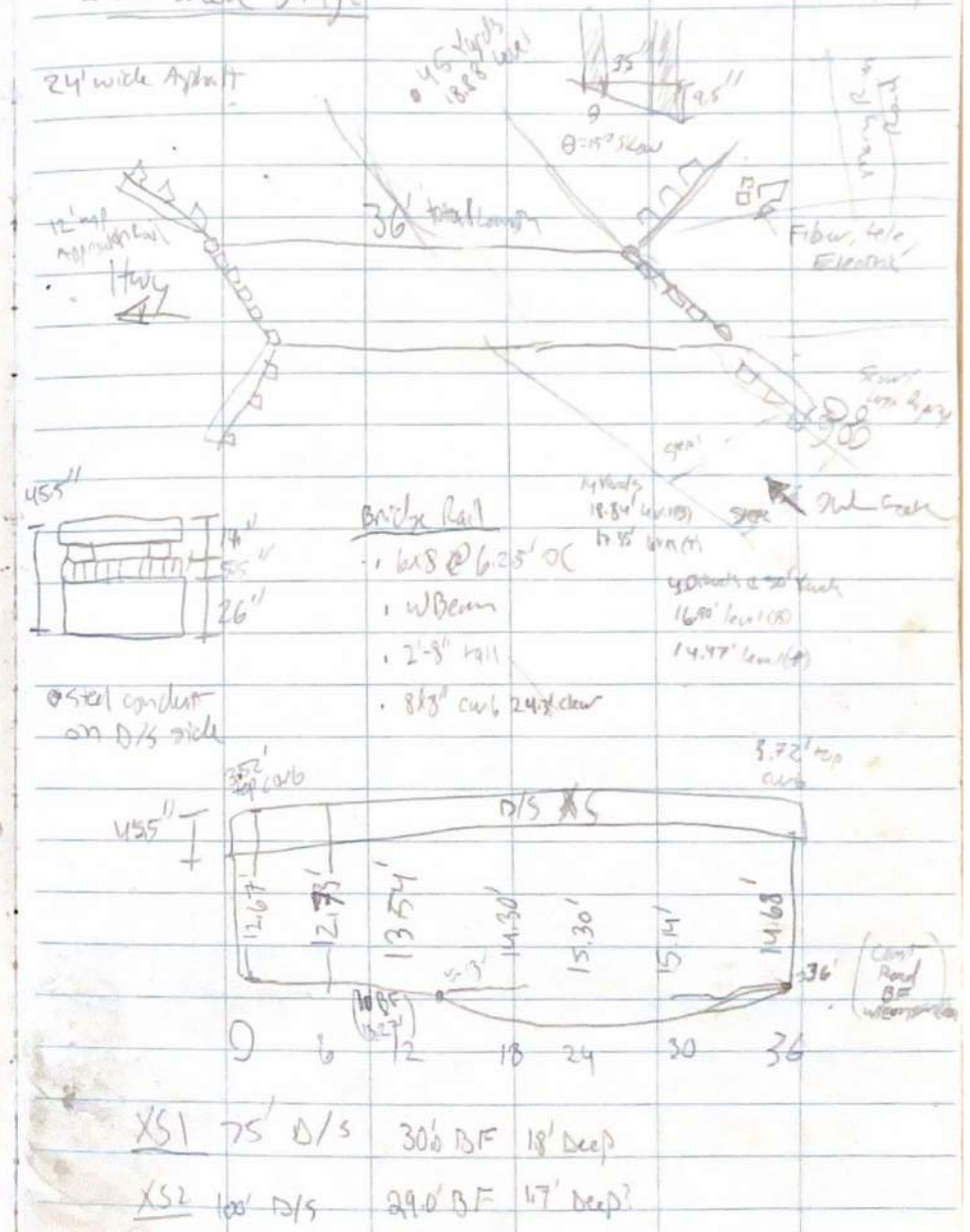
Kraft Creek Bridge

11/19/24



Owl Creek Bridge

11/19/24



XS1 75' D/S 30.0 BF 18' Deep

XS2 100' D/S 29.0' BF 47' Deep?

Appendix C: Environmental Scan Memo

2000 Maple Street
Missoula, MT 59808
406.721.4320
djanda.com

Memo

To: Missoula County
From: DJ&A, P.C.
Date: December 2024
Re: Kraft Creek Road Bridge Project – Environmental Scan

Purpose

The purpose of this memorandum is to identify potential environmental concerns and how they could relate to the future scope, schedule, and budget of the proposed Kraft Creek Road bridge replacement. Generally speaking, the memo addresses aquatic, biological, and cultural resources of the proposed project area. An overview of the following applicable resources from the Montana Department of Transportation's Consultant Design Activities 111 and 182 is provided within this memo: aquatic resources including surface water and groundwater; floodplains and floodways; riparian areas and wetlands; prime, unique, or farmland of statewide importance; and section 4(f) and 6(f) properties. Finally, this memo presents potential permitting, consultation/coordination, and compliance requirements applicable to the Kraft Creek Road Bridge Project.

Project Description

DJ&A was contracted by Missoula County to perform preliminary engineering services for the Kraft Creek Road Bridge Project. This phase of the project focuses on the development of Preliminary Engineering Scan Memos, such as this memo, to explore replacement of the existing bridge. The replacement is assumed to be constructed in the same location as the existing bridge with the proposed configuration of the new bridge being explored in this work. The existing bridge is located at 47.4625945581°N, -113.6853896358°W and spans the Swan River south of Condon, MT. The proposed project would replace the 70-year-old timber bridge that is roughly 101-feet long and consists of four main spans. Construction timing is contingent upon funding allocation and future project development.

Analysis

For the purposes of this memo, a half mile buffer around the existing bridge was applied to create the project area. The half mile buffer encompasses both the existing and anticipated footprint of the replacement bridge and also accounts for potential alignment or configuration alternatives that may be developed in the future. The buffer may also account for turnaround, staging, or material source areas associated with bridge replacement. Analysis areas for different resources throughout this memo may vary according to the extent and availability of data used to support the analysis and may differ from the project area. If the analysis area does differ from the project area it is defined for the applicable data source throughout this memo.

An environmental summary report was obtained from the Montana Natural Heritage Program (MTNHP) on November 26, 2024, with the analysis area consisting of all Public Land Survey System sections within one (1) mile of the existing bridge, resulting in nine (9) total sections (5,760 acres) (MTNHP 2024). This analysis area is the smallest available unit of analysis.

Data included within this report include: species occurrences, observations, potential occurrence, survey results, land cover, wetland and riparian mapping, land management, and invasive and pest species. Resulting data are filtered to include: Montana Species of Concern (SOC), Special Status (SS), Important Animal Habitat (IAH), and Potential SOC.

A U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation (IPaC) report was generated for the project area on November 21, 2024 in order to identify any federally listed species or designated critical habitat with potential to be impacted by activities occurring within the project area; this report also addresses bald and golden eagle and Birds of Conservation Concern (BCCs) potentially impacted by activities occurring within the project area (U.S. Fish & Wildlife Service (USFWS) 2024a).

A site visit occurred on November 19, 2024, during which a DJ&A environmental scientist conducted a preliminary site evaluation of conditions and natural resources present or potentially present near the existing bridge.

Aquatic Resources

Surface Water and Groundwater

Kraft Creek Road Bridge lies within the Headwaters Swan River watershed (Hydrologic Unit Code (HUC) 1701021101) and, more specifically, the Town of Condon-Swan River subwatershed (HUC 170102110106). The Swan River is categorized as a perennial stream/river in the National Hydrography Dataset (NHD) and it along with unnamed intermittent tributaries constitute the surface waters within the project area (USGS 2023). Within the project area the Swan River generally flows from south to north through a natural riparian area. Groundwater of the project area is part of the Seeley-Swan subarea groundwater aquifer. This aquifer is a surficial aquifer comprised mostly of unconsolidated sediments deposited by streams, glaciers, or by meltwater from glaciers (Smith, LaFave, and Patton 2013).

Floodplains and Floodways

National Flood Insurance Rate Maps (FIRM) produced through the Federal Emergency Management Agency (FEMA) indicate that the project area is within a special flood hazard area (SFHA) meaning the area is subject to inundation by the 1% annual chance flood (i.e., 100-year flood). According to FIRM panel 30063C0183F, Kraft Creek Road Bridge lies within a regulatory floodway and is within SFHA Zone AE, meaning base flood elevations have been determined (FEMA 2015).

Riparian Areas and Wetlands

In addition to the Swan River, the USFWS National Wetlands Inventory (NWI) indicates the primary wetlands of the project area as Freshwater Forested/Shrub (PSS) and Palustrine Emergent wetland (PEM). The project area also contains forested riparian areas. These areas are categorized as ‘Rp1FO’ in NWI meaning they are riparian systems, related to flowing water or lotic, and have woody vegetation greater than 6 meters in height or forested (NWI 2024). These NWI data, including riparian area characteristics and wetlands, were observed during the site visit.

Potential Permitting Requirements

When proposed work is located in, above, or near waterways, various federal, state, and local permits may be required contingent upon the specific location and scope of the proposed work. DJ&A has reviewed federal, state, and local guidance regarding permitting requirements for work occurring in, above, or near waterways in the state of Montana and Missoula County. DJ&A has developed permitting recommendations for Missoula County based on proposed project work and

associated activities. Table 1 summarizes potential permit requirements for the proposed project and provides rationale and brief notes for each. Permits identified as potentially applicable to the project include:

- Clean Water Act Section 404 Nationwide Permit 3 – Maintenance (NWP 3);
- Clean Water Act Section 401 Water Quality Certification;
- Montana Stream Protection Act (SPA) 124 Permit;
- Short-Term Water Quality Standard for Turbidity (318 Authorization);
- Montana Land-Use License or Easement on Navigable Waters;
- Missoula County Storm Water Permit; and
- Missoula County Floodplain Development Permit.

Joint Permit Application

The MT DNRC, along with participating agencies, created a Joint Application Form to help reduce the number of separate applications to be submitted for proposed work located in, above, or near waterways in the state of Montana. The use of this Joint Application is recommended for this project. The permitting process takes 30–90 days following completion of aquatic resource delineations and preparation of a complete Joint Application. The MT DNRC permitting webpage[1] provides additional information including Joint Application instructions[2]. These instructions explain everything required to properly complete a Joint Application.

[1] https://dnrc.mt.gov/licenses-and-permits/stream-permitting/
[2] https://dnrc.mt.gov/_docs/permits-services/Joint-Application-Direction-Final.pdf

Table 1 Summary of Potential Permit Requirements for the Kraft Creek Road Bridge Project

Permit	Agency	Applicable (Yes / No)	Rationale	Notes
Federal				
Clean Water Act Section 404 Nationwide Permit 3–Maintenance (NWP 3)	U.S. Army Corps of Engineers (USACE)	Yes	The Swan River is a potential water of the U.S (WOTUS). Project work constitutes repair, rehabilitation, or replacement of a previously authorized, currently serviceable structure.	There are no acreage thresholds associated with NWP 3. A pre-construction notification (PCN) is required for this project as the Swan River is occupied designated critical habitat for the federally listed bull trout *(Salvelinus confluentus)*.
Rivers and Harbors Act Section 10 Permit	USACE	No	The Swan River is not a jurisdictional waterway under Section 10 of the Rivers and Harbors Act.	N/A
National Pollutant Discharge Elimination System (NPDES) Permit	U.S. Environmental Protection Agency (EPA)	No	Project activities may result in the discharge of a pollutant (stormwater) into potential WOTUS; however, the state of Montana issues pollutant discharge permits through the Montana Pollutant Discharge Elimination System (MPDES). EPA issues NPDES permits on tribal lands only in Montana. Additionally, the project will not disturb 1 acre or greater.	If the project would disturb 1 acre or greater, a MPDES Storm Water Construction Permit (MTR100000) issued by the Montana Department of Environmental Quality (MT DEQ) would be required.
State				
Clean Water Act Section 401 Water Quality Certification	MT DEQ	Yes	Project requires a Clean Water Act Section 404 permit (NWP 3).	NWP 3 is certified by MT DEQ meaning projects operating under NWP 3 are approved. Certification letter available for project files.
SPA 124 Permit	Montana Fish, Wildlife, and Parks (MT FWP)	Yes	Project activities may impact the banks of the Swan River.	A Notice of Construction (application) must be submitted to MT FWP, which has up to 30 days to review the application, perform an on-site investigation, and approve, modify, or deny the application. An application must be submitted for review not less than 60 days before the intended start of construction. There is no application fee.
Short-Term Water Quality Standard for Turbidity (318 Authorization)	MT DEQ	Yes	Project activities may cause short term or temporary violations of state surface water quality standards for turbidity.	The authorization may be obtained from MT DEQ or may be waived by MT FWP during its review process under the SPA 124 Permit. There is an application fee of $250.
MPDES Storm Water Construction Permit	MT DEQ	No	Project activities would not disturb 1 acre or greater.	Though 1 acre or greater will not be disturbed, storm water Best Management Practices (BMPs) to be implemented.
Municipal Separate Storm Sewer System (MS4) General Permit	MT DEQ	No	Missoula County holds an active MS4 General Permit issued by MT DEQ.	A Storm Water Permit issued by Missoula County may be required.

Permit	Agency	Applicable (Yes / No)	Rationale	Notes
Montana Natural Streambed and Land Preservation Act (310 Permit)	MT DNRC-Missoula Conservation District	No	This permit applies only to private or nongovernmental applicants.	Joint Application sometime referred to as "310 Joint Application" will still be used to obtain all permits identified as applicable to this project.
Montana Land-Use License or Easement on Navigable Waters	MT DNRC	Possible	The Swan River is considered a navigable waterway by MT DNRC.	There may be an existing license or easement associated with the bridge.
Montana Water Use Act (Water Reservation)	MT DNRC	No	Project activities will not result in new or additional water rights nor change or modify existing water rights; no water reservation would be implemented for the proposed project.	N/A
Streamside Management Zone Law	MT DNRC	No	Project activities do not include commercial forest practices.	N/A
Local				
Missoula County Storm Water Permit	Missoula Public Works and Mobility Department	Possible	Project falls within Missoula County's MS4 area and project activities may disturb 2,500 square feet or greater of land or change the grade of the project area by more than three (3) feet.	Storm Water Permit application shall be submitted to Development Services, along with the relevant fee, no greater than 180 days and no less than 60 days from the start date of construction. Existence of any cooperating County/City MS4 permit agreement or use should be explored.
City or County Floodplain Development Permit	Missoula County Floodplain Administrator	Yes	Project area is located within a Special Flood Hazard Area (SFHA) Zone AE (base flood elevations determined)	A Floodplain Development Permit cannot be issued until all other applicable permits are issued first. Permit fees range from $897 to $1,050.

Biological Resources

Special Status Species

Special status species includes those with federal or state protections or management emphasis. Evaluated species include those protected under the Endangered Species Act, Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act; Montana Species of Concern (SOC); Montana Special Status Species (SSS); Montana Species of Greatest Conservation Need (SGCN); Montana Species of Greatest Information Need (SGIN); U.S. Forest Service (USFS) Sensitive Species; and USFS Species of Conservation Concern (SOCC). Potential impacts and anticipated mitigations are summarized in Potential Impacts and Compliance.

Federally Listed Species and Designated Critical Habitat

Federally listed species and final designated critical habitat occur within the project area (Table 2). Mitigations will likely be required to avoid potential impacts (see Compliance).

Table 2 Federally Listed Species Potentially Affected by Project Activities Occurring within the Project Area

Category	Common Name	Scientific Name	Designated Critical Habitat within Project Area	Status
Mammals	Canada Lynx	*Lynx canadensis*	Present	Threatened
	Grizzly Bear	*Ursus arctos horribilis*	None	Threatened
	North American Wolverine	*Gulo gulo luscus*	None	Threatened
Birds	Yellow-billed Cuckoo	*Coccyzus americanus*	None	Threatened
Fishes	Bull Trout	*Salvelinus confluentus*	Present	Threatened
Invertebrates	Monarch	*Danaus plexippus*	None	Candidate

Source: (USFWS 2024a)

Bald and Golden Eagles

Both bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) have the potential to occur within the analysis area and may be affected by project activities (USFWS 2024a). Bald eagles may occur within the analysis area, and suitable foraging and nesting habitat is present. Golden eagle have a relatively low likelihood of occurrence within the analysis area. There is no suitable nesting habitat for golden eagle within the analysis area, but foraging habitat is present. Mitigations may be required to avoid potential impacts (see Compliance).

Migratory Birds and Birds of Conservation Concern

Suitable habitat for a wide variety of migratory birds and birds of conservation concern occurs within the analysis area. Active nests may be present, and inactive American dipper (*Cinclus mexicanus*) nests were observed on the existing bridge structure during a site visit conducted on November 19, 2024 (Figure 1). Deteriorated open cup nests were also present but were not positively identified as migratory bird nests, though their presence indicates suitable nesting sites for migratory open cup nesters are present. Mitigations will likely be required to avoid potential impacts (see Compliance).

Figure 1 American dipper nests observed underneath Kraft Creek Road Bridge on November 19, 2024

USFS

Species designated as USFS Sensitive and USFS SOCC may be present within the analysis area on lands administered by the USFS. No such lands exist within the immediate vicinity of the existing bridge. Potential impacts to these species will be considered, but further mitigations are not anticipated (see Potential Impacts).

State of Montana

Suitable habitat for multiple SOC, SSS, SGCN, and SGIN occurs within the analysis area, and individuals may occur. Potential impacts to these species will be considered, but further mitigations are not anticipated (see Potential Impacts).

Cultural Resources

The Kraft Creek Road Bridge and nearby infrastructure may have potential historic significance and be eligible for listing on the National Register of Historic Places. For this reason, the infrastructure would be subject to review under the National Historic Preservation Act. Consultation with the state historic preservation office (SHPO) is recommended for a determination on the historic significance. Consultation with local tribes and/or tribal historic preservation office (THPO) is also recommended.

Prime, Unique, or Farmland of Statewide Importance

A Web Soil Survey report was generated for the project area. As indicated in Table 3 below prime, unique, or farmland of statewide importance is not found within the project area.

Table 3 Farmland Ratings of Project Area Soil Map Units

Map Unit Symbol	Map Unit Name	Rating	Acres in Project Area	Percent of Project Area
6	Poverty-Ibex family, complex, 0 to 2 percent slopes	Not prime farmland	119.6	23.3%
42	Glaciercreek gravelly silt loam, 0 to 4 percent slopes	Not prime farmland	15.8	3.1%
111	Udifluvents, 0 to 2 percent slopes	Not prime farmland	20.8	4.0%
*115	Waldbillig gravelly silt loam, 4 to 30 percent slopes	Not prime farmland	356.8	69.6%
		TOTAL	**512.9**	**100.0%**

*Indicates SMU found in the immediate vicinity of the existing bridge.
Source: (USDA 2024)

Section 4(f) and 6(f) Properties

There are no Section 4(f) or Section 6(f) properties located within the project area. The nearest properties would be located on the Flathead National Forest which Kraft Creek Road provides access to. Recreation access to nearby properties may be temporarily restricted or impeded by the implementation of the proposed project; however, alternative access is available.

Potential Impacts

The potential impacts of the proposed project are presented below. Anticipated impacts are subject to change pending project design and alternative development.

Aquatic Resources

The proposed project may result in minimal impacts to potential WOTUS and waters of the state. Project activities occurring below the OHWM or within wetlands would necessitate the implementation of mitigations and conservation measures specified by corresponding permits. Any potential impacts to aquatic resources would be further mitigated by the implementation of standard mitigation measures and best management practices associated with project activities.

Biological Resources

Anticipated project activities necessary to complete the proposed work have the potential to result in minimal impacts to special status species. Construction activities and associated noise, dust, vibrations, heavy equipment operation, and human presence are likely to result in short-term disturbance and displacement of individuals. If necessary, vegetation removal or modification would result in negligible loss of habitat. No impacts to special status plant species are anticipated. Standard mitigation measures and best management practices would be implemented to reduce potential impacts to special status species. Mitigation measures will likely be necessary to avoid or minimize potential impacts to bull trout and associated designated critical habitat, migratory birds including active nests, bald eagle including active nests, and golden eagle. Applicable mitigation measures may include: seasonal timing restrictions, pre-construction surveys, monitoring, and tailored construction and design criteria. Project activities would also be subject to additional conservation measures and construction parameters identified through consultation with USFWS to avoid or minimize potential impacts to federally listed species and/or final designated critical habitat. To avoid potential impacts to active migratory bird nests, it would be prudent to discourage the establishment of active nesting through the removal of existing inactive nests (USFWS 2024b). The following seasonal timing restrictions and/or work periods may be applicable to the project dependent upon activity type and affected species and are subject to modification pending consultation:

Bull trout

- May 1 through August 31: in-channel disturbance within spawning and rearing habitat.
- July 1 through September 30: in-water work and/or impact pile driving not attenuated for noise within foraging, migrating, and overwintering habitat.

Bald eagle

- February 1 through August 15: activity restrictions within 0.5 mile of any primary active bald eagle nest.

Migratory birds/BCCs

- August 16 through April 15: vegetation removal and/or modification.

Cultural Resources

Replacement of the existing bridge may constitute an impact to infrastructure with potential historic significance. Mitigations, if required for this potential impact, would be identified during Section 106 consultation.

Compliance

In support of expected permitting and as required by regulatory agencies, any waters of the state and potential WOTUS, including wetlands (i.e. aquatic resources) that may be impacted by the project need to be delineated. Delineation results are best presented in an aquatic resources delineation report meeting USACE standards. Additional information needed to properly complete a Joint Application for this project include detailed maps meeting USACE standards and identifying whether the project area falls within sage grouse core or connected habitat or any component of the National Wild and Scenic River System, neither of which apply to the project area.

The proposed project will require formal consultation with USFWS based upon the presence of bull trout and final designated critical habitat. It is anticipated that the project will tier to the 2020 *Standard Local Operating Procedures for Endangered Species for Nationwide Permits affecting Bull Trout and Kootenai River White Sturgeon in Northern Idaho, Western Montana, and Northeast Washington Biological Opinion* (hereafter referenced as SLOPES BO). In the event that the proposed project does not conform to the requirements of the BO, additional formal consultation would be necessary. This consultation would require the preparation of a Biological Assessment (BA) by the proponent and issuance of a Biological Opinion (BO) by the USFWS.

It is anticipated that informal consultation with the USFWS will be necessary to fulfill Section 7 Consultation requirements for Canada lynx and associated critical habitat, grizzly bear, North American wolverine, and monarch.

Due to the potential historic significance of project area infrastructure a Class I cultural resources assessment of the project area should be conducted. A Class III cultural resources survey in areas where ground disturbance is anticipated will need to be conducted to comply with Section 106 of the National Historic Preservation Act. Consultation with local tribes and SHPO as Section 106 consultation should continue through all phases of the project.

If state funds are used on the proposed project, the act of funding is considered a “state action”, triggering the need to fulfill requirements set forth by the Montana Environmental Policy Act (MEPA). At the state level, the replacement of an existing bridge is eligible for a Categorical Exclusion (CE) according to Montana Code Annotated (MCA) 18.2.261, requiring the completion of a CE documentation form. Similarly, if the project were to receive federal funding, the project would trigger the need to fulfill obligations under the National Environmental Policy Act (NEPA) with replacement of the existing bridge being eligible for a CE.

References

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United States Geological Survey (USGS). 2023. National Hydrography Dataset (NHD) - USGS National Map Downloadable Data Collection: USGS - National Geospatial Technical Operations Center (NGTOC). https://apps.nationalmap.gov/downloader/ (accessed November 2024).

Appendix D: Geotechnical Scan Memo

TETRA TECH

December 9, 2024

Jacob Roske, P.E.
DJ&A
2000 Maple St
Missoula, MT 59808

SUBJECT: Preliminary Geotechnical Recommendations
Missoula County Bridges – Kraft Creek
Condon, Montana

Dear Mr. Roske:

Tetra Tech has completed a geotechnical site visit at the Kraft Creek Bridge Replacement site near Condon, Montana. This memo describes our site visit, as well as preliminary foundation recommendations for the new bridge.

Existing and New Bridge

The Kraft Creek Bridge is located on Kraft Creek Road and crosses the Swan River at approximately mile post 0.55 (47.46259455810483, -113.68538963576158). The existing bridge is an approximately 70-year-old timber bridge that is roughly 101-feet long consisting of four main spans.

The new bridge is anticipated to be a single-span, two-lane, prestressed concrete bridge on the order of 120 feet in length.

Site Visit

The site visit was completed on November 14th, 2024, to observe the site geology, drill rig access, take photos, and determine potential foundation alternatives.

A review and observations of the site geology, and a geologic desktop study, shows that the bridge site is located in an area of alluvium deposits. This could be seen at the site as the creek bottom consisted of cobbles, boulders, gravel, sand, and silt. Underlying the alluvial deposits at depth is the Helena Formation which consists of beds of limestone interbedded with dolomite, siltite, and argillite. A photo log from the site visit is attached.

During the site visit, drilling access was also assessed. The existing bridge has an approximate one-lane width. The east side is steep on both sides of the road so the drill rig would have to be situated within the roadway prism, and the drill rig may block more than half the roadway, thus creating the need to possibly close the roadway to through traffic during drilling of the east boring. The west side of the road has more shoulder room with an area on the north side wide enough for the rig to pull into without blocking any part of the road.

TETRA TECH

Preliminary Foundation Recommendations

Based on the observations during the site visit, our geologic desktop study, our knowledge of the general geology in the area, and the anticipated structural loads, driven H or pipe piles are the recommended foundation type to support the new bridge abutments.

Based on similar bridge foundation designs conducted by Tetra Tech in the past, and our knowledge of the area, we anticipate the following approximate pile foundation design parameters:

Driven Pile Foundations: H-pile or pipe piles, anticipated pile depth below pile cap elevation = 75 to 80 feet depending on pile type and size and final bridge loads.

For future final foundation design recommendations, Tetra Tech recommends drilling a minimum of one boring at each bridge abutment to depths on the order of 100 feet.

If you have any questions, please contact me at (406) 543-3045.

Respectfully submitted,

Tetra Tech

Marco Fellin, P.E.
Senior Geotechnical Engineer

PHOTOGRAPH LOG – Kraft Creek Road

December 9, 2024

Photo 1: Looking west across the bridge

Photo 2: Looking east from east side of bridge

Photo 3: View of slope on the east side of bridge

Photo 4: Looking east across bridge

PHOTOGRAPH LOG – Kraft Creek Road

Photo 5: View of access on the west side of bridge

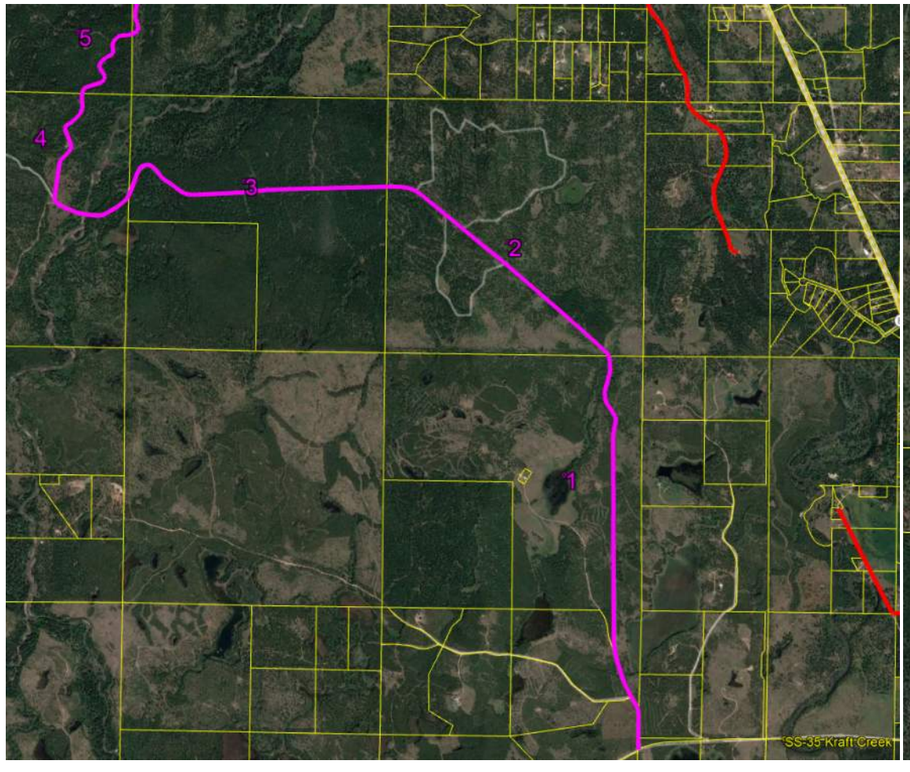
Photo 6: View of Swan River and east abutment

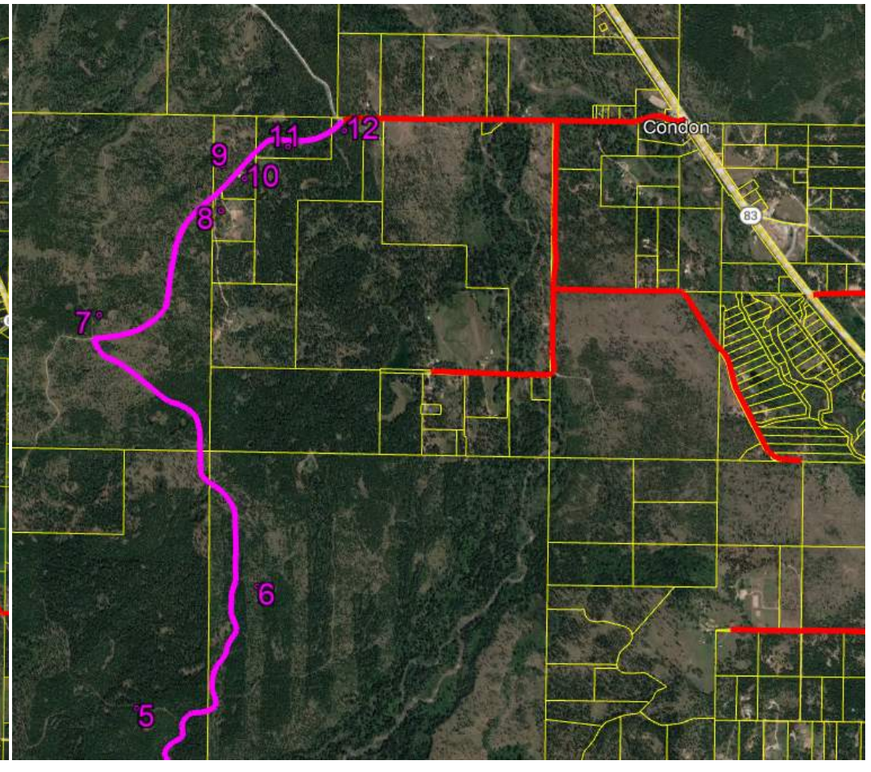
Photo 7: View of west abutment

Photo 8: View of bridge and Swan River

Appendix E: Detour Route

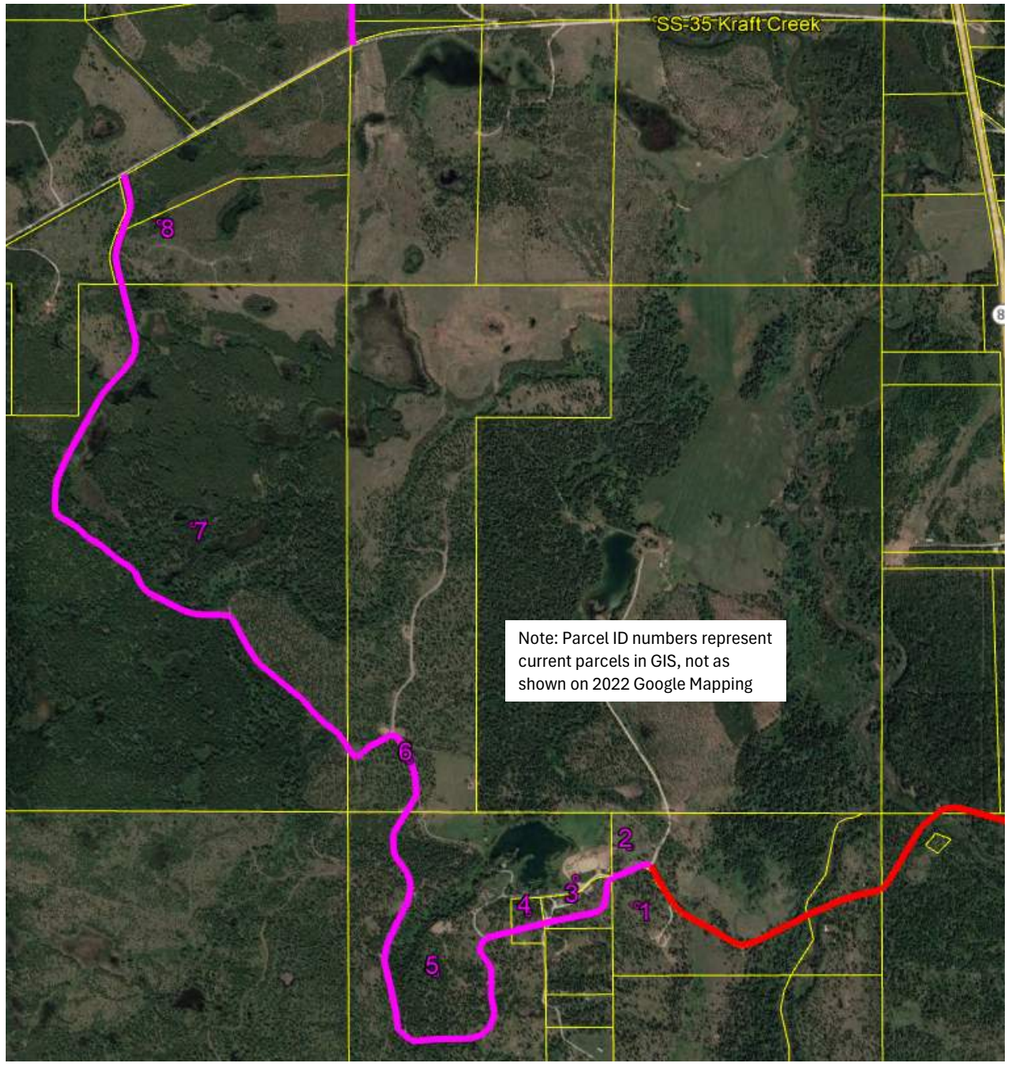
Kraft Creek Road to Glacier Creek Road Detour (South to North)				
Parcel ID	**Owner**	**Property Address**	**Mailing Address**	**Legal**
1	Hanging J Family Limited Partnership	699 Glacker-Elk Creek Road	2980 Linwood Ave, Cincinnati, OH 45208-2939	S24, T20 N, R17 W, ACRES 480.001, N2 & IN SE4 TO INCLUDE PORTION A OF COS 5825 LESS PORTION B COS 5825
2	FS		Missoula	S13, T20 N, R17 W, ACRES 640, ALL (PARCEL 603)
3	FS		Missoula	S14, T20 N, R17 W, NW4, NE4, SE4
4	Garlick Family Trust		340 Lowell Ave, Palo Alto, CA 94301-3811	S15, T20 N, R17 W, ACRES 640, ALL
5	FS		Missoula	S10, T20 N, R17 W, NE4NE4, S2NE4, S2
6	Montana Land Company		3301 Benson Dr Ste 304, Raleigh, NC 27609-7381	S11, T20 N, R17 W, ALL
7	FS		Missoula	S03, T20 N, R17 W, ACRES 634.96, ALL LESS PORTION A COS 6313
8	Barten, Logan & Jennifer	2327 Glacier Creek Road	PO Box 425, Sommers, MT 59932-0425	S02, T20 N, R17 W, C.O.S. 3264, PARCEL A, & COS 4997 POR. A IN NW4 NW4
9	Reschke, Steven	2100 Glacier Creek Road	PO Box 983, Condon, MT 59826	S02, T20 N, R17 W, C.O.S. 3285, PARCEL A, IN W1/2 NW1/4 NW1/4
10	Kretschmar Revocable Trust	2201 Glacier Creek Road	2201 Glacier Creek Road, Condon, MT 59826	S02, T20 N, R17 W, C.O.S. 4997, PARCEL B1, IN NW4 NW4
11	Melton	1597 Glacier Creek Road	1696 E Maple Way, Layton UT 84040-3910	S02, T20 N, R17 W, TRACT 1 PT NW1/4 NE1/4 NW1/4 GOVT LOT 3 & NE1/4 OF GOVT LOT 4
12	Melton	1529 Glacier Creek Road	1696 E Maple Way, Layton UT 84040-3910	S02, T20 N, R17 W, ACRES 53.66, PT GOV LOT 3 SE1/4 NW1/4 NW1/4 GOV LOT 4 E1/2 SW1/4 NW1/4





6.3 mile detour using Glacier Elk Creek Road
- 3.2 miles Forest Service
- 7 private property owners (4 out of state) for 3.1 miles
- southern 4.3 miles is open and drivable to center of NE1/4 of #4
- gated at 4.3 milepost and again at south end of 5/6
- northern 1 mile is drivable to the point it turns southeast
- gated at 7/8; likely gated north end of 5/6
- red shows county maintained roads

Pine Ridge Road to Kraft Creek Road Detour (South to North)				
Parcel ID	**Owner**	**Property Address**	**Mailing Address**	**Legal**
1	Stoner, Glenn & Kitty	991 Pine Ridge Road	991 Pine Ridge Road, Condon, 59826	S06, T19 N, R16 W, C.O.S. 4778, PARCEL 3, IN NE4 S OF RD W OF RIVER
2	HPR Land LLC	220 Lundberg Road	3003 Red Arrow Drive, Las Vegas, NV 89135	S06, T19 N, R16 W, C.O.S. 4778, PARCEL 1, IN N2 NE4 N OF RD W OF RIVER
3	HPR Land LLC	391 Underwood Road	3003 Red Arrow Drive, Las Vegas, NV 89135	S06, T19 N, R16 W, C.O.S. 6154, PARCEL 1A
4	HPR Land LLC	483 Underwood Road	3003 Red Arrow Drive, Las Vegas, NV 89135	S06, T19 N, R16 W, C.O.S. 6154, PARCEL 2A
5	HPR Land LLC	165 Homestead Road	3003 Red Arrow Drive, Las Vegas, NV 89135	S06, T19 N, R16 W, C.O.S. 6037, PARCEL 3
6	HPR Land LLC		3003 Red Arrow Drive, Las Vegas, NV 89135	S31, T20 N, R16 W, C.O.S. 6037, PARCEL A, NE4 NW4 & GOV LOTS 1 THRU 4
7	FS		Missoula	S36, T20 N, R17 W, E2, S2SW4, SE4NW4
8	Martin, Frederick		29 Pine Road, North Oaks, MN 55127-6471	ELK CREEK PRESERVE, S25, T20 N, R17 W, Lot 5A, AMENDED PLAT OF LOTS 2-5



2.9 mile detour using Underwood Road, ? Road, Loon Flats Road
- 1.2 miles Forest Service
- 3 private property owners (2 out of state) for 1.7 miles
- no field checks of potential gate locations or road conditions
- red shows county maintained roads

Appendix F: ROM Cost Estimate

ENGINEERS ROM COST ESTIMATE

Kraft Creek Road Bridge Replacement

Prepared By:	DJ&A ENGINEERS PLANNERS SURVEYORS
Job No: **7593**	
Computed: **JR**	Date: **11/26/2024**
Checked: **TE**	Date: **12/13/2024**

LINE ITEM NO.	PAY ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	Total
	0010	*MOBILIZATION (12%)*	LS	1	$207,039	$207,039
	0020	*SURVEY AND STAKING, BRIDGE*	LS	1	$25,000	$25,000
	0030	*CONTRACTOR QUALITY CONTROL AND ASSURANCE (2%)*	LS	1	$32,314	$32,314
	0040	*TEMPORARY TRAFFIC CONTROL*	LS	1	$20,000	$20,000
	0050	*SOIL EROSION & POLLUTION CONTROL (2%)*	LS	1	$32,314	$32,314
	0060	*REMOVAL OF EXISTING BRIDGE*	LS	1	$125,000	$125,000
	0070	*DETOUR - CONSTRUCT, MAINTAIN, REMOVE*	LS	1	$300,000	$300,000
	0080	*PLACED RIPRAP, CLASS 3*	CY	250	$175	$43,750
	0090	*CONCRETE FILLED STEEL PIPE PILE, IN PLACE*	LF	800	$500	$400,000
	0100	*STRUCTURAL CONCRETE, PILE CAPS & END DIAPHRAGMS*	CY	60	$2,250	$135,000
	0110	*PRECAST, PRESTRESSED CONCRETE DECKED BULB-TEE GIRDERS*	LF	476	$800	$380,800
	0120	*BRIDGE RAIL*	LF	234	$350	$81,900
	0130	*APPROACH RAIL & TERMINAL SECTION*	EA	4	$7,500	$30,000
	0140	*APPROACH ROADWAY IMPROVEMENTS*	LF	450	$265	$119,250

Notes:

- Bridge is replaced in same location as existing bridge.
- Assumes 24' travel way.
- 30% Contingency is applied for Scoping Phase.
- Assumed (1) 117' Span.
- Assumed 80' foot long steel piles with 5 per abutment.
- A detour route/bridge for access during construction is assumed to be constructed by the contractor.

SUBTOTAL (CN)	**$1,932,367**	
CONTINGENCY	30%	$579,710
SUBTOTAL	**$2,512,078**	
INFLATION	4%	
(NO. YEARS)	4	$426,698
SUBTOTAL	**$2,938,775**	
INCIDENTAL CONST. (IC)	1%	$29,388
RIGHT OF WAY (RW)	2%	$58,776
CE	10%	$293,878
PE	15%	$440,816
TOTAL ESTIMATED PROJECT COST		**$3,761,633**

Appendix G: Project Schedule

ESTIMATED PROJECT SCHEDULE

Project Title **KRAFT CREEK ROAD BRIDGE REPLACEMENT**

Location MISSOULA COUNTY
CONDON, MT

	2025						2026												2027											
	Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4		
ACTIVITY	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
ENGINEERING CONTRACT																														
GRANT AWARDED TO COUNTY																														
ENGINEERING CONSULTANT PROCUREMENT																														
GRANT AGREEMENT SIGNED																														
SCOPING																														
CONTRACT WITH CONSULTANT																														
PE - PRELIMINARY DESIGN																														
FIELD WORK																														
30% PRELIMINARY DESIGN																														
NEPA																														
PE - FINAL DESIGN																														
60% DESIGN																														
ROW																														
PERMITTING																														
90% DESIGN																														
100% DESIGN																														
CE - CONSTRUCTION CONTRACT																														
BIDDING																														
AWARD																														
NTP ISSUED																														
CE & CN - CONTSTRUCTION																														
CONTRACTOR SUBMITTALS & PRE-PLANNING																														
SUPERSTRUCTURE FABRICATION																														
CONTRACTOR MOBILIZATION																														
PROJECT CONSTRUCTION																														
PROJECT CLOSEOUT																														

	2028						2029																							
	Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4								
ACTIVITY	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D						
ENGINEERING CONTRACT																														
GRANT AWARDED TO COUNTY																														
ENGINEERING CONSULTANT PROCUREMENT																														
GRANT AGREEMENT SIGNED																														
SCOPING																														
CONTRACT WITH CONSULTANT																														
PE - PRELIMINARY DESIGN																														
FIELD WORK																														
30% PRELIMINARY DESIGN																														
NEPA																														
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ROW																														
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PROJECT CONSTRUCTION																														
PROJECT CLOSEOUT																														

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