DRAFT

ENVIRONMENTAL ASSESSMENT

Montana Beaver Transplant Program

September 26, 2025

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Environmental Assessment

The Montana Department of Fish, Wildlife and Parks (FWP) has prepared this Draft Environmental Assessment (EA) in accordance with the requirements of the Montana Environmental Policy Act (MEPA). The purpose of an EA is to identify, analyze, and disclose the impacts of a proposed state action. This document may disclose impacts that have no required mitigation measures, or over which FWP, more broadly, has no regulatory authority.

Local governments and other state agencies may have authority over different resources and activities under separate regulations. FWP actions will only be approved if the proposed action complies with applicable regulations. FWP has a separate obligation to comply with any federal, state, or local laws and to obtain any other permits, licenses, or approvals required for any part of the proposed action.

This EA was prepared for the following action:

PROJECT NAME: Montana Beaver Transplant Program	
LOCATION: Statewide, limited to perennial streams	**COUNTY:** Statewide
PROPERTY OWNERSHIP: ☒**FEDERAL** ☒**STATE** ☒**COUNTY** ☒**PRIVATE**	
EA PREPARER: Torrey Ritter	**DATE ISSUED:** 09/26/2025

I. Compliance with the Montana Environmental Policy Act

Before a proposed *project* may be approved, environmental review must be conducted to identify and consider potential impacts of the proposed project on the human and physical environment affected by the project. The Montana Environmental Policy Act (MEPA) and its implementing rules and regulations require different levels of environmental review, depending on the proposed project, significance of potential impacts, and the review timeline. Section 75-1-201, Montana Code Annotated ("MCA"), and the Administrative Rules of Montana ("ARM") 12.2.430, General Requirements of the Environmental Review Process.

FWP must prepare an EA when:

- It is considering a "state-proposed project," which is defined in § 75-1-220(8)(a), MCA as:
  (i) a project, program, or activity initiated and directly undertaken by a state agency;
  (ii) … a project or activity supported through a contract, grant, subsidy, loan, or other form of funding assistance from a state agency, either singly or in combination with one or more other state agencies; or
  (iii) … a project or activity authorized by a state agency acting in a land management capacity for a lease, easement, license, or other authorization to act.
- It is not clear without preparation of an EA whether the proposed project is a major one significantly affecting the quality of the human environment. ARM 12.2.430(3)(a));
- FWP has not otherwise implemented the interdisciplinary analysis and public review purposes listed in ARM 12.2.430(2) (a) and (d) through a similar planning and decision-making process (ARM 12.2.430(3)(b));
- Statutory requirements do not allow sufficient time for the FWP to prepare an EIS (ARM 12.2.430(3)(c));
- The project is not specifically excluded from MEPA review according to § 75-1-220(8)(b) or ARM 12.2.430(5); or
- As an alternative to preparing an EIS, prepare an EA whenever the project is one that might normally require an EIS, but effects which might otherwise be deemed significant appear to be mitigable below the level of significance through design, or enforceable controls or stipulations or both imposed by the agency or other government agencies. For an EA to suffice in this instance, the agency must determine that all

the impacts of the proposed project have been accurately identified, that they will be mitigated below the level of significance, and that no significant impact is likely to occur. The agency may not consider compensation for purposes of determining that impacts have been mitigated below the level of significance (ARM 12.2.430(4)).

MEPA is procedural; its intent is to ensure that impacts to the environment associated with a proposed project are fully considered and the public is informed of potential impacts resulting from the project.

II. Background and Description of Proposed Project

This section includes a short description of the proposed project including the responsible party, the type of proposed action and the anticipated schedule of the proposed project.

Name of Project: Montana Beaver Transplant Program

BACKGROUND

The majority of low-gradient streams in Montana, like most of the western United States, were once characterized by extensive beaver-modified habitats. Over-exploitation of beavers by trappers in the 1700s and 1800s, followed by widespread stream channel, riparian, and wetland manipulations associated with the settlement of western North America, left many watersheds in a degraded state. The degraded stream systems in these watersheds suffer from channel incision and/or over-widening which has led to the loss of woody riparian vegetation, simplification of stream channels, and drying out of valley bottoms as streams have become disconnected from their floodplains. In some areas, this "degraded" state is necessary to support agricultural operations, which are a key part of Montana's economy and Montanan's way of life. But in many areas, this degradation diminishes ecosystem services (e.g., natural water storage) that are essential to both humans and habitat in Montana.

The cumulative impact of stream degradation in Montana is impossible to accurately quantify, but it has almost certainly resulted in a decreased capacity for the landscape to slow down and soak up snowmelt and other forms of precipitation on which Montana's wildlife and working lands rely (Pollock et al. 2003, Wohl 2021, Hafen et al. 2024). This loss of landscape-scale water storage has likely contributed significantly to the drought conditions Montana often faces in the summer and fall (DNRC 2023). Subsequent impacts of diminished landscape water storage capacity include loss of important riparian and instream habitats for fish and wildlife species, degradation of water quality, and diminished ecosystem connectivity and resilience to disturbances such as fires, floods, and drought (Naiman et al. 1988, Wohl 2019, 2021).

Beavers have rebounded to somewhere between 3% and 15% of their pre-colonization numbers in North America (Naiman et al. 1988). While this rebound is encouraging, the widespread loss of beaver-modified habitats has greatly reduced in-stream and riparian habitat quality and quantity as well as the capacity of streams to provide important ecosystem services to humans (Wohl 2019, Thompson et al. 2021, Wohl 2021). Given the ongoing threats of drought and the increasing demand for water resources, it is critical that natural resource agencies and organizations work to restore the ability of the landscape to soak up water and slow its movement from snowmelt to the large rivers, to benefit all aspects of a functioning watershed (DNRC 2023). These include other fish and wildlife species, farmers, ranchers, and municipalities that all depend on reliable water resources.

The restoration of beavers and beaver-modified habitats has the potential to address stream degradation issues at a landscape scale (Naiman et al. 1988, Rosell et al. 2005, Wohl 2019, 2021). This type of restoration generally relies on low-cost techniques that work towards allowing beavers to take over and expand the restoration work once a stream is suitable for colonization (Ritter et al. 2023). Beavers therefore offer an opportunity to transfer the restoration work to the ecosystem, after some guidance by humans, so that the system can essentially repair itself. Tapping into that potential can address stream degradation and drought issues at a scale that more closely matches the scale of degradation that occurred over the past century (Barnett et al. 2008, Wohl 2021). Additionally, partnering with beavers can save time, money, and energy for groups and agencies that are tasked with the conservation of water resources and restoring degraded streams and wetlands.

Sources of stream degradation that beavers can help address include:

- Lack of woody debris input into the stream channel and floodplain resulting in diminished aquatic habitat conditions and natural stream processes. Beaver activity can introduce structural elements to streams and floodplains through dam, lodge, and cache construction and subsequent abandonment; tunnel and channel digging that can undermine streamside vegetation; vegetation death and toppling due to flooding; or through direct tree/shrub felling into the stream channel and floodplain through harvest by beavers.

- Excessive sediment loads in streams from channel incision, wildfires, roads, and other sources. Beaver dams can accumulate sediment behind the structures that can help re-build incised stream channels (Pollock et al. 2014). Once beavers leave the area, the sediment accumulations behind their dams either largely stay in place resulting in a wet meadow characterized by sedges and other hydrophytic vegetation or the sediment is fully or partially vacated downstream after dam failure resulting in variable pulses of sediment to the stream system (Green and Westbrook 2009, Levine and Meyer 2014).

- Drying out of streamside vegetation and/or shifting to upland vegetation species entirely. This impact is often the result of stream incision which lowers the water table and prevents floodplain connection during high-water periods. Beaver activity can raise the water table around dams and dam complexes that sub-irrigates surrounding floodplain habitats and may kill off certain plant species (e.g., conifers, dryland grasses) while encouraging the growth of others (e.g., willows, sedges, pasture grasses).

- Loss of channel-floodplain connectivity through stream incision or over-widening that diminishes the ability of streams and floodplains to slow down water and create conditions for establishment of riparian vegetation. Beaver damming activity can help reconnect streams to their floodplains, resulting in a greater propensity for the stream channel to braid and to soak in to valley-bottom soils and recharge groundwater reserves (Pollock et al. 2014).

Throughout Montana, state and federal agencies, non-profit organizations, landowners, and many others are working to reverse nearly a century of stream degradation in recognition of the importance of these systems to humans and wildlife. There are countless methods for restoring streams, including passive methods such as more carefully managing grazing around streams, as well as more direct methods such as floodplain regrading and realigning stream channels. These techniques can be highly effective for recovering degraded stream systems but rarely are effective at large spatial scales (Bernhardt 2005). In areas where beavers can be encouraged to re-colonize, either as an explicit goal of the restoration project or a passive outcome, the beavers can perpetuate restoration actions into the future by introducing key natural processes that help streams maintain a restored state (Wohl 2019). Therefore, beavers are a critical tool for FWP and its partners when it comes to addressing stream degradation at meaningful scales (Ritter et al. 2023).

Just as there are a variety of techniques for restoring degraded streams, there are also a variety of ways to restore beavers to areas of their former range (Ritter et al. 2023). Passive methods often mirror passive stream restoration methods, such as managing grazing or introducing large wood to structurally starved streams. More active methods include the construction of beaver dam analogs (BDAs) and other in-stream structures to attract beavers to a specific area and encourage them to build on and expand on these in-stream structures (Wheaton et al. 2019). Thoughtful management of beaver conflicts can help restore beavers on the landscape by increasing landowner tolerance for beavers and creating dispersal corridors where dispersing individuals can move through private lands without getting lethally removed for causing damage to human infrastructure or crops. FWP and its partners currently employ many of these methods to restore beavers to areas of their former range, and the most important aspect of this work is to have as many tools in the toolbelt as possible to achieve desired outcomes. A diversity of beaver restoration options helps restoration practitioners match the diversity of stream types, sources of degradation, and recovery pathways that exist across Montana's various landscapes.

One critical tool in the toolbelt for beaver restoration that has largely been absent from Montana is beaver transplantation. Transplanting beavers in areas where their activities can be beneficial can be an effective method both to relieve beaver-human conflicts and to restore degraded stream systems (Pollock et al. 2017). Currently, live-capturing and moving beavers in Montana requires an Environmental Assessment and Fish and Wildlife Commission approval for each individual transplant. This regulatory burden makes beaver transplants unpalatable for FWP biologists because the investment in time, money, and energy to get a transplant approved is too cumbersome for the relatively modest restoration outcomes a single transplant project can bring about.

Furthermore, under the current system, transplants are rarely, if ever, a viable option for resolving beaver-human conflicts. Landowners and land managers experiencing conflict issues seldom have time to wait for a transplant project to be approved through the Montana Environmental Policy Act (MEPA) and Fish and Wildlife Commission processes, which takes many months. Yet, one of the most common beaver conflict-related calls FWP staff receive is a landowner who has a beaver-human conflict they need resolved but they do not want the beavers to be killed. There are also many situations where beavers need to be removed from an area, but a trapper is not willing to trap in the area because it is in an urban setting or is too close to areas with high use by humans and pets (e.g., trails systems). If these situations are not conducive to non-lethal beaver conflict resolution (e.g., culvert fences, pond levelers, or tree wrapping), there is currently no other method available to resolve the conflict in a reasonable timeframe.

During the 2025 Montana Legislative session, lawmakers passed HB95. This piece of legislation expanded the scope of situations where landowners could remove beavers, outside the furbearer trapping season, when beaver activity conflicts with human infrastructure. While this legislation was critical for making sure landowners can readily respond to beaver-human conflicts, it also means that more landowners may be seeking help from FWP for solutions for these conflicts. Since there may be more situations where people need help with beavers, beaver transplants would provide the entire suite of tools to FWP and landowners to help resolve or mitigate beaver-human conflicts.

Streamlining Montana's processes and policies for transplanting beavers would allow FWP biologists and partners to more easily work with beavers as a restoration tool. Beaver transplants would provide an opportunity to remove beavers from areas where they are causing problems for people and move them to areas where their activities can benefit people, as well as ecosystems and the ecosystem services wildlife and Montanans rely on.

DESCRIPTION

Under the proposed action, FWP would implement a program to transplant beavers into areas of Montana that are part of their historical range and are also deemed to be suitable habitats. The Montana Beaver Transplant Program (MBTP) would provide a streamlined process that would make beaver transplants a more viable option for FWP and its partners. For the rest of this document, those involved with beaver transplant projects will be referred to as "restoration practitioners," and this term encompasses both FWP biologists that are undertaking or assisting with beaver transplant projects, as well as the non-profit organizations (e.g., Trout Unlimited, watershed groups), stream restoration consultants/contractors, and private landowners FWP biologists may be working with on transplant projects.

The primary state action under evaluation in this EA is the MBTP, which would include five sub-actions that are outlined and analyzed as part of this draft EA. These sub-actions would be performed by FWP staff or others under the supervision of FWP staff. The five sub-actions are:

1) **Live-capture and removal of beavers**: Live-capturing and removing beavers from a given location to be transplanted elsewhere. This would include capturing beavers during times of the year outside of the established trapping season.

2) **Construction and maintenance of holding facilities:** Constructing and maintaining holding facilities for temporarily housing beavers to be transplanted.

3) **Beaver quarantine and care:** Transporting beavers to a holding facility, caring for the beavers while they are at the holding facility, and conducting health screenings to evaluate suitability for transplant.

4) **Transporting and releasing beavers at release sites:** Transporting beavers from the holding facility to the release site and releasing the beavers there.

5) **Monitoring of release sites:** Conducting follow-up monitoring of areas where beavers are released to track success of beaver transplants and identify any beaver-human conflict issues.

In addition to these five sub-actions, beaver-human conflict management would also be an important part of some, but not all, beaver transplant projects. Beaver-human conflict management would be undertaken by FWP and its partners and would include the following strategies:

- Lethal trapping of conflict beavers during regular furbearer trapping season.
- Lethal trapping of conflict beavers outside the furbearer trapping season through FWP's beaver damage permit system.
- Installation of non-lethal beaver conflict resolution devices such as culvert fences, pond levelers, and tree wrapping (Shockey 2024a, 2024b).
- Deterrent measures such as electric fencing, motion-detecting floodlights, and fladry.
- Education about the benefits of beavers for situations where the beavers are not causing damage but are perceived as a negative influence on stream systems.

Montana has one of the most robust non-lethal conflict resolution programs in the western U.S., the Montana Beaver Conflict Resolution Project (BCRP). The BCRP is housed within the National Wildlife Federation with support from FWP and other non-profit organizations and private donors. This program works to help landowners and land managers find non-lethal solutions for beaver-human conflicts. The BCRP is particularly

effective at addressing beaver-human conflicts that are repeated issues at culverts, headgates, bridge spans, and other human infrastructure, and where beavers are cutting down trees but not causing direct damage to human infrastructure.

Montana also has a strong network of licensed trappers and wildlife control operators who can respond to beaver conflicts where a non-lethal solution will not work or is not desired by the landowner or land manager. This network of trappers, combined with the BCRP, provides a strong foundation of beaver-human conflict management from which to build a beaver transplant program. It is important to note that the MBTP itself adds another tool in the toolbelt for addressing beaver-human conflicts, providing landowners and land managers the full suite of options for relieving beaver conflicts. One of the most common beaver-human conflict calls FWP staff receive are situations where someone needs beavers removed from an area but does not want them killed, so there is significant demand from FWP's constituents to have a transplant option for beavers as well.

Temporary trapping restrictions may also be needed with some beaver transplant projects under the proposed program to protect investments in beaver transplants until the beavers become well-established in the project area. Mandatory trapping restrictions would be evaluated on a case-by-case basis and would require approval by the Fish and Wildlife Commission. All beaver trapping restrictions would be temporary and would require scientifically sound, habitat-based metrics that would lead to the trapping restrictions being lifted. Restoration practitioners would be required to evaluate the number of potential beaver territories in their project area and outline the level of beaver occupancy over space and time that would lead to the area being considered an established population. Once those occupancy goals were reached, the area would be re-opened for beaver trapping. Trappers would still be able to target other furbearers in the area where a beaver trapping restriction was put in place.

Restoration practitioners would also have the option to post signs asking trappers to voluntarily elect not to trap beavers in the area where a beaver transplant took place. This signage would not require Fish and Wildlife Commission approval but would require approval by regional FWP staff that are sponsoring the transplant project, the landowner whose land the signs would be posted on, and the landowner where the beavers would be released as part of a transplant project. This strategy would be employed in areas where the likelihood of beaver trapping is low or where mandatory trapping restrictions were proposed but ultimately not approved by the Commission.

This draft EA proposes and evaluates the establishment and implementation of the MBTP. The main body of the EA provides an overview of the proposed transplant program and analyzes potential impacts from such a program on the natural and human environment. This draft EA also includes Supplemental Materials that outline the specifics of the program such as trapping protocols, holding facility standards, internal vetting process, etc. (EA Supplemental Materials - MBTP Rules and Guidelines for Restoration Practitioners). The MBTP Rules and Guidelines for Restoration Practitioners are included as part of FWP's white paper on beaver restoration (Ritter et al. 2023). If the proposed action is approved, and this draft EA is adopted as final, FWP would release Version 2.0 of the white paper that would include the MBTP Rules and Guidelines for Restoration Practitioners as the official FWP guidance document for implementing the MBTP.

Under the MBTP, beaver transplants would be approved statewide and authorized under an internal vetting process (i.e., EA Supplemental Materials - MBTP Rules and Guidelines for Restoration Practitioners, Transplant Area Authorization Form and Beaver Transplant Authorization Packet). This internal vetting process would

replace the current system of individual EAs for each beaver transplant but would still require careful planning for each beaver transplant and tracking of project successes and failures.

Beaver transplants would be limited to perennial streams with suitable habitat conditions for beavers and where potential conflicts with humans are minimal or can be mitigated. The proposed action would allow FWP staff, or individuals and groups under direct guidance of FWP staff, to live-capture beavers from beaver-human conflict situations or from large source colonies and transport those beavers to pre-determined, suitable habitats. The internal vetting process for individual transplant projects would assure the transplants occur in suitable habitat and do not represent an undue burden on landowners at or near release sites.

Beaver transplants would be used to bolster natural water storage in headwater streams; increase landscape resilience to floods, wildfire, and drought; restore degraded streams and riparian habitats; create and sustain high-value wildlife habitats; and help alleviate beaver-human conflict situations. Beavers would be transplanted into areas where their dam-building has the potential to help restore degraded stream channels, invigorate riparian vegetation, reconnect streams to their floodplains, and enhance natural water storage. Beaver transplants would complement the wide variety of stream restoration projects being undertaken in Montana and would also represent standalone projects to alleviate conflict issues while promoting riparian restoration where it is needed.

Under the proposed action, beaver captures and transplants would be encouraged to occur within watersheds defined by a level-8 Hydrologic Unit Code (HUC-8; Figure 1). HUC-8 drainages are an appropriate scale for beaver transplants because natural beaver dispersal would generally occur at this spatial scale without human intervention over long periods of time (Epps et al. 2021 and see review in Ritter 2018). HUC-8 drainages are also large enough to provide adequate options for source populations of beavers to be transplanted and provides areas they could be moved to that would benefit from their activities (e.g., degraded streams or empty habitats). However, there are many areas in the state that are on the border between one or more HUC-8 drainages where beaver transplants may be permitted across watershed boundaries because there is essentially no logical, natural separation of beaver populations between those drainages. Therefore, moving beavers around multiple, adjacent HUC-8 drainages would not represent a human-induced beaver movement that falls outside of what could happen through natural dispersal in the existing beaver population. Consultation with area fisheries biologists would be a required part of every transplant project, and it would be at the discretion of those biologists to decide how far beavers can be moved and what mitigations may be needed to address concerns around disease and Aquatic Invasive Species (AIS) transmission (e.g., longer quarantine times, treatments to remove/kill AIS).

To bolster stream restoration in Montana using beaver transplants, FWP would use remote-sensing data to identify suitable beaver habitats at a broad spatial scale. Streams that can support beaver dam building can be mapped and assessed using the Beaver Restoration Assessment Tool (BRAT; Macfarlane et al. 2017), which is available through the Montana Natural Heritage Program (Figure 2). The BRAT model provides a myriad of information on stream suitability for beaver dams using publicly available, remote-sensing data that evaluates intrinsic measures of habitat suitability (i.e., streamflow, vegetation, stream gradient). Assuming that beavers were present and active in almost all suitable streams in North America prior to European colonization (Goldfarb 2018), the BRAT dam capacity model can function as a rough map of historical beaver habitat. The BRAT model also characterizes stream reaches based on the potential for conflicts with human infrastructure, so the combined models provide a science-based assessment of the potential for beaver restoration based on both the ecological suitability and the social suitability of stream reaches.

The BRAT model classifies stream reaches in terms of their capacity to support beaver dams (i.e., dams per kilometer of stream), and the rankings are “Pervasive”, “Frequent”, “Occasional”, “Rare”, or “None.” Streams suitable for beaver transplants would be ranked via the BRAT as either “Occasional”, “Frequent”, or “Pervasive”. No transplants would occur in stream sections ranked as “Rare” or “None” unless on-the-ground surveys indicate the area may be suitable despite the ranking by the BRAT model. All release sites would be investigated on-the-ground and further evaluated using a modified version of the Methow Beaver Project Transplant Site Evaluation Form (available in EA Supplemental Materials - MBTP Rules and Guidelines for Restoration Practitioners). This form has been used successfully to evaluate release sites for beavers in Washington and elsewhere and is a relatively easy and rapid way to assess potential release sites that will have the greatest chances of beavers colonizing the area where they are released.

The Montana Beaver Dam Census, completed in fall 2024, provides additional critical information for determining when and where beaver transplants may be appropriate. The beaver dam census was based on a “snapshot” in time covering roughly 15 years of aerial imagery and includes GPS locations of all beaver dams in the state that were visible on aerial imagery during that timeframe. While the beaver dam census is a snapshot in time, it provides important information on where beaver damming activity is or has been recently on the landscape. This allows restoration practitioners to identify beaver strongholds that may be good source colonies for beavers to be transplanted elsewhere. The beaver dam census also helps identify sites that may be isolated from source colonies and therefore may be candidate areas for beaver transplants. Finally, the beaver dam census, when combined with the BRAT model, allows restoration practitioners to identify areas on the landscape that are highly suitable for beaver dam building activity but where little or none is occurring, and put those areas in the context of potential conflicts with humans. The combination of the beaver dam census and the BRAT model helps prioritize restoration sites on the landscape while also assisting restoration practitioners in figuring out which beaver restoration strategies may be most effective for recovering beaver populations in areas of their former range. These datasets would be essential for making sure beaver transplants are used in socially and biologically appropriate settings, and for making sure that transplants are well-justified where they are used.

For each proposed beaver transplant, an FWP biologist would work with the group or agency proposing the transplant to fill out the Transplant Area Authorization Form (to approve sites for transplants) and the Beaver Transplant Authorization Packet (to approve the actual beaver transplants). These materials would include details about the source colony where beavers would be captured, an explanation of why the release site is a suitable location for beavers, evidence of outreach to surrounding landowners, and details of the proposed transplant such as number of beavers, who would do the trapping, timeframes, and a monitoring plan. The documents would be reviewed by a regional beaver transplant project reviewer, which would either be the FWP regional nongame biologist or the FWP regional furbearer biologist. The documents would then be either approved, approved contingent on changes to the plan, or rejected if deemed insufficient or if the project has a low chance of success. Capture, handling, release, and monitoring requirements and techniques and best management practices would be outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

For all beaver transplants in Montana, the focus would be on using beavers that have come into conflict with humans as stock for transplants. This would allow for relief of a wildlife conflict issue in one area while addressing a restoration need in another area. In situations where existing beaver populations that are not in conflict with humans are to be used for transplants, those source populations of beavers would be large and

expansive so that removal of beavers for a transplant effort would not cause a measurable change in the local population or in the ecosystem services (e.g., water storage, wildlife habitat, floodplain connections) the beaver population is providing.

There are three scenarios when and where beavers may be transplanted under the proposed action:

1) **Dispersal Isolation:** The transplant site is isolated from source colonies by potential dispersal barriers. If it is likely dispersing beavers can reach the proposed restoration site *consistently*, there may be no need to transplant since the lack of beaver colonization is likely reflective of poor habitat or possibly a low beaver density in the area (see Scenario 3 below). We emphasize the word "consistently" because beavers are adept at dispersing into new habitats, but there needs to be connectivity to larger source populations for beavers to be active in an area enough to bring about restoration benefits. When connectivity to the larger metapopulation is diminished or absent, transplants can help supplement beavers to these isolated areas to mimic historical levels of beaver dispersal and settlement.

2) **Beavers are Needed for Restoration:** The transplant site is part of a targeted restoration project that includes actions or structures (e.g., beaver dam analogs and/or post-assisted log structures; Wheaton et al. 2019) that are dependent on beaver occupancy for long-term success. Often, these structures are used to kick-start natural processes that can lead to stream restoration, but without beavers these projects usually require many phases of work and long timeframes for success. In contrast, when beavers occupy areas where these structures are built, the restoration project almost always experiences rapid and dramatic success with relatively little additional input from the restoration practitioners (Bouwes et al. 2016, Ritter et al. 2019). Transplants may be a viable option in these situations because the beaver population needs to reach a certain density before dispersers are forced to settle in sub-optimal/marginal habitats that generally characterize restoration sites (Ritter et al. 2019). Beavers may be needed at the restoration site as soon as possible because their work is required for maintaining and improving BDAs or other in-stream structures before the structures naturally degrade. Often, BDA projects involve building dozens of structures at once, and a small existing beaver population may not have the numbers needed to attend to all those structures.

3) **Low Beaver Density Relative to Habitat:** The transplant site is in an area with a low density of beavers relative to available, suitable habitat for colonization. These situations can occur because of large beaver die-offs due to disease, high levels of predation by humans or natural predators, or some other stochastic impact (e.g., severe winter). These would be rare circumstances relative to the other two scenarios and would require substantial on-the-ground knowledge of the dynamics of the beaver population where the transplants would take place. This definition does not encompass areas where beavers are at a low density because of natural succession of beaver-modified habitats. For example, in areas where beavers abandoned colonies due to silting in of ponds or lack of preferred vegetation from long-term occupancy.

The proposed action would allow for beaver transplants without individual MEPA analysis for each transplant project. Commission approval would still be needed for beaver transplants, and it would be up to the discretion of the Commission to determine the level of beaver transplant activities that would occur under the proposed program. The Commission would be provided an annual report on the program to help guide their analysis and decisions around continuation/expansion of the program.

Individual beaver transplants would occur on a case-by-case basis guided by the three scenarios listed above. FWP would undertake some transplants internally while other transplants would be proposed to FWP by private landowners, conservation organizations, and municipalities, as well as other groups/agencies/individuals who are conducting stream restoration and/or experiencing beaver-human conflict issues. If a non-FWP entity wants to conduct a transplant, it would require a member of FWP staff to act as a sponsor and carry the project

through the internal vetting process and oversee the activities of the transplant. Additional details are provided in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Affected Area / Location of Proposed Project

The proposed programmatic EA for beaver transplants includes the entirety of the state of Montana (all 56 counties) covering an area of 147,040 mi^2. There are 101 HUC-8 drainages in the state (Figure 1), though we do not anticipate all these HUC-8 drainages would be targeted for beaver transplants. Within this landscape, beaver transplants would only be permitted in perennial stream systems with appropriate habitat conditions for beaver occupancy. This restriction is based on the wide body of scientific literature around beavers in perennial systems versus the relative scarcity of research around beavers in intermittent streams. As more information is produced around other stream types, those streams may be permitted for beaver transplants in future versions of the MBTP.

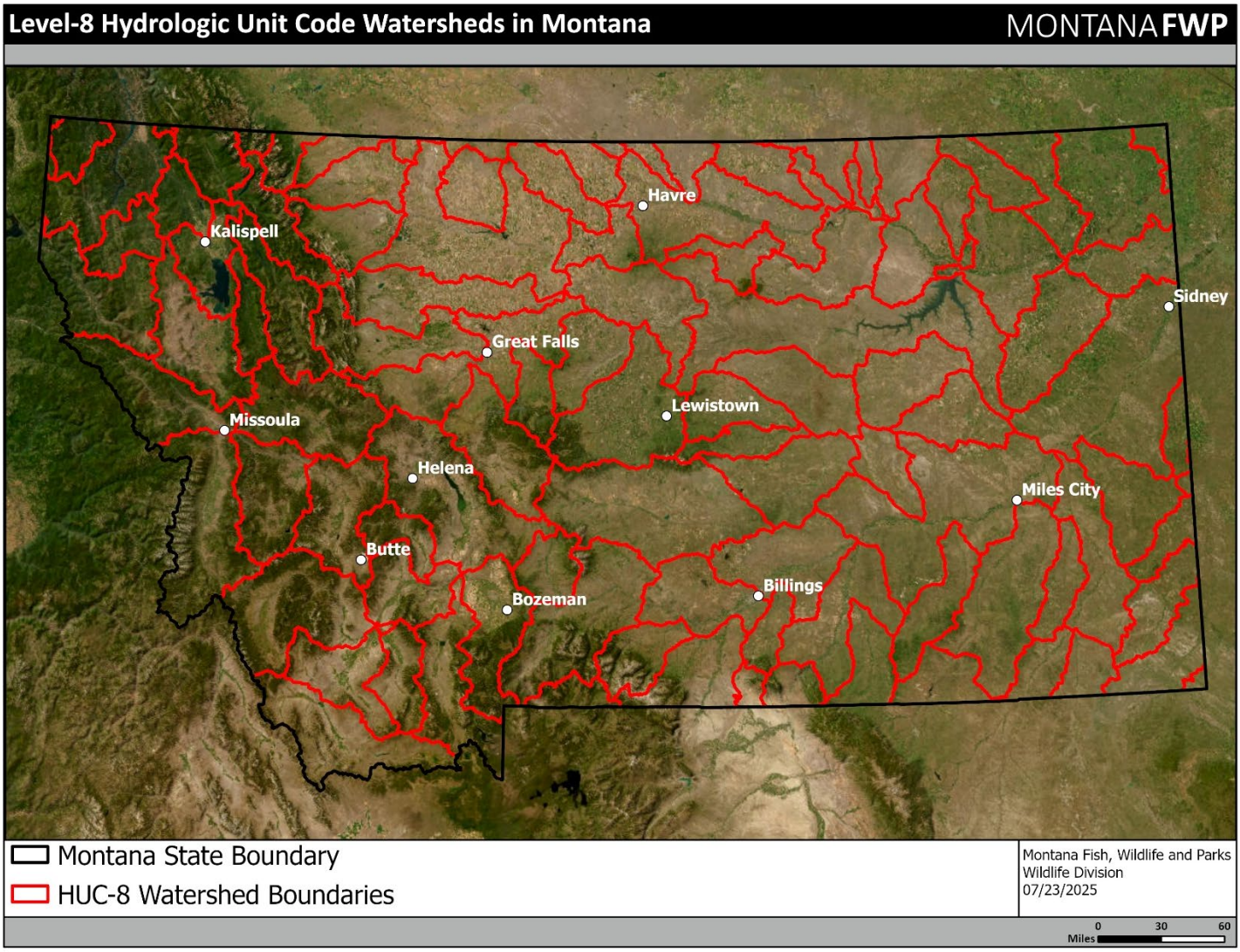

Figure 1. Location and boundaries of HUC-8 Watersheds in Montana. Beaver transplants would generally be allowed within these watershed boundaries with minimal quarantine restrictions for beavers, as determined by the regional fisheries biologist and FWP's AIS program.

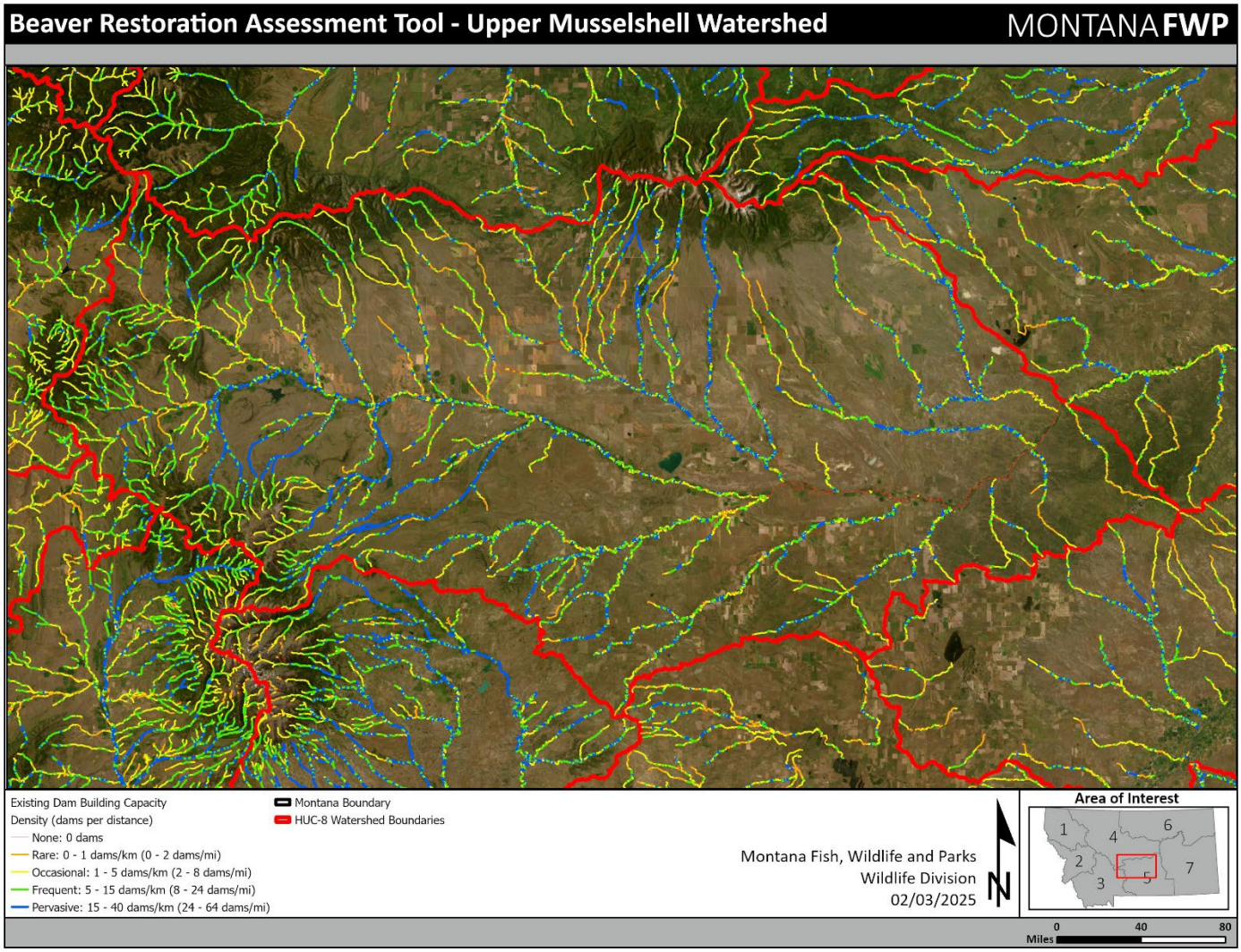

Figure 2. Example of the BRAT model results for the Upper Musselshell Watershed in central Montana. The BRAT model can be used as a rough map of potential habitat where beavers could find the conditions they need to build dams and bring about riparian restoration and water storage benefits in Montana.

III. Purpose and Benefits of Proposed Project

The purpose of the proposed project is to develop a program to guide the transplant of beavers into suitable habitats in areas of their historical range in Montana. Beaver transplants would provide FWP and other restoration practitioners a powerful tool for addressing stream, riparian, and floodplain degradation in Montana. Beaver transplants would also provide another option to resolve human-beaver conflicts, potentially solving a wildlife conflict issue in one location while addressing a habitat degradation issue in another.

The potential benefits of restoring beavers to streams in Montana include:

- Increasing water storage capacity through the expansion of beaver-influenced riparian habitats in headwater streams leading to improved late-season streamflow and greater ecosystem resilience to disturbances like drought, wildfire, and flooding.

- Encouraging floodplain connectivity to promote natural processes that create biologically rich habitats while reducing downstream damage to human infrastructure or degradation of stream systems due to excessive flooding and sedimentation.

- Expanding and enhancing stream, riparian, and floodplain habitats to benefit a wide range of game and nongame fish and wildlife species, included economically important game species as well as many Montana Species of Greatest Conservation Need.

- Maintaining a viable and accessible population of an important furbearing animal to sustain trapping opportunities and heritage into the future.

- Addressing beaver conflict issues in partnership with beaver restoration, alleviating property damage concerns while providing opportunities to engage with landowners on wildlife management and drought resilience issues.

- Addressing a frequent source of frustration from the public regarding the management of beaver-human conflict situations where landowners would like the conflict issues alleviated but do not want the beavers to be killed.

- Enhancing opportunities for community engagement and education around the importance of riparian areas and wetlands to overall ecosystem health and the value of learning to live with wildlife where possible.

Under the proposed action, FWP would be authorized to undertake or facilitate beaver transplants for a period of three years. Every three years, FWP and the Commission would evaluate the MBTP through a biannual report covering all activities associated with the program and then determine if any changes are needed. Changes, such as new science and/or best management practices that are developed to improve the efficiency and success of beaver transplants, would be recommended to, or by, the Commission. If substantial changes to the program or the scope of the program are proposed, they would be reflected in an updated version of this EA, which would be released for another 30-day public comment period. FWP would then seek approval from the Fish and Wildlife Commission to undertake additional beaver transplants. This process would be repeated until it is determined that the program is no longer needed. The details of beaver transplants, including the timing of individual capture and release efforts, would be guided by the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

If FWP prepared a cost/benefit analysis before completion of the EA, the EA must contain the cost/benefit analysis or a reference to it. ARM 12.2.432(3)(b).

	Yes*	No
Was a cost/benefit analysis prepared for the proposed project?	☐	☒

* If yes, a copy of the cost/benefit analysis prepared for the proposed project is included in Attachment A to this Draft EA

IV. Other Agency Regulatory Responsibilities

FWP must list any federal, state, and/or local agencies that have overlapping or additional jurisdiction, or environmental review responsibility for the proposed project, as well as permits, licenses, and other required authorizations. ARM 12.2.432(3)(c).

A list of other required local, state, and federal approvals, such as permits, certificates, and/or licenses from affected agencies is included in **Table 2** below. **Table 2** provides a summary of state requirements but does not necessarily represent a complete and comprehensive list of all permits, certificates, or approvals needed. Rather, **Table 2** lists the primary state agencies with regulatory responsibilities, the applicable regulation(s) and the purpose of the regulation(s). Agency decision-making is governed by state and federal laws, including statutes, rules, and regulations, that form the legal basis for the conditions the proposed project must meet to obtain necessary permits, certificates, licenses, or other approvals. Further, these laws set forth the conditions under which each agency could deny the necessary approvals.

Table 2: Federal, State, and/or Local Regulatory Responsibilities

Agency	Type of Authorization (permit, license, stipulation, other)	Purpose
U.S. Forest Service (USFS)	MOU or Agreements for work on National Forest Lands	Individual agreements for beaver captures and transplants that would occur on National Forest lands.
Bureau of Land Management (BLM)	MOU or Agreements for work on BLM lands	Individual agreements for beaver captures and transplants that would occur on BLM lands.
Department of Natural Resources and Conservation (DNRC)	MOU or Agreements for work on DNRC lands	Individual agreements for beaver captures and transplants that would occur on DNRC lands.
Department of Natural Resources and Conservation (DNRC)	310 Permit	Permitting of stream work proposed by a private landowner.
FWP	SPA 124 Permit	Permitting of stream work proposed by a government entity.
U.S. Bureau of Reclamation (BoR)	MOU or Agreements for work on U.S. Bureau of Reclamation lands	Individual agreements for beaver captures and transplants that would occur on U.S. Bureau of Reclamation lands.
U.S. Fish and Wildlife Service (USFWS)	MOU or Agreements for work on USFWS lands	Individual agreements for beaver captures and transplants that would occur on USFWS lands.
USFWS	ESA Section 4(d), Section 6, and Section 10	Section 4(d) directs USFWS to issue regulations necessary and advisable to provide for the conservation of threatened species; Section 6 provides a mechanism for cooperation in conservation of threatened, endangered, and candidate species; Section 10 allows “take” of a listed species if a habitat conservation plan is in place.
Tribal Nations	MOU or Agreements for work on tribal lands	Coordinate beaver transplants where HUC-8 drainages overlap tribal lands.
Montana Fish and Wildlife Commission	Statutes/Administrative Rules of Montana	Regulate trapping laws and wild animal capture and transplantation in Montana.
FWP	State Wildlife Action Plan (SWAP; 2015) - currently under revision	Guidance for conservation of Montana Species of Greatest Conservation Need and Community Types of Greatest Conservation Need

V. List of Mitigations, Stipulations

Mitigations, stipulations, and other *enforceable* controls required by FWP, or another agency, may be relied upon to limit potential impacts associated with a proposed project. **Table 3** below lists and evaluates enforceable conditions FWP may rely on to limit potential impacts associated with the proposed project. ARM 12.2.432(3)(g).

Table 3: Listing and Evaluation of Enforceable Mitigations Limiting Impacts

Are enforceable controls limiting potential impacts of the proposed action? If not, no further evaluation is needed.			**Yes ☒**	**No ☐**
If yes, are these controls being relied upon to limit impacts below the level of significance? If yes, list the enforceable control(s) below			**Yes ☒**	**No ☐**
Enforceable Control	**Responsible Agency**	**Authority (Rule, Permit, Stipulation, Other)**	**Effect of Enforceable Control on Proposed Project**	
Land management	USFS	Federal land manager	Regulate land management activities on U.S. Department of Agriculture federal lands that affect beaver habitat.	
Land management	BLM	Federal land manager	Regulate land management activities on U.S. Department of Interior (DOI) federal lands that affect beaver habitat.	
Land management	DNRC	State land manager	Regulate land management activities on State School Trust Lands that affect beaver habitat.	
Land management	USFWS	Federal land manager	Regulate land management activities on USDI federal lands that affect beaver habitat.	
Trapping regulations and damage permits	Montana Fish and Wildlife Commission	Authority to trap furbearers during closed seasons (§ 87-6-602, MCA).	Regulates when beavers can be trapped in Montana and includes regulations on damage permits for beavers that are in conflict with human infrastructure.	
Wildlife species authorized for introduction or transplantation	Montana Fish and Wildlife Commission	Authority to introduce or transplant wild animals in Montana (§§ 87-5-711, 87-5-713, 87-5-714, MCA).	Section 87-5-711, MCA, requires Commission approval for introduction or transplantation of species not listed under § 87-5-714, MCA. Section 87-5-713, MCA, requires a plan for introduction or transplant of species listed in § 87-5-714, MCA, or approved by the Fish and Wildlife Commission to assure that the population can be controlled if any unforeseen harm should occur. Section 87-5-714, MCA, lists the species in Montana authorized for introduction or transplantation, and beavers are not on this list.	
Stream permitting (government entities)	Montana Fish, Wildlife and Parks	§§ 87-5-501 – 509, MCA	Permit to allow construction activities on stream banks by government entities. Known as SPA 124 permits.	
Stream permitting (private entities)	DNRC	§§ 75-7-101 – 125, MCA	Permit to allow construction activities on stream banks by private entities.	

			Administered through DNRC Conservation Districts. Known as 310 permits.
Cultural resource analysis	FWP, State Historic Preservation Office	Cultural Assessment and Inventory	Completed prior to any ground disturbing activities or site disturbance.

VI. Alternatives Considered

In addition to the proposed Project, and as required by MEPA, FWP analyzes the "No-Action" alternative in this EA. Under the “No Action” alternative, the proposed project would not occur. Therefore, no additional impacts to the physical environment or human population in the analysis area would occur. The “No Action” alternative forms the baseline from which the potential impacts of the proposed Project can be measured.

Under the No Action Alternative, FWP would not streamline the process for transplanting beavers in Montana but would retain the current protocols and policies for transplanting beavers. Beaver transplants could still occur through the production of individual Environmental Assessments and subsequent Fish and Wildlife Commission approval for each transplant project. This is the current system for conducting beaver transplants in Montana, and the burden of such a procedure has resulted in very few projects being proposed and conducted in the state’s history. That trend would be expected to continue under the No Action alternative. Stream and riparian area degradation would continue to be addressed through individual stream restoration projects but would proceed at smaller spatial scales than could be achieved through a multi-pronged approach to beaver restoration, and would continue to require direct inputs from FWP and other restoration practitioners. Benefits of the proposed action would not be realized as beaver restoration would only occur at relatively small spatial scales and over long time periods. The opportunity to relieve beaver-human conflicts while promoting stream restoration would not be realized, and beaver-human conflict issues would continue to be alleviated using non-lethal techniques to mitigate property damage or trapping to lethally remove the beavers if a non-lethal option does not work.

	Yes*	No
Were any additional alternatives considered and dismissed?	☐	☒

* If yes, a list and description of the other alternatives considered, but not carried forward for detailed review, is included below

VII. Terms Used to Describe Potential Impacts on the Physical Environment and Human Population

The impacts analysis identifies and evaluates **direct**, **secondary**, and **cumulative impacts**.

- **Direct impacts** are those that occur at the same time and place as the action that triggers the effect.
- **Secondary impacts** are “further impact[s] to the human environment that may be stimulated or induced by or otherwise result from a direct impact of the action.” ARM 12.2.429(18).
- **Cumulative impacts** “means the collective impacts on the human environment of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location or generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures.” ARM 12.2.429(7).

Where impacts are expected to occur, the impact analysis estimates the **extent, duration, frequency,** and **severity** of the

impact. The duration of an impact is quantified as follows:

- **Short-Term**: impacts that would not last longer than the proposed project.
- **Long-Term**: impacts that would remain or occur following the proposed project.

The severity of an impact is measured using the following:

- **No Impact**: there would be no change from current conditions.
- **Negligible**: an adverse or beneficial effect would occur but would be at the lowest levels of detection.
- **Minor**: the effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.
- **Moderate**: the effect would be easily identifiable and would change the function or integrity of the resource.
- **Major**: the effect would irretrievably alter the resource.

Some impacts may require mitigation. As defined in ARM 12.2.429, mitigation means:

- Avoiding an impact by not taking a certain action or parts of a project;
- Minimizing impacts by limiting the degree or magnitude of a project and its implementation;
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment; or
- Reducing or eliminating an impact over time by preservation and maintenance operations during the life of a project or the time period thereafter that an impact continues.

FWP may, as an alternative to preparing an EIS, prepare an EA whenever the action is one that might normally require an EIS, but effects which might otherwise be deemed significant appear to be mitigable below the level of significance through design, or enforceable controls or stipulations, or both, imposed by the agency or other government agencies. For an EA to suffice in this instance, the agency must determine that all the impacts of the proposed action have been accurately identified, that they will be mitigated below the level of significance, and that no significant impact is likely to occur. The agency may not consider compensation for purposes of determining that impacts have been mitigated below the level of significance. ARM 12.2.430(4).

A list of any mitigation strategies including, but not limited to, design, enforceable controls or stipulations, or both, as applicable to the proposed project is included in **Section VI** above.

FWP must analyze impacts to the physical and human environment for each alternative considered. The proposed project considered the following alternatives:

- Alternative 1: No Action
- Alternative 2: Proposed Project, Montana Beaver Transplant Program

VIII. General Setting of the Affected Environment

The analysis area for direct, secondary, and cumulative impacts on the physical environment and human population resources analyzed by this Draft EA includes the entirety of the state of Montana, all 56 counties.

Together, these counties cover 147,040 mi^2 (380,832 km^2) (Figure 3). Because the proposed project focuses on beavers, the analysis will be limited to those areas and resources located within the channel and floodplain of streams and rivers and within and adjacent to lakes, ponds, and other wetlands. Beavers do not occupy or affect any other type of environment.

Physical Environment:
Most Montana counties located west of the Continental Divide (Figure 3) are characterized by one or more river valleys divided by rugged mountain ranges. Elevations range from 1,820 ft. (555 m) where the Kootenai River enters Idaho near Troy, Montana, to 12,799 ft (3,904 m) on top of Granite Peak in the Beartooth Mountain Range. The mountainous portions of Montana (above 6,000 ft.; 1,829 m) contain all, or portions of, 44 mountain ranges. Mountainous habitats are dominated by coniferous forest (Douglas fir, lodgepole pine, Engelman spruce, western cedar, hemlock, whitebark pine, limber pine, ponderosa pine, juniper), and rocky sub-alpine-alpine communities found above timberline.

East of the Continental Divide, Montana counties generally have flatter topography characterized by vast grassland and sagebrush ecosystems innervated by perennial and intermittent stream drainages and dotted with lakes, reservoirs, and pothole wetlands of various sizes. These are mostly lower elevation habitats (below 6,000 ft.; 1,829 m).

About one third of the land mass of Montana is public land (Table 4, Figure 3).

Table 4. Acres of land by federal, state, county, municipal government within the state of Montana.

Owner	Acres
City Government	47,950
County Government	79,944
Local Government	33,873
Montana Department of Corrections	35,213
Montana Department of Natural Resources and Conservation	14,320
Montana Department of Transportation	8,382
Montana Fish, Wildlife & Parks	451,709
Montana State Trust Lands	5,197,389
Montana University System	25,221
National Park Service	1,188,144
State of Montana	48,237
U.S. Army Corps of Engineers	6,497
U.S. Bureau of Land Management	8,041,210
U.S. Bureau of Reclamation	156,208
U.S. Department of Agriculture	71,361
U.S. Department of Defense	9,313
U.S. Fish & Wildlife Service	941,148
U.S. Forest Service	17,177,072
U.S. Government	1,730

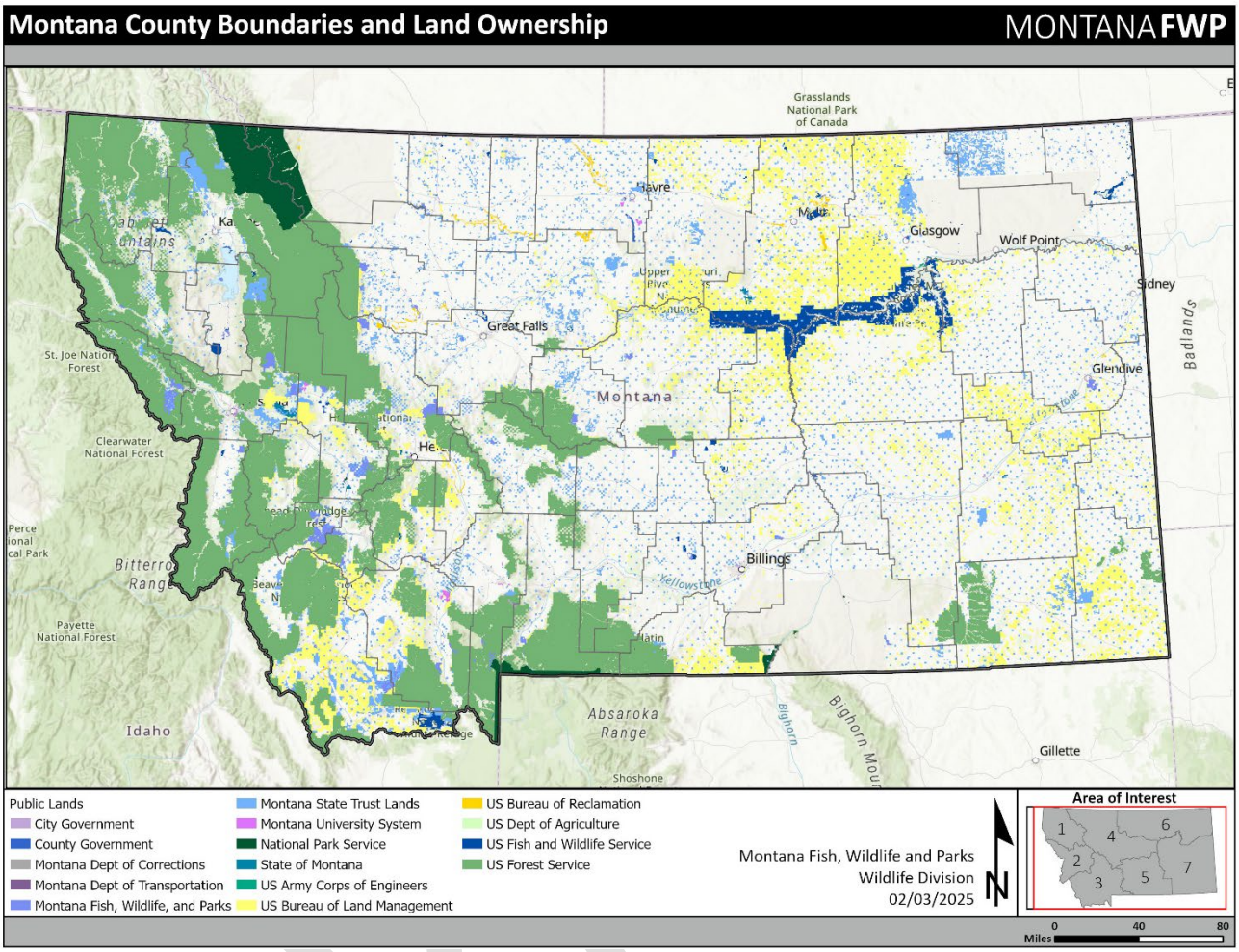

Figure 3. Map of Montana delineating landownership by federal, state, county, municipal, and tribal governments. All lands not colored are privately owned.

Beavers in Montana tend to occupy streams, lakes, ponds, and wetlands with a year-round water supply and a suitable supply of woody riparian vegetation. Aspen, cottonwood, willow, and alder are the most important forage and dam-construction resources across the state. However, beavers are also found in intermittent stream drainages and areas without woody riparian vegetation, though these observations are relatively rare. The Montana Beaver Dam Census, completed in 2024, documented 32,336 beaver dams that were visible on high-resolution aerial imagery. This is an undercount of beaver dams in the state because many dams are not visible on aerial imagery due to overstory tree cover, poor image quality, and other issues. Additionally, a large portion of Montana's beaver populations do not build dams and are therefore not able to be estimated using aerial imagery. Beavers occupy large rivers and streams, lakes, reservoirs, and wetland complexes, all of which generally require no dam building by the beavers. The BRAT model estimates that Montana's landscapes could potentially support from hundreds of thousands to over one million beaver dams, so despite the large number of beaver dams recorded in the state, this is still only a fraction of the beaver damming activity that could be present and generating ecosystem services on the landscape.

Human Population:

As of 2024, an estimated 1,137,233 people lived in Montana (U.S. Census Bureau 2021). The 2024 population estimate reflects an almost 32% increase in population since the year 2000. During the 20 year-period from 2000

to 2020, population growth was highest in Gallatin, Broadwater, and Flathead counties and population declined modestly in nine counties.

Economics:
In 2023, the median per capita income in the United States was $43,289, and the median household income was $78,538. In Montana, median per capita income was somewhat lower, at $39,842, with the median household income being $69,922.

Land Ownership:
The public owns approximately 27,000,000 acres (29%) of land in Montana that is managed by the USFS, approximately 8,300,000 acres (9%) that are managed by the BLM, and approximately 1,800,000 (2%) is managed by the National Park Service (NPS). USFS lands tend to be located above 6,000 ft. (1,829 m) in elevation while BLM lands cover more low-elevation landscapes. NPS lands are primarily contained within Glacier National Park and the Montana portion of Yellowstone National Park. State government owns and/or manages approximately 5,200,000 acres (6%) of land in Montana and private entities own approximately 61,000,000 acres (65%) of land in Montana. Tribal lands constitute approximately 9,200,000 acres (10%) of Montana's land mass, though these are sovereign nations. Smaller amounts of land in Montana are managed specifically for fish and wildlife by the USFWS and FWP. Other lands are in private ownership, including private subdivisions, ranches, land trusts, ski resorts, golf courses, and timber company lands. Communities of various sizes also occupy several thousand acres of mostly low-elevation areas.

Agriculture
Montana supports a large agricultural economy. In 2022, there were an estimated 24,266 farms and ranches, down 10.3% since 2017. The most common agricultural activities of these farms and ranches include: raising beef cattle, growing forage (hay) for cattle, and growing grain crops (wheat, oats, barley). Sheep, hogs, and dairy cattle were also raised in smaller numbers. Sheep and beef cattle were grazed on privately owned grassland and on publicly owned (USFS, BLM, DNRC) grazing allotments. In 2022, an estimated 2,118,284 cattle (including calves) grazed in Montana.

Mining:
Large mineral deposits, ranging from talc to gold, are located throughout Montana. Of these, metallic minerals provide the largest share of Montana's non-fuel mining income, with copper, palladium, and platinum leading the list of important metals (these latter two being mined nowhere else in the United States). In 2012, there were a total of 53 mines in production, development, standby permitting, or reclamation status, all but seven of which were in the mountainous western part of the state.

Wood Products:
Most of Montana's forested lands (23 million acres) are located within the mountainous western part of the state. Nearly four million acres of these forest lands are permanently reserved as either congressionally designated Wilderness Areas or National Parks. Eleven million acres of the remaining forested land is administered by the USFS, with 5.2 million acres of this public estate designated by current Forest Plans as suitable for timber production. Private forest lands occupy approximately 6 million acres, with 2 million owned and managed by large timber companies. Another four million acres of private forest lands are owned by some 11,000-plus private individuals.

Sources for wood products, categorized broadly into public (USFS, BLM, state, and other public) and private (corporate industrial timber lands, private, non-industrial, and tribal) forestlands, has varied over time. During

the 1980s, most production came from USFS lands, being almost matched by private industrial forests, with very little coming from other state lands. As production on USFS lands declined in the 1990s, the proportion coming from non-industrial and tribal lands increased (briefly becoming dominant in 1994). The relative contribution from private industrial lands peaked in 1998 as USFS lands continued to decline, but other public lands made up some of that difference. However, the proportion contributed by private industrial lands has declined markedly in the past 20 years, with the other identified sources increasing in importance.

Recreation:
Outdoor recreation and tourism are major components of Montana's economy, particularly in the mountainous western part of the state. Western Montana is nationally renowned for its high-quality fishing, hunting, camping, hiking, river floating, skiing, snowmobiling, wildlife viewing, and sightseeing opportunities. Glacier and Yellowstone National Parks, Flathead Lake, and other public lands attract large numbers of people to western Montana every year. Eastern Montana is known for its open landscapes, abundant natural resources, and relatively few people. Recreational activities include bird watching, floating and boating, hunting, and sightseeing. Many of these outdoor activities across Montanan are made possible by public ownership of large tracts of mountainous habitat and additional access provided by private landowners. Recreationists have largely unhindered access to millions of acres of undeveloped land in Montana. Much of this land includes waterbodies that were historically modified by beaver activity.

IX. Cumulative Impacts Analysis

For the purposes of MEPA, cumulative impact "means the collective impacts on the human environment of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location or generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures." ARM 12.2.429(7).

Under the No Action alternative, the proposed project would not occur. Therefore, no additional cumulative impacts to the physical or human environment in the analysis area would occur. The No Action alternative forms the baseline from which the potential impacts of the proposed project can be measured. For the purposes of adoption and implementation of the Programmatic EA for Beaver Transplantation, the cumulative impacts analysis below applies to all resources analyzed under Alternative 2, Proposed Action/Project (Section XI. A and B).

No significant adverse cumulative impacts would be expected because of the proposed project. However, under the proposed action, cumulative impacts would occur. The information below identifies past, present, and related future actions (i.e., activities to be considered under the cumulative impacts analysis). Actions considered in these analyses were identified by FWP and other subject matter experts. Past and present actions are accounted for as part of the existing, or "baseline," environmental conditions. MEPA is forward-looking, with analyses focused on the potential impacts of the proposed action with consideration for any past, present, or future related actions.

FWP and its partners have engaged in stream restoration efforts in the state for decades, and many of these projects seek to re-establish natural stream conditions that were in place prior to European colonization of North America, which includes substantial beaver activity. Each historical FWP action has been subject to, and complied with, MEPA.

Related Past, Present, and Future Actions

The proposed project would allow for beaver transplants in perennial streams across the state of Montana. Beavers are a native species in Montana. Beaver activities (i.e., dam building, vegetation harvest, etc.) are a natural and highly beneficial part of Montana's low gradient, perennial stream systems. Beaver dams historically were responsible for maintaining high water tables, recharging ground water reserves, and for large amounts of nutrient-rich sediments being deposited in floodplains. Any cumulative impacts due to beaver transplants would be largely beneficial and consistent with historical impacts and natural processes within areas of beavers' former range. Beaver transplants would therefore only represent a human-induced attempt to return those natural processes to ecologically and socially appropriate stream systems to benefit fish and wildlife habitat and to bolster economic benefits to all Montanans through maximizing ecosystem services that beavers and their wetlands provide (e.g., natural water storage, water quality improvements, fishing and hunting opportunities, etc.).

To date, only two authorized beaver transplants have occurred in Montana, the Upper Missouri Beaver Transplant Project (MFWP 2010) and the Reservoir Creek Beaver Transplant Project (MFWP 2018). Other beaver transplants have occurred in the state's history through Memorandums of Understanding with federal land management agencies. Further transplants have not occurred primarily due to the burden required to do these projects under the current regulatory framework.

FWP and its partners undertake stream restoration projects that occur within the historical range of beavers, and many of these projects have resulted in restoration of habitats to the point of allowing for beaver colonization. FWP would continue to promote the idea of encouraging natural colonization by beavers as the most effective way to expand beaver-modified stream systems and their associated benefits. FWP would also continue to promote non-lethal conflict management techniques over beaver transplants to resolve beaver-human conflicts. Transplants would only be used for specific situations as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials). Beaver transplants would be a useful tool for enhancing stream restoration projects that are already occurring or occurred in the past and could benefit from the activity of beavers to promote stream and riparian health.

Cumulative impacts from beaver transplants that would occur following implementation of the proposed action are not mutually exclusive and impacts to the ecology and conservation of the terrestrial and aquatic landscape and actions from other programs are considered prior to any actions that may impact organisms and/or habitats. Because the base intent of beaver transplants is to improve stream, riparian, and floodplain habitat conditions, and resolve human-wildlife conflicts in the state of Montana, it is expected that any cumulative impacts would be short- and long-term, negligible to major, and predominantly beneficial.

The following list of historic MEPA projects identifies prior MEPA review conducted to assess potential impacts to the affected human environment from historical projects affecting streams that are within the historical range of beavers and that may be targeted for beaver transplants:

- FWP's 2023 Statewide Fisheries Management Plan and associated programs (MFWP 2023).
- FWP's 2018 Reservoir Creek Beaver Transplant Environmental Assessment (MFWP 2018).
- FWP's 2010 Upper Missouri Watershed Beaver Relocation Project Environmental Assessment (MFWP 2010).

The following activities have impacted or may impact the human environment in the analysis area:

- **Human population expansion and development.** Human population expansion and development may result in adverse impacts to streams and riparian areas that could impact beaver habitat. Additionally,

where human infrastructure is located has a major influence on where beaver activity can or cannot be tolerated on the landscape, as well as whether conflict resolution actions would be a part of a given beaver transplant project.

- **Agriculture and livestock operations.** Agricultural and livestock development in Montana consists mostly of cropland, pastureland, and grazing lands. Historical and ongoing agricultural and livestock development alters available beaver habitat and potential restoration sites within the analysis area. However, impacts would be consistent with current and historical practices. The proposed action does not include any additional agricultural or livestock production; therefore, the project does not contribute to cumulative impacts associated with agricultural or livestock production.
- **Road right-of-way, trails, and related construction.** Roads, trails, and associated right-of-way construction activities have historically resulted in pinch-points in streams where beavers are attracted for dam building, resulting in beaver-human conflict situations. These construction and maintenance activities would continue under the proposed action, which would contribute to beaver-human conflicts on the landscape. These impacts can be mitigated through lethal and non-lethal beaver conflict management options. The proposed action does not propose any additional construction disturbance; therefore, the project does not contribute to cumulative impacts associated with road or right-of-way construction.
- **National Park, National Wildlife Refuges, Wilderness, and National Forest area designations.** Federal land managers have jurisdiction over National Parks, National Wildlife Refuges, Wilderness Areas, and National Forests. These areas are protected from certain activities that could impact terrestrial, avian, and aquatic life and habitats in the affected areas.
- **Wildland and prescribed fire.** Wildland and prescribed fires can directly influence Montana's water resources in various ways. Wildfires, and certain prescribed burns, often lead to increased sediment and ash entering the stream, reducing habitat and water quality for aquatic organisms. However, beaver dams can be an important sink for sediment on the landscape and have been shown to be highly resilient to wildfire impacts relative to surrounding habitats (Fairfax and Whittle 2020). The proposed action does not propose any addition or decrease of wildland or prescribed fire; therefore, the project does not contribute to cumulative impacts associated with wildland or prescribed fire. Any cumulative impacts would be potential positive impacts from beavers associated with creating and maintaining valley bottom patches that are resilient to the effects of fire and in post-fire recovery of riparian areas.

Several guiding documents, as well as other affected state and federal regulatory entities, inform the various components of the MBTP described in this Draft EA by outlining strategies and considerations for taking management action and any potential impacts from such management actions. These guiding documents and affected regulatory entities include the following:

- **Montana Fish, Wildlife and Parks' 2023 Statewide Fisheries Management Plan (MFWP 2023)** provides direction for the overall management of Montana's fisheries, statewide.
- **FWP's individual fish species management plans and conservation strategies.** Species management plans are collaboratively developed between FWP and other state and federal management agencies and NGOs to develop strategies to conserve species. These individual species plans provide fisheries and habitat management strategy specific to the resource and include:
    - Arctic grayling
    - Pallid sturgeon
    - Westslope cutthroat trout
    - Yellowstone cutthroat trout

- **FWP's SWAP (MFWP 2015)** identifies species and habitats of the highest conservation priority in the state and outlines threats to those species and habitats as well as potential conservation actions to address those threats.
- **The Montana Beaver Working Group's 2023 Beaver Action Plan (Montana Beaver Working Group 2023)**, which FWP was involved in drafting and updating, "offers applied direction to advance work with beavers for resilient, healthy watersheds. The Plan offers specific goals, guiding strategies, and specific actions aimed at recovering beavers in areas of their former range." Expanding the use of beaver transplants in the state has been a core goal of the Working Group since its establishment, and it remains one of the top goals outlined in the Action Plan. The Montana Beaver Working Group, which consists of partners from state and federal agencies, non-profit organizations, private landowners, tribes, and recreationists, has become a leading voice in Montana on the need to restore beaver-modified habitats for the immense benefits to humans and the ecosystems we rely on. The Beaver Working Group has produced and continually updates the Montana Beaver Action Plan (MBWG 2023), which identifies key goals, strategies, and actions all geared towards recovering beavers in areas of their former range and educating Montanans about the benefits beavers can bring to critical ecosystems and the services they provide. The Montana Beaver Working Group identifies drought resilience and fish and wildlife habitat as key components of the underlying reason for the work they do. Members work diligently from multiple angles and disciplines to scale up beaver restoration to a level that will have a significant and lasting positive effect on the recovery of beaver-modified systems in areas of the species' former range. Increasing the use of beaver transplants in Montana has been a key goal of the Beaver Working Group since its creation, recognizing that beaver transplants can be an effective way to resolve conflict issues while hastening the restoration of streams, riparian areas, and floodplains in Montana.
- **Fish and Wildlife Commission**. The commission has statutory authority over the capture, transport, and release of wildlife species in Montana.
- **USFS.** The USFS manages a large amount of the land in Montana where beaver transplants may be proposed. Changes in stream habitats resulting from actions by the USFS may influence beaver colonization and abandonment dynamics and may influence where potential transplant sites are in Montana.
- **BLM.** The BLM manages a large amount of the land in Montana where beaver transplants may be proposed. Changes in stream habitats resulting from actions by the BLM may influence beaver colonization and abandonment dynamics and may influence where potential transplant sites are in Montana.
- **BoR.** The BoR manages a small amount of the land in Montana where beaver transplants may be proposed. Changes in stream habitats resulting from actions by the BoR may influence beaver colonization and abandonment dynamics and may influence where potential transplant sites are in Montana.
- **USFWS.** The USFWS manages a small amount of the land in Montana where beaver transplants may be proposed. Changes in stream habitats resulting from actions by the USFWS may influence beaver colonization and abandonment dynamics and may influence where potential transplant sites are in Montana.
- **DNRC.** The DNRC manages a large amount of the land in Montana where beaver transplants may be proposed. Changes in stream habitats resulting from actions by the DNRC may influence beaver colonization and abandonment dynamics and may influence where potential transplant sites are in Montana. The DNRC's Montana Drought Management Plan (DNRC 2023), describes drought as a natural and recurring part of Montana's climate. The Drought Management Plan specifically identified building resilience to drought as the most effective way to minimize or mitigate negative impacts to agriculture,

municipalities, recreation, and ecosystem function. One of the primary strategies for building drought resilience identified in the plan is to increase the capacity of the landscape to soak up water and release it slower throughout the year. Streams and associated floodplains modified by beaver damming activity have some of the greatest capacities to store more water on the landscape, especially in higher elevation portions of stream drainages where the climate is generally cooler and there are higher levels of precipitation throughout the year. The Drought Management Plan mentions the potential impacts of beavers many times throughout the document and specifically looks to the construction of beaver dam analogs as a way to restore beaver-modified habitats to build drought resilience in the state. While beaver dam analogs and other methods can be effective for restoring degraded floodplains, they are often short-term improvements without subsequent colonization of beavers, who can then sustain the restoration actions into the future with minimal human intervention.

Upon implementation of the proposed action, FWP would work with local, state, and federal agencies, as well as private landowners, to identify potential capture and release sites for beavers. FWP would seek to enter into Memorandums of Understanding (MOU) or other types of agreements with agencies to allow activities associated with the MBTP on the public lands they administer. Associated with this action likely would be recommendations from FWP biologists to incorporate considerations for beaver transplants into local, state, and federal land management plans.

Beavers inhabit various aquatic habitats across the state and would continue to do so under the proposed action. The proposed action, with consideration for impacts associated with the various components of a beaver transplant program listed above, would result in restoration and maintenance of beaver-modified habitats in Montana and resolution of beaver-human conflict issues. Therefore, any cumulative impacts of the proposed action would be consistent with current and historical impacts, short- or long-term, negligible to major, and largely beneficial to Montana's aquatic and terrestrial habitats and water resources.

Any direct, secondary, and/or cumulative impacts to natural resources resulting from beaver transplant projects in Montana would be assessed on a case-by-case basis through the Transplant Area Authorization and Beaver Transplant Authorization processes prior to project approval and implementation. These processes would assure that appropriate game, nongame, and fisheries biologists, as well as the state wildlife veterinarian, are aware of each individual transplant project and have an opportunity to provide input. The authorization materials also assures that private landowners with the potential to be impacted by a transplant project are made aware of the project and have the opportunity to provide input as well.

X. Climate Impacts Analysis

Healthy rivers and streams that maintain connectivity between the stream channel and associated floodplains are naturally resilient systems that can help mitigate the effects of a rapidly changing climate (Figure 4; Wohl et al. 2018, Jordan and Fairfax 2022, Norman et al. 2022, Wohl 2024). Well-connected stream-floodplain systems enhance natural water storage, improve water quality, support high biodiversity, and bolster landscape-scale resilience to climate-driven events such as severe wildfires, damaging floods, and drought (Beechie et al. 2013, Thompson et al. 2021, Wohl 2024). Healthy stream systems are also natural carbon sinks, sequestering carbon through sediment deposition and subsequent vigorous growth of aquatic and terrestrial non-animal life forms (Wohl et al. 2018). There is no doubt that restoration and maintenance of healthy streams, rivers, and other natural waterbodies is a critical strategy for building resilience into Montana's landscapes as the climate continues to change rapidly (Figure 4; Jordan and Fairfax 2022).

Beavers are widely recognized as agents of substantial change in stream systems (Naiman et al. 1988, Wohl 2021). In most situations, their impacts on these systems lead to restoration of floodplain connectivity and natural, healthy stream function (Naiman et al. 1988, Collen and Gibson 2001, Wright et al. 2002, Pollock et al. 2017). Because of this, throughout western North America the recovery of beaver-modified streams, riparian areas, and floodplains is considered one of the top actions humans can take to mitigate the negative impacts of a changing climate (Hood and Bayley 2008, Gibson and Olden 2014, Dewey et al. 2022, Jordan and Fairfax 2022).

One of the primary negative effects of climate change in Montana is the reduction of snowpack and changing of seasonal precipitation patterns that cause severe and ongoing drought conditions. This climate-induced strain on water resources in Montana is exacerbated by increasing demand for water resources due to a burgeoning human population and sometimes conflicting land-use goals (e.g., agricultural production versus river recreation). Beaver activity, particularly the creation of dams and dam complexes, can restore degraded stream systems and greatly improve natural water storage capacity on the landscape (Scarmardo et al. 2022). Enhanced water storage from beaver activity can extend water resources later into the summer and fall months when drought conditions have the largest negative effect on Montana's human and wildlife populations. Landscapes innervated by healthy, well-connected stream systems are also more resilient to additional impacts of a changing climate such as severe wildfires (Fairfax and Whittle 2020) and major flood events (Puttock et al. 2020, Graham et al. 2022), as well as, in some instances, encroachment of undesirable plant species (e.g., invasive weeds, conifer encroachment; Wright et al. 2002, Ritter personal observation). The potential benefits of restoring beavers to areas of their former range for creating and sustaining healthy, resilient landscapes is well-documented in the scientific literature, and subsequent policy changes that promote stream restoration by partnering with beavers are occurring across western North America.

Wetlands created and maintained by beavers can also have more direct impacts on climate change by acting as both sources and sinks for carbon, carbon dioxide, and methane (Wohl 2013, Thompson et al. 2021). Whether beaver wetlands are a source or a sink for these greenhouse gases depends on the age of the wetlands and the water table level (Lazar et al. 2015, Vehkaoja et al. 2015, Nummi et al. 2018), and both sequestration and emission may occur within the same wetland complex at the same time. Studies have shown both that greenhouse gas sequestration can outpace emission in beaver wetland complexes or can lag behind (Wohl 2013, Johnston 2014, 2017, Nummi et al. 2018). Therefore, it is difficult to accurately quantify the net impacts of beaver activity at large spatial scales (e.g., the state of Montana), without detailed information on the number of beaver ponds, their age, and their status (i.e., dry, shallow inundation, deep inundation). Substantial negative effects of beaver activity on greenhouse gas emissions have been documented in the Arctic (Tape et al. 2018, Clark et al. 2023), where beaver damming activity is accelerating permafrost thawing.

In Montana, the overall impacts of beavers on the landscape are far more likely to be positive regarding climate change than negative. While it is possible that beaver activity in the state leads to emission of more greenhouse gases than are sequestered, the additional effects of increasing natural water storage, improving water quality, mitigating the effects of floods and fires, and bolstering biodiversity in the aquatic and terrestrial realms, supports the restoration of beavers as a critical tool for mitigating the impacts of a changing climate in Montana.

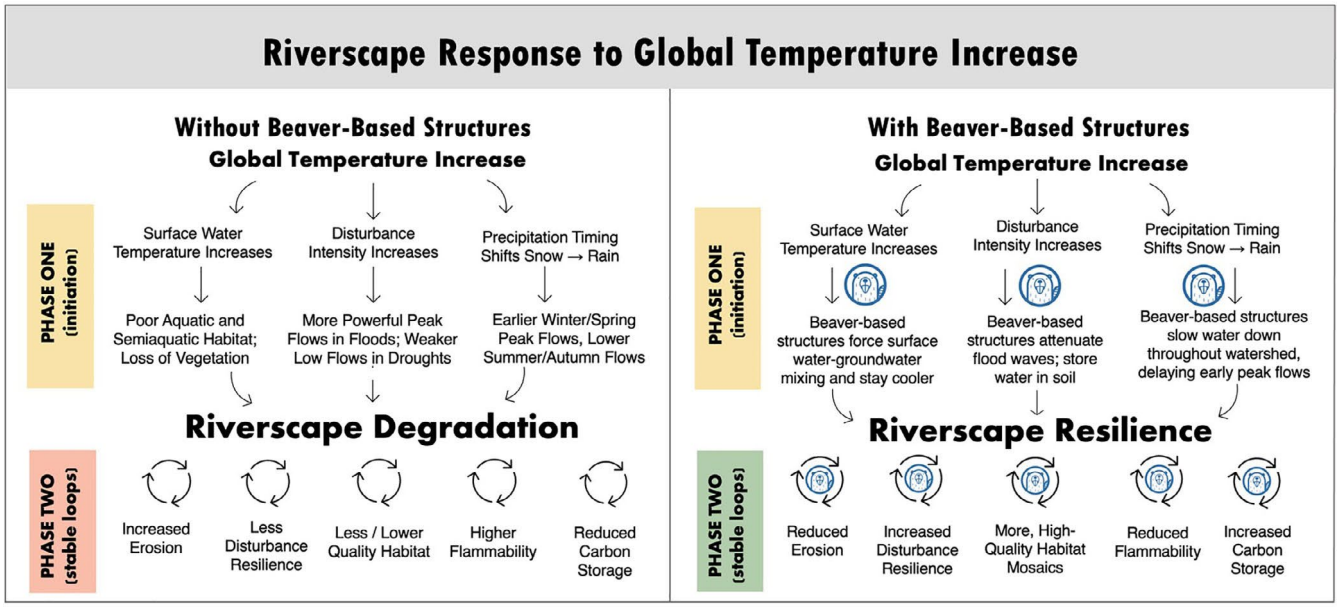

Figure 4. Jordan and Fairfax (2022), comparison of riverscape feedback cycles with increased global temperature. Phase 1 indicates processes that are initiated by warming global temperatures and lead to either degradation or resilience. Phase 2 indicates processes that occur once riverscapes have already reached a degraded or resilient state. Left: Cycle of increasing riverscape degradation occurring without beaver or beaver mimicry. Right: Cycle of maintained riverscape resilience that can be achieved by partnering with beaver and utilizing beaver-based designs.

XI. Alternative 1: No Action. Evaluation and Summary of Potential Impacts on the Physical Environment and Human Population

Under the No Action Alternative, FWP would not streamline the process for transplanting beavers into perennial streams in Montana. Beaver transplants could still occur through the production of individual Environmental Assessments for each project and subsequent Fish and Wildlife Commission approval for each project. This is the current system for conducting beaver transplants in Montana, and the burden of such a procedure has resulted in only two projects being proposed in the state's history. That trend would be expected to continue under the No-action alternative. Stream and riparian area degradation would continue to be addressed through individual stream restoration projects but would continue at smaller spatial scales and through direct inputs from FWP and other restoration practitioners. Benefits of the proposed action would not be realized as beaver restoration would only occur at relatively small spatial scales and over long time periods. The opportunity to relieve beaver-human conflicts while promoting stream restoration would not be realized, and beaver-human conflict issues would continue to be alleviated using non-lethal techniques to mitigate property damage or trapping to lethally remove the beavers if a non-lethal option does not work.

XII. Alternative 2: Proposed Project. Evaluation and Summary of Potential Impacts on the Physical Environment and Human Population

For the evaluation and summary of potential impacts, the following section is organized based on the five sub-actions under the umbrella of the broader state action of developing the Montana Beaver Transplant Program

as outlined in Section II. These five sub-actions and associated effects would be consistent across impact types and are:

1) Live-capture and removal of beavers
2) Construction and maintenance of holding facilities
3) Beaver quarantine and care
4) Transporting and releasing beavers at release sites
5) Monitoring of release sites

Direct, secondary, and cumulative impacts are only assessed for perennial streams in Montana that are within the likely historical range of beavers because those are the only types of streams where beaver transplants would be permitted.

Throughout the Impacts Analysis section, we are considering impacts of removing beavers from an area for a transplant project to be less substantial than releasing beavers into an area. Under the proposed action, beavers would only be allowed to be removed from an area for transplant purposes if their removal is unlikely to result in impacts that could be classified as "major" (e.g., all the ponds drain, catastrophic dam failures, sediment flushing). The exception to this requirement would be if the beavers are in conflict with human infrastructure and the removal of the beavers and/or their infrastructure is necessary to alleviate the conflict issue. In these situations, the need to resolve the conflict supersedes the habitat and ecosystem service benefits the beavers may be providing. However, years of experience resolving human-beaver conflicts in Montana has demonstrated that the number of situations where removing beavers due to conflict issues causes major impacts to physical environment or human population is low. Alternatively, when beavers are strategically released in an area where they are likely to build dams and other infrastructure and expand their activities, impacts can be classified as "major" because the entire ecosystem may change. In most situations this would be exactly what restoration practitioners are seeking from a beaver transplant project, substantial changes to the ecosystem that benefit fish and wildlife habitat and the human population in Montana.

A. Evaluation and Summary of Potential Impacts on the Physical Environment

1. Terrestrial, Avian, and Aquatic Life and Habitats

Existing Environment/Baseline Conditions (No Action Alternative):
Large swaths of stream, riparian, and floodplain habitats across Montana remain below their ecological potential due to multiple sources of long-term degradation. Beavers exist in a fraction of their former range, so the riparian and wetland habitats beaver activity can create, and the beneficial processes beavers can initiate and maintain in stream systems, also represent a small proportion of the potential. Various state and federal agencies as well as non-profit organizations have worked and are still working to restore streams and rivers in Montana using techniques such as floodplain regrading, channel construction, riparian plantings, grazing management, and other restoration techniques. Terrestrial, avian, and aquatic life and habitats benefit from these restoration efforts, but those that benefit from or rely on beaver-modified habitats are far below their historical and ecological potential in Montana.

The SWAP identifies 128 Species of Greatest Conservation Need (SGCN) in Montana. These are species for which there are substantial concerns about their long-term population viability in the state, and therefore conservation funding and actions should be directed towards conserving these species and their habitats. The SWAP also identifies Community Types of Greatest Conservation Need (CTGCN), which are habitats and related fish and wildlife that are in greatest need of conservation throughout

Montana. The SWAP is the Montana's primary guiding document for nongame wildlife conservation in the state, so numbers of fish and wildlife species, and their habitats, that are potentially affected by the proposed action and are therefore under consideration in this Impacts Analysis, are reflective of the 2015 SWAP.

In 2022, biologists with FWP and the Montana Natural Heritage Program (MTNHP) conducted a literature review and expert analysis on the impacts of beaver activity on SGCN in Montana (Ritter et al. 2023). The results of this analysis, summarized in Table 5, reveal that beaver activity can be a significant benefit to the majority of terrestrial SGCN in the state. While aquatic SGCN are much more complicated in terms of the effects of beaver activity on their habitats, in the right situations there are substantial benefits to aquatic SGCN as well. It is important to note that beaver activity was not assessed to be entirely negative for any SGCN in Montana.

Table 5. Overview of the impacts of beaver activity on SGCN in Montana based on an analysis included in Ritter et al. (2023).

SGCN	Total SGCN	SGCN that overlap with beavers	Positive effects of beaver activity	Negative effects of beaver activity	Positive or negative effects depending on context
Terrestrial	106	62	53	0	9
Aquatic	23	11	0	0	6*
Total	**128**	**73**	**53**	**0**	**15**

*For five aquatic SGCN, there was too little information on the effects of beaver activity on the species to classify impacts.

Montana is home to a wide range of game species and furbearers that occupy both aquatic and terrestrial realms. Terrestrial game animals include bighorn sheep (*Ovis canadensis*), bison (*Bos bison*), elk (*Cervus canadensis*), moose (*Alces alces*), mountain goats (*Oreamnos americanus*), mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), sandhill cranes (*Antigone canadensis*), white-tailed deer (*Odocoileus virginianus*), wild turkeys (*Meleagris gallopavo*), a wide variety of waterfowl, and various grouse species. Terrestrial carnivores that are also considered game animals include black bears (*Ursus americanus*) and mountain lions (*Puma concolor*). Wolves (*Canis lupus*) are a terrestrial carnivore that are classified as Species in Need of Management in Montana. Furbearers in the state include beavers (*Castor canadensis*), bobcats (*Lynx rufus*), Canada lynx (*Lynx canadensis*), fishers (*Pekania pennanti*), martens (*Martes americana*), mink (*Neogale vison*), muskrats (*Ondatra zibethicus*), otters (*Lontra canadensis*), swift foxes (*Vulpes velox*), and wolverines (*Gulo gulo*). Aquatic game species include many species that are not native to Montana yet represent important species pursued by anglers. Non-native aquatic game species include black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), chinook salmon (*Oncorhynchus tshawytscha*), golden trout (*Oncorhynchus mykiss aguabonita*), green sunfish (*Lepomis cyanellus*), kokanee (*Oncorhynchus nerka*), lake trout (*Salvelinus namaycush*), northern pike (*Esox lucius*), rainbow trout (*Oncorhynchus mykiss*), tiger muskellunge (*Esox masquinongy x lucius*), walleye (*Sander vitreus*), several catfish species (*Ictaluridae* spp.), yellow perch (*Perca flavescens*), largemouth bass (*Micropterus nigricans*), smallmouth bass (*Micropterus dolomieu*), pumpkinseed (*Lepomis gibbosus*), rock bass (*Ambloplites rupestris*), and white crappie (*Pomoxis annularis*).

Not all these game animals have the potential to overlap with beaver-modified habitats. Terrestrial game species that do overlap with beaver habitat largely benefit from beaver activity, with some benefitting substantially or even not being present in an area without beaver activity (e.g., moose, waterfowl, muskrats, mink, otters, and some grouse species). Aquatic species have more complex

interactions with beaver activity where some species can benefit and some can be negatively impacted depending on the context under consideration (Ritter et al. 2023).

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to terrestrial, avian, and aquatic life and habitats would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

i. Fish

Montana has 102 species of fish which occupy aquatic habitats ranging from tiny mountain streams to vast prairie reservoirs. Of the 102 fish species, 23 are considered SGCN in the 2015 SWAP (MFWP 2015). There are three fish species that are designated as Threatened or Endangered under the Endangered Species Act (ESA): bull trout (*Salvelinus confluentus*), pallid sturgeon (*Scaphirhynchus albus*), and white sturgeon (*Acipenser transmontanus*).

Of the 102 fish species in the state, only a subset of species has the potential to be directly affected by the proposed action (Table 5). This is because the scope of the proposed action is limited to perennial streams with suitable habitat conditions for beaver occupancy, and many Montana fish species do not inhabit these types of streams. Of the 23 fish species that are considered SGCN in the SWAP, 14 have the potential to be affected by the proposed action (Appendix A). One fish species that has the potential to be impacted by the proposed action is listed as threatened under the ESA (i.e., bull trout) (Appendix A).

ii. Birds

Montana has 459 species of birds that have been confirmed in the state, though this number includes many species who only occasionally show up in the state along migration routes. Montana's birds occupy a wide range of habitats from alpine tundra to prairie badlands, and not all of them are dependent on riparian areas that may be affected by beaver activity. Of the 459 bird species, 66 are considered SGCN by the SWAP. There are three bird species that are designated as Threatened or Endangered under the ESA: piping plover (*Charadrius melodus*), least tern (*Sternula antillarum*), and whooping crane (*Grus americana*) (Appendix A).

Of the 459 bird species in the state, only a subset of species has the potential to be directly affected by the proposed action. This is because the scope of the proposed action is limited to perennial streams with suitable habitat conditions for beaver occupancy, and many Montana bird species do not rely on these types of streams. Of the 66 bird species that are considered SGCN in the SWAP, 37 have the potential to be affected by the proposed action (Appendix A). None of the bird species in Montana that are listed under the ESA have the potential to be significantly affected by beaver activity.

iii. Mammals

Montana has 115 mammal species that have been confirmed in the state. Montana's mammals occupy a wide range of habitats from alpine tundra to prairie badlands, and not all of them are dependent on riparian areas that may be affected by beaver activity. Of the 115 mammal species, 26 are considered SGCN by the SWAP. There are five mammal species that are designated as Threatened or Endangered under the ESA: Canada lynx, grizzly bear (*Ursus arctos horribilis*), wolverine, black-footed ferret (*Mustela nigripes*), northern long-eared bat (*Myotis septentrionalis*).

Of the 115 mammal species in the state, only a subset of species has the potential to be directly affected by the proposed action. This is because the scope of the proposed action is limited to perennial streams with suitable habitat conditions for beaver occupancy, and many Montana mammal species do not rely on these types of streams. Of the 26 mammal species that are considered SGCN in the SWAP, 15 have the potential to be affected by the proposed action (Appendix A). Four mammal species in Montana that are listed under the ESA have the potential to be affected by beaver activity (i.e., Canada lynx, grizzly bear, wolverine, and northern myotis) (Appendix A).

iv. Reptiles

Montana has 20 species of reptiles that have been confirmed in the state. Montana's reptiles occupy a wide range of habitats from high-mountain basins to prairie badlands, and not all of them are dependent on riparian areas that may be affected by beaver activity. Of the 20 reptile species, eight are considered SGCN by the SWAP. There are no reptile species that are designated as Threatened or Endangered under the ESA in Montana.

Of the 20 reptile species in the state, only a subset of species has the potential to be directly affected by the proposed action. This is because the scope of the proposed action is limited to perennial streams with suitable habitat conditions for beaver occupancy, and many Montana reptile species do not rely on these types of streams. Of the eight reptile species that are considered SGCN in the SWAP, four have the potential to be affected by the proposed action (Appendix A).

v. Amphibians

Montana has 15 species of amphibians that have been confirmed in the state. Montana's amphibians occupy a wide range of habitats from high-mountain streams and lakes to temporary prairie pothole wetlands, and not all of them are dependent on riparian areas that may be affected by beaver activity. Of the 15 amphibian species, five are considered SGCN in the SWAP. There are no amphibian species that are designated as Threatened or Endangered under the ESA in Montana.

Of the 15 amphibian species in the state, only a subset of species has the potential to be directly affected by the proposed action. This is because the scope of the proposed action is limited to perennial streams with suitable habitat conditions for beaver occupancy, and many Montana amphibian species do not rely on these types of streams. Of the five amphibian species that are considered SGCN in the SWAP, four have the potential to be affected by the proposed action (Appendix A).

vi. Invertebrates

Although there are thousands of invertebrate species in Montana, we know relatively little about most of these species, and invertebrates were largely not included in the SWAP due to this lack of knowledge. Therefore, only one invertebrate species was included in the SWAP as an SGCN, the western pearlshell mussel. The western pearlshell mussel has the potential to be affected by beaver activity. (Appendix A).

Direct Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to minor, short-term, direct impacts to terrestrial, avian, and aquatic life and habitats in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to minor, short-term, direct impacts to terrestrial, avian, and aquatic life and habitats in Montana.

Most of the more substantial impacts of beaver transplants on terrestrial, avian, and aquatic life and habitats would occur as secondary impacts as beavers build up their infrastructure and harvest vegetation at or near the release sites.

Overall, the proposed action would allow for beavers to be used as a method to improve habitat quality and quantity for a wide variety of aquatic and terrestrial wildlife species. This would provide FWP staff and their partners an important "tool in the toolbelt" for addressing at-risk species and their habitats and for relieving human-wildlife conflicts. Establishment and implementation of the MBTP would therefore improve FWP's ability to carry out its mission on multiple fronts (e.g., nongame, game, fisheries, recreation, etc.).

Where beavers are captured for transplant, beaver activity would cease or be reduced, though this effect may only be temporary as settlement in a location often indicates suitable habitat conditions and the area may be re-occupied later. In beaver-human conflict situations, removal of beavers would be beneficial to humans as the damage to infrastructure caused by beavers would be reduced or eliminated. However, in both conflict and non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the immediate area around the capture site. Stipulations as to when and where beavers can be captured, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would reduce the probability of removing potentially beneficial beavers from a given site.

Where beavers are released, dam-building, vegetation harvest, and tunneling can cause significant impacts to the stream channel, riparian area, and floodplain that can affect terrestrial, avian, and aquatic life and habitats. These potentially significant impacts are the reason the project is being proposed; Beavers can cause major changes to the form and function of streams which can lead to substantial benefits to water storage, wildlife habitat, and riparian health. However, these significant changes come about through time as beavers build up their colony infrastructure, and therefore are best described as secondary impacts.

Direct impacts to terrestrial, avian, and aquatic life and habitats are similar across all species groups and are therefore described collectively for each of the five sub-actions under the proposed action:

Live-capture and removal of beavers:
Type: Adverse and/or beneficial, depending on the context.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: No impact to minor.

Where beavers are captured for transplant, beaver activity would cease or be reduced. Dams, caches, and other beaver structures that affect terrestrial, avian, and aquatic life and habitats would remain in place at least until the next major flood event, where they may be damaged or completely washed away due to lack of maintenance by beavers (see secondary impacts below). A potential source of prey for bears, mountain lions, coyotes, and other large predators would be immediately removed from the area. However, these large carnivores generally have a varied diet, and there is no evidence that any of these predator species are entirely reliant on beavers in Montana for food.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. The effects of beaver removal would vary by stream and by the plant and animal communities within those streams, with some species, populations, and/or communities benefitting from beaver removal, some being adversely impacted, and some being relatively unaffected (e.g., when conflict beavers are removed before they start to substantially impact their environment). These site-specific impacts are impossible to outline and predict across all perennial streams in Montana, emphasizing the role of regional FWP biologists in evaluating projects and recommending approval/disapproval and/or mitigation actions. Overall, the required analyses within the Transplant Area Authorization Form and the Beaver Transplant Authorization Packet for the area where beavers would be removed would assure that no substantial negative impacts to terrestrial, avian, and aquatic life and habitats would occur.

Construction and maintenance of holding facilities:
Type: Adverse and can be mitigated or no impact, depending on the species.
Extent: Impacting the area of the holding facility and within an approximately 50-foot radius around the holding facility.
Duration: Short-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: No impact to negligible.

Holding facilities for beavers would be located away from stream channels and wetlands to assure that runoff from maintaining the facilities would not have an opportunity to introduce disease-causing agents or AIS to waterbodies that may impact fish, birds, amphibians, and other aquatic life. Thorough review by relevant FWP biologists for every proposed beaver transplant project would assure that transport of disease-causing agents and AIS by beavers would not cross watershed boundaries and would not fall outside what could naturally happen through normal beaver dispersal activities over time. Where bears and other predators/scavengers may be present, holding facilities would be required to be inaccessible to these species so that these species cannot gain access to the beavers or their food and waste. Holding facility requirements would be outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), and all participants in the beaver transplant program would be required to adhere to the rules outlined in this document.

Beaver quarantine and care:
Type: Adverse and can be mitigated or no impact, depending on the species.
Extent: Impacting the area of the holding facility and within an approximately 50-foot radius around the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers are held at the facility.
Severity: No impact to minor.

Beaver quarantine and care facilities would be located far enough from streams and riparian areas that any runoff from cleaning out enclosures would not directly enter any waterbody in the state where it could impact terrestrial or aquatic life. Facilities would be cleaned with disinfectant that would kill most organisms, then the runoff would be exposed to sunlight and ground filtration to remove any potential AIS or disease-causing agents that may have been washed off the beavers' fur or expelled during

defecation. Those wishing to participate in the beaver transplant program would be a required to follow beaver quarantine and care facility standards outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) which would assure that best management practices are being followed. Quarantine and care standards, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would assure that food used to feed beavers, as well as the beavers themselves, would not be available or become an attractant to bears and other predators/scavengers.

Transporting and releasing beavers at the release site:
Type: Adverse and/or beneficial, depending on the context.
Extent: Impacting the area(s) targeted for beaver colonization.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: No impact to minor.

Where beavers are released, no significant, adverse direct impacts to terrestrial, avian, and aquatic life and habitats are anticipated. Beavers may begin harvesting vegetation within 48 hours of being released that could affect cover and food resources for fish and wildlife species, but the amount of vegetation harvest would be small and unlikely to affect more than a few individuals of any given species. Beavers may similarly start building dams and lodges within 48 hours of being released, but any significant impacts due to habitat changes brought about by beaver activity would occur later in time as the beavers build up infrastructure (i.e., secondary impacts). Released beavers may be predated on by large carnivores at or near the release site. If released beavers immediately move to a new area, there may be conflicts with other beaver colonies, though substantial effects on the local beaver population are unlikely. Consultation with FWP fisheries biologists that would occur for every beaver transplant project would assure that potential disease-causing agents and AIS that may impact fish, amphibians, and other aquatic life are removed from the beavers prior to release. Additionally, required coordination with FWP's fisheries division would assure that transport of disease-causing agents and AIS by beavers would not cross watershed boundaries in a way that would fall outside what could naturally happen through natural beaver dispersal activities over time.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No direct impacts to terrestrial, avian, and aquatic life and habitats are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause significant direct impacts to terrestrial, avian, and aquatic life and habitats at or near the release site(s).

Secondary Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to major, short- and long-term, secondary impacts to terrestrial, avian, and aquatic life and habitats in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short- and long-term, secondary impacts to terrestrial, avian, and aquatic life and habitats in Montana.

Beaver transplants would seek to expand beaver-modified habitats and introduce important stream processes that can lead to restoration of degraded stream channels, riparian areas, and floodplains. These impacts can occur long after beavers are released at a site, as is the goal of transplanting beavers in the first place. The assessment of secondary impacts to terrestrial, avian, and aquatic life and habitats below assumes that beavers would be released at a site (or sites) and then harvest vegetation and build dams, lodges, and food caches. However, transplanted beavers may disperse from the release site(s) and affect areas nearby as well. Therefore, the assessment of secondary impacts will focus on changes to the stream channel, riparian area, and floodplain within and adjacent to a single beaver colony that consists of a series of dams and lodges along a stream channel, with the recognition that multiple colonies in a drainage may result from a single transplant project.

Where beavers are captured for transplant, beaver activity would cease or be reduced, though this effect may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area will likely be re-occupied later. In conflict situations, removal of beavers would be a benefit to humans, as the damage caused by beavers would be reduced or eliminated, but may have adverse or beneficial impacts to terrestrial, avian, and aquatic life and habitats, depending on the context. In non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the immediate area around the capture site. However, stipulations as to when and where beavers can be captured, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would reduce the probability of removing potentially beneficial beavers from an area.

Where beavers are released, dam-building, vegetation harvest, and tunneling can cause significant impacts to the stream channel, riparian area, and floodplain that can affect terrestrial, avian, and aquatic life and habitats. These potentially significant impacts are the reason the project is being proposed; Beavers can cause major changes to the form and function of streams which can lead to major benefits to water storage, wildlife habitat, and riparian health. The Transplant Area Authorization Form and the Beaver Transplant Authorization Packet and associated MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) would act as mitigation factors that would reduce or eliminate the chances for significant, adverse impacts to occur to terrestrial, avian, and aquatic life and habitats.

Secondary impacts to terrestrial, avian, and aquatic life and habitats that are similar across all species groups are outlined first, then impacts that may vary between species groups are outlined separately.

All Species Groups - Secondary Impacts

Live-capture and removal of beavers:
Type: Adverse and/or beneficial, depending on the species or habitat under consideration.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as areas upstream and downstream if the removal of beavers initiates territory shuffling in the

affected population or if degradation of beaver infrastructure initiates geomorphic changes in the stream (e.g., headcuts at abandoned dams).
Duration: Short-term to long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. Dams, caches, and other beaver structures that affect terrestrial, avian, and aquatic life and habitats would remain in place at least until the next major flood event, where they may be damaged or completely washed away due to lack of maintenance by beavers. This could result in a lowering of the water table above the dams and flushing of sediments that have built up behind the dams over time. In conflict situations, this may be a desirable effect for the landowner or land manager. In both conflict and non-conflict situations, these effects could adversely or positively impact terrestrial, avian, and aquatic life and habitats, depending on the species or habitat under consideration. Some dams may remain in place for many years without beaver maintenance while others may collapse within days or weeks. Vegetation growth often accelerates following abandonment of beaver-modified habitats as clipped vegetation resprouts and exposed sediments are colonized by new plants or grow from propagules or seed stock.

Where beaver ponds and instream structures were providing important habitat and microhabitats for fish and wildlife, adverse impacts may occur as the beaver infrastructure degrades. In both conflict and non-conflict situations, these effects could adversely or positively impact terrestrial, avian, and aquatic life and habitats, depending on the species or habitat under consideration. For example, where dams were reducing fish passage, silting in spawning gravels, and/or warming water temperatures, beneficial impacts to fish may occur through beaver removal. Conversely, where beaver ponds were providing critical overwinter habitat to fish, negative impacts to fish may occur due to beaver removal. In some situations, both these positive and negative effects could happen at the same site. This emphasizes the need to defer decision making about the viability of transplant projects to regional FWP biologists. These biologists have the localized knowledge and expertise to evaluate potential impacts of beaver activity at specific sites and provide recommendations on proposed transplant projects to minimize significant, negative impacts to terrestrial, avian, and aquatic life and habitats.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Some adverse impacts may be unavoidable, such as when beaver-created habitats are reduced to relieve a beaver-human conflict situation. Removal of beavers from an area that is not part of a beaver-human conflict would only be permitted if it can be demonstrated that the source population is large and expansive enough that removal of one or several beaver families for transplant is unlikely to cause changes to the stream system that would be classified as significant.

The effects of beaver removal would vary by stream and by the plant and animal communities within those streams, with some plant and animal communities benefitting from beaver removal, some being adversely impacted, and some being relatively unaffected (e.g., when conflict beavers are removed before they establish much infrastructure). Overall, careful evaluation of sites where beavers would be removed, as required by the Transplant Area Authorization Form and the Beaver Transplant Authorization Packet in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would prevent any significant, adverse impacts to terrestrial, avian, and aquatic life and habitats from the proposed action.

Construction and maintenance of holding facilities:

Type: Adverse and can be mitigated or no impact, depending on the species or habitat under consideration.
Extent: Impacting the area of the holding facility and within an approximately 50-foot radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: No impact to negligible.

Holding facilities for beavers would be located away from stream channels and wetlands to make sure runoff from maintaining the facilities would not have an opportunity to introduce disease-causing agents or AIS to waterbodies that may impact fish, amphibians, or other aquatic life. Additionally, required coordination with the FWP fisheries division for every transplant project would assure that transport of disease-causing agents and AIS by beavers would not cross watershed boundaries in a way that would fall outside what could naturally happen through beaver dispersal activities over time. Holding facilities for beavers would be cleaned regularly as required under the protocols in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) to avoid attracting bears, birds, and other predatory or scavenging animals. Some birds, reptiles, and mammals may be displaced during construction activities, but this impact would be negligible as holding facility footprints would be relatively small.

Beaver quarantine and care:
Type: Adverse and can be mitigated or no impact, depending on the species or habitat under consideration.
Extent: Impacting the area of the holding facility and within an approximately 50-foot radius around the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long beavers were being held at the facility.
Severity: No impact to negligible.

Secondary impacts from beaver quarantine and care activities would mirror direct impacts and only last long enough to be considered secondary impacts when beavers remain at the facility for longer time periods. Facilities would be located far enough from streams and riparian areas that any runoff from cleaning out enclosures would not directly enter any waterbody in the state where it could impact fish, amphibians, or other aquatic life. Facilities would be cleaned with disinfectant that would kill most organisms, then the runoff would be exposed to sunlight and ground filtration to remove any potential AIS or disease-causing agents that may have been washed off the beavers' fur or expelled during defecation. Quarantine and care standards, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would assure that food used to feed beavers, as well as the beavers themselves, would not be available or become an attractant to bears, birds, and other scavengers. Those wishing to participate in the beaver transplant program would be a required to follow beaver quarantine and care facility standards outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Transporting and releasing beavers at the release site:
Type: Adverse and/or beneficial, depending on the species or habitat under consideration.

Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term to long-term.
Frequency: Would occur during every beaver transplant and last from weeks to perpetuity depending on project success.
Severity: Negligible to major.

Where beavers are released, secondary impacts to terrestrial, avian, and aquatic life and habitats are anticipated. As outlined in the introductory paragraphs to this section of the Impacts Analysis, long-term changes to the stream channel, riparian area, and floodplain are one of the primary reasons for restoring beavers to areas of their former range. Stream systems suitable for beavers in Montana were historically modified by beaver activity, so transplanting beavers back to these stream systems represents an attempt to restore a native species that can then reestablish historical conditions that were largely beneficial to these stream systems and associated fish and wildlife species. Montana's terrestrial, avian, and aquatic life and habitats evolved with orders of magnitude greater beaver activity in the state than currently exists, so there is a pre-historical, historical, and ecological basis for beavers and terrestrial, avian, and aquatic life and habitats co-existing in streams across Montana as the baseline ecological conditions for these waterbodies.

Negative impacts to fisheries and aquatic life can occur but are mostly associated with at-risk fish communities that exist in heavily altered habitats and/or reduced numbers and range compared to historical conditions. Negative impacts to mammals can occur but are mostly associated with mammal species attempting to travel through heavily altered habitats where riparian corridors can be critical movement routes and beaver activity can make travel more (or less) difficult. Negative impacts to birds and reptiles can occur but are mostly associated with species that prefer habitats not modified by beaver activity. However, these impacts are negligible across bird and reptile species at the population level, and beaver activity tends to increase the abundance and diversity of these species groups across the landscape (Naiman et al. 1988, Russell et al. 1999, Wright et al. 2002, Cooke and Zack 2008). Negative impacts to amphibians can occur but are limited to those species that prefer habitats that are not characteristic of beaver habitats. These species and beavers rarely overlap in Montana. For all other amphibian species, beaver-modified habitats are either neutral or highly beneficial.

The Transplant Area Authorization Form and the Beaver Transplant Authorization Packet in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) are specifically designed to avoid or mitigate situations where beaver activity in an area would cause significant, adverse impacts to terrestrial, avian, and aquatic life and habitats. Transplants would not occur without direct consultation and approval from FWP game, nongame, and fisheries biologists, who would have the authority to deny a transplant project based on potential negative impacts to the resources under their management responsibility.

Monitoring of release sites:
Type: Adverse or no impact, depending on the species.
Extent: Impacting the area targeted for beaver colonization as well as 1–2 miles upstream and downstream of the release site(s).
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact to negligible.

Secondary impacts from activities related to monitoring release sites would mirror direct impacts but would encompass longer-term monitoring as required by the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and as may be desired by restoration practitioners and project partners. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery. Some of these activities may cause repeated disturbances to wildlife using the areas in and around the transplant site(s). However, these impacts would be occasional, short-term, and relatively low impact. Required consultation with FWP biologists would assure that monitoring would not adversely impact any terrestrial, avian, and aquatic life and habitats at or near the release site(s).

Fish-specific Secondary Impacts

The main goal of transplanting beavers to an area is for the beavers to harvest vegetation and build dams, which is the primary agent of change to the aquatic environment from beaver activity. Dam-building may occur within 48 hours of beavers being released at a site and may continue in the area for decades. However, the amount of dam-building, and the subsequent effects of that dam-building, are highly site-specific. In some areas, dam building would be beneficial to fish species and in other areas it may be detrimental or neutral. Appropriate conditions for beavers to be released would be defined by many factors, and one of those would be potential impacts to fish species in the area. Therefore, consideration of potential impacts to fish would be integrated into the planning process for all beaver transplants in Montana.

Beaver impoundments due to dam-building can result in increased water storage, improved late-season flow, floodplain reconnection, increases in available side-channel and backwater habitats, increases in overwinter habitat, and increases in habitat complexity. In certain situations, however, beaver activity may negatively impact fisheries and aquatic habitats through increased water temperatures, silting in of spawning gravels, blocked or hindered fish passage, and removal of streamside vegetation. Regional FWP biologists and their colleagues are the best source of knowledge across Montana when it comes to these site-specific impacts, and one of the key parts of the proposed action is early and often coordination with regional biologists for every beaver transplant project to prevent significant, adverse impacts to terrestrial, avian, and aquatic life and habitats.

The amount and duration of water in a stream directly affects aquatic species through stream temperature, water quality, habitat availability, and connectivity. Increased water quantity is associated with stream temperature reduction, higher oxygen content, increased opportunities for fish movement, and access to additional habitat features through increased wetted widths and greater channel complexity. Streams that are wetted for longer periods of time typically are desirable for growth and survival, especially when it comes to gravel-bottom spawning areas that require water during egg incubation and hatching.

If a beaver colony is established in a hydrologic gaining reach, there may be a benefit to streamflow and water storage. If a beaver colony is established in a hydrologic losing reach, water may move from the stream into groundwater and not return to the stream until a downstream location, leading to negative impacts to aquatic connectivity even if there is an overall water storage benefit. The effects of beaver impoundments on stream temperature are not well understood and may depend on many factors, including the amount and kinds of riparian vegetation present, interactions with hyporheic flow

exchanges, and the character of beaver impoundments (Weber et al. 2017; Majerova et al. 2015, 2020, Munir and Westbrook 2021, Roper 2022). Monitoring associated with beaver transplant projects would be a critical component of better understanding the effects of beaver activity on stream temperatures. If uncertainty around impacts on stream temperature are of concern to local FWP fisheries biologists, then the project can be recommended as not viable, or mitigation actions could be required for the project to move forward.

Beaver dam impoundments lead to sediment deposition upstream of the structures, which can affect available spawning substrate. In many stream systems, fine sediments collecting upstream of beaver dams can bury gravels, which are required for salmonid species to spawn (Collen and Gibson 2001). Alternatively, deposition of sediment upstream of beaver dams can reduce sediment loading downstream, ultimately supporting additional suitable spawning sites. The likelihood of both scenarios is affected by the frequency of dam breaching, which directly affects sediment storage and transport (Roper 2022).

Beaver dam impoundments create pool habitats, which are beneficial for fish populations that need refuge during low flow periods or over winter (Jakober et al. 1998, Roper 2022). In contrast, other fish populations may have a greater benefit from faster moving water and riffles or to maximize spawning areas. Beaver activity rarely converts an entire stream to beaver-modified habitats, and beaver activity changes over time, so in the vast majority of situations there will be both beaver-modified stream reaches and non-modified stream reaches in the same drainage. This provides both types of aquatic habitats in the same area which helps avoid significant, adverse impacts to fish and other aquatic life.

Beaver dam impoundments can lead to overbank flooding, which may create side channel and backwater microhabitats for young fish to grow. Lateral habitats created along the shallow littoral areas of beaver ponds are typically beneficial to juvenile fish growth and survival (Wathen et al. 2019). The increased habitat complexity can provide additional areas to forage, rest, evade predators, and avoid high streamflow (Bouwes et al. 2016). If juvenile recruitment and growth is a limiting factor in the fishery, beaver activity could be highly beneficial.

In many areas of Montana, vegetation harvest by beavers can be a significant source of woody material input into stream systems, which is an important component of fish habitat (Roper 2022). Large wood in streams can provide resting and overhead cover for fish and is important in creating side channels and other forms of channel complexity, forcing bed scour, and providing food for aquatic invertebrates. In some areas of Montana, beaver foraging and dam/lodge building activities are the primary avenue for wood entering the stream. In stream systems that are lacking structure from woody inputs, beaver activity may be highly beneficial to fish, especially if there are adequate sources of large wood such as mature cottonwood and aspen trees. In areas without a consistent supply of large wood near the stream channel, beavers can create and maintain pools using smaller diameter wood materials (i.e., < 1” diameter). Beavers therefore have the unique ability to create critical aquatic habitats in streams that do not have the capacity to do so without beaver damming activity (Roper 2022).

Habitat connectivity is critical for long-term fish population sustainability. Movement and migration are important for locating new habitats for food, reproduction, shelter, or to escape extreme temperatures or streamflow. Some species require movement in the spring when water is typically higher and beaver dams are less likely to impede movement; others may move in the fall when streamflow is typically

lower and beaver dams are at their most robust state. Fish species have different abilities to swim and leap over barriers, and these abilities also change with factors like permeability, impoundment height and plunge pool depth, streamflow, and body size. Larger fish can typically leap over structures that small fish cannot. Small-bodied fish are likely most successful passing through the gaps or interstitial spaces within a beaver impoundment. In many cases, fish passage may not be a concern. Again, regional FWP biologists are the best source of knowledge for how beaver activity may impact habitat connectivity in an area where a beaver transplant may be proposed.

Fish passage in relation to beaver dams is also highly dependent on the geomorphic state of the stream channel. Beaver dams in streams that are better connected to their floodplains often force overbank flow, which can provide alternative flow pathways that fish can use to pass the dams (Cutting et al. 2018). In incised streams or streams that are naturally laterally confined, beaver dams may not cause overbank flow and can therefore represent partial or full movement barriers (Cutting et al. 2018). Recovery of floodplain connection is often an explicit goal of restoring beavers to an area. Therefore, beaver dams in a degraded stream may be movement barriers when the project is started but can become more passable as the stream recovers. Restoration practitioners, working with their local fisheries biologists, should consider if the fish population can handle shorter term movement barriers in the context of a long-term goal of re-establishing floodplain connection.

Similarly, intact beaver dams change over time as sediment accumulates behind the dams and beavers work on repairing and/or expanding the dams. A newly established beaver dam may have plenty of interstitial spaces for small-bodied fish to pass through the dam, but as sediment fills in those interstitial spaces passage for those same fish may be significantly reduced or cut off completely. Long-term dams that have accumulated large amounts of sediment can also fail from the bottom, whereby a hole is formed at the base of the dam that allows the upstream pond to partially or fully drain without major damage to the channel-spanning aspect of the dam. In these situations, over-dam or over-bank flow that fish may have used to pass the dam may be reduced or cut off, forming a potential movement barrier.

When it comes to fish passage, there is potential in almost every system for movement barrier beaver dams to form. However, beaver damming activity is dynamic, and a movement barrier dam is likely not going to stay a movement barrier for very long. Therefore, considerations around fish passage and beaver dams need to focus on whether the fish population of interest can survive occasional interruptions of their movement, or if the fish population is so threatened that potential movement barriers cannot be tolerated even if they are temporary in nature.

Overall, beaver transplants into perennial streams in areas of beavers' historical range would cause a wide range of secondary impacts to fish species. However, prior to transplanting a beaver, a careful consideration of potential fisheries impacts and close coordination with FWP's fisheries division would occur, and beavers would not be transplanted where significant, adverse impacts to fish would be anticipated. In fact, beaver transplants may be a viable option for removing beavers from streams where they are having negative impacts on conservation populations of fish and other aquatic life. Therefore, the proposed action would overall result in positive or neutral impacts to fish species, other aquatic life, and associated habitats.

Mammal-specific Secondary Impacts

The main goal of transplanting beavers to an area is for the beavers to harvest vegetation and build dams, which is the primary agent of changes to the terrestrial and aquatic environment from beaver activity. Dam-building may occur within 48 hours of beavers being released at a site and may continue in the area for decades. However, the amount of dam-building, and the subsequent effects of that dam-building, are highly site-specific. In some areas, dam building would be beneficial to mammal species and in other areas it may be detrimental or neutral. Appropriate conditions for beavers to be released would be defined by many factors, and one of those would be potential impacts to mammal species in the area. Therefore, consideration of potential impacts to mammals would be integrated into the planning process for all beaver transplants in Montana.

Beaver activity as a result of transplants can result in increased water storage, floodplain reconnection, creation of ponds and floodplain wetlands, sub-irrigation of floodplain vegetation, and increased habitat complexity within the stream channel, riparian area, and floodplain. These effects are likely almost entirely beneficial to mammal species in Montana (Ritter et al. 2023).

The only potential negative impacts of beaver activity on mammals in Montana would occur if beaver activity changes the way some larger mammals move across floodplains. If an area of floodplain is made difficult to cross by beaver activity, mammal species like bears, mountain lions, and wolves may be forced to find other areas to cross, which could lead them closer to human habitations. However, this impact is only theoretical and there are no scientific studies linking increased carnivore-human conflicts to beaver activity. In many areas, beaver dams and beaver-toppled trees form highly used movement routes for species seeking to cross through beaver-mediated wetland complexes.

Overall, beaver transplants into perennial streams in areas of beavers' historical range would cause impacts that are almost entirely beneficial to mammals. The approval process for beaver transplants would require careful consideration of potential impacts to wildlife species in and around the release site, and beavers would not be transplanted into areas where a significant, adverse effect on mammals would be anticipated.

Bird-specific Secondary Impacts

The main goal of transplanting beavers to an area is for the beavers to harvest vegetation and build dams, which is the primary agent of changes to the terrestrial and aquatic environment from beaver activity. Dam-building may occur within 48 hours of beavers being released at a site and may continue in the area for decades. However, the amount of dam-building, and the subsequent effects of that dam-building, are highly site-specific. In some areas, dam building would be beneficial to bird species and in other areas it may be detrimental or neutral. Appropriate conditions for beavers to be released would be defined by many factors, and one of those would be potential impacts to bird species in the area. Therefore, consideration of potential impacts to birds would be integrated into the planning process for all beaver transplants in Montana.

Beaver activity as a result of transplants can result in floodplain reconnection, creation of ponds and floodplain wetlands, sub-irrigation of floodplain vegetation, harvest of preferred vegetation, death of vegetation in impounded areas due to flooding, opening of the streamside canopy favoring early successional plants, and increased habitat complexity within the stream channel, riparian area, and floodplain. These effects are likely almost entirely beneficial to bird species in Montana because beaver

modifications increase habitat heterogeneity at the patch scale (within a single beaver colony) and at the landscape scale (across an entire stream length or drainage) (Naiman et al. 1988, Collen and Gibson 2001, Wright et al. 2002 and 2004, Rosell et al. 2005, Pollock et al. 2014). Increased habitat heterogeneity is associated with higher species diversity and richness due to a wider breadth of ecological niches different species can use. Additionally, the creation of unique habitat types that would not exist without beaver activity (e.g., ponded water, floodplain snags, changes to prey base) allows certain bird species to use habitats along a stream that may otherwise not have been available. Overall, beaver-modified habitats are almost entirely beneficial to bird species in Montana (Ritter et al. 2023), and for some groups of birds, these benefits can be substantial (e.g., waterfowl, shorebirds, riparian songbirds).

The only potential negative secondary impacts of beavers on birds in Montana are in situations where beaver activity causes changes to the streamside and floodplain habitats that are needed by specific bird species. For example, if beavers flood out or harvest a stand of mature cottonwood trees that are used by cavity nesters, great blue herons, or nesting raptors. Similarly, if beavers flood a mountain meadow that is used heavily by owls for hunting it may reduce their prey base in the open areas where those prey are most readily available. However, instances of this type of negative outcome of beaver activity are rare in the types of streams where transplants would take place and are generally not at the scale at which we would expect the negative impacts to affect a bird species at the local or regional population level. Furthermore, beaver activity often favors the expansion of riparian zones and the establishment of riparian vegetation over time, so though there may be shorter-term, negative impacts to bird habitat, the long-term trajectory is most often beneficial to bird habitat.

The approval process for beaver transplants would require careful consideration of potential impacts to wildlife species in and around the release site, and beavers would not be transplanted into areas where a significant, adverse effect on birds would be anticipated. Alternatively, if important bird habitats might be affected then additional stipulations would be put in place (e.g., tree fencing) prior to transplant.

Reptile-specific Secondary Impacts

The main goal of transplanting beavers to an area is for the beavers to harvest vegetation and build dams, which is the primary agent of changes to the terrestrial and aquatic environment from beaver activity. Dam-building may occur within 48 hours of beavers being released at a site and may continue in the area for decades. However, the amount of dam-building, and the subsequent effects of that dam-building, are highly site-specific. In some areas, dam building would be beneficial to reptile species and in other areas it may be neutral, but it is unlikely to be detrimental to reptiles anywhere in the state other than very small and specific sites. Appropriate conditions for beavers to be released would be defined by many factors, and one of those would be potential impacts to reptile species in the area. Therefore, consideration of potential impacts to reptiles would be integrated into the planning process for all beaver transplants in Montana.

Beaver activity as a result of transplants can result in the creation of ponds and floodplain wetlands, death and toppling of streamside trees, and increased habitat complexity within the stream channel, riparian area, and floodplain. These effects are likely almost entirely beneficial to reptile species in Montana because beaver modifications tend to favor resources needed by reptiles that are active in riparian zones. This includes increased production and availability of small fish and all life-stages of amphibians that can make up a substantial portion of the diet for reptiles that are active in riparian zones. Additionally, dead and toppled trees can provide hiding cover and hibernacula for reptiles. The

creation of unique habitat types that would not exist without beaver activity (e.g., ponded water, floodplain snags, changes to prey base) allows certain reptile species to use habitats along a stream that may otherwise not have been suitable. Overall, beaver-modified habitats are almost entirely beneficial to reptile species in Montana.

The only potential negative secondary impacts of beavers on reptiles in Montana are in relatively rare and geographically small instances where flooding due to beaver dams may flood out potential reptile habitat like rocky areas or downed trees. However, instances of this type of negative outcome of beaver activity are rare in the types of streams where transplants would take place and are generally not at the scale at which we would expect the negative impacts to affect a reptile species at the local or regional population level.

The approval process for beaver transplants would require careful consideration of potential impacts to wildlife species in and around the release site, and there are likely no instances where the effects on reptiles would be substantial enough that beavers would not be transplanted into the area.

Amphibian-specific Secondary Impacts

The main goal of transplanting beavers to an area is for the beavers to harvest vegetation and build dams, which is the primary agent of changes to the terrestrial and aquatic environment from beaver activity. Dam-building may occur within 48 hours of beavers being released at a site and may continue in the area for decades. However, the amount of dam-building, and the subsequent effects of that dam-building, are highly site-specific. In most areas, dam building would be highly beneficial to amphibian species while there are relatively few areas where it may be detrimental or neutral. Appropriate conditions for beavers to be released would be defined by many factors, and one of those would be potential impacts to amphibian species in the area. Therefore, consideration of potential impacts to amphibians would be integrated into the planning process for all beaver transplants in Montana.

Beaver activity as a result of transplants can result in floodplain reconnection, creation of ponds and floodplain wetlands, sub-irrigation of floodplain vegetation, harvest of preferred vegetation, death of vegetation in impounded areas due to flooding, and increased habitat complexity within the stream channel, riparian area, and floodplain. These effects are almost entirely beneficial to amphibian species in Montana because beaver modifications increase habitat heterogeneity at the patch scale (within a single beaver colony) and at the landscape scale (across an entire stream length or drainage) (Naiman et al. 1988, Collen and Gibson 2001, Wright et al. 2002 and 2004, Rosell et al. 2005, Pollock et al. 2014). Increased habitat heterogeneity is associated with higher species diversity and richness due to a wider breadth of ecological niches different species can use. Additionally, the creation of unique habitat types that would not exist without beaver activity (e.g., ponded water, floodplain snags, changes to prey base) allows certain amphibian species to use habitats along a stream that may otherwise not have been available.

The only potential negative secondary impacts of beavers on amphibians in Montana are in situations where the amphibian species' habitat requirements are cold, clear, faster moving streams (i.e., Rocky Mountain tailed frogs and Idaho giant salamanders). In these habitats, beavers may shift the habitat conditions to the point that these species may no longer use the stream sections modified by beavers or may be at much lower numbers than in unmodified stream sections. However, both Rocky Mountain tailed frogs and Idaho giant salamanders have plenty of habitat that falls outside of suitable habitat for beavers, so instances of this type of negative outcome of beaver activity are rare and are generally not

at the scale at which we would expect the negative impacts to affect an amphibian species at the local or regional population level.

Amphibians are a group of species who are likely one of the biggest beneficiaries of expanded beaver habitats in Montana that result from beaver transplants. The creation of diverse wetland types with diverse hydroperiods and complex in-stream, riparian, and floodplain habitats heavily favors amphibian species that may overlap with beaver habitat.

Overall, beaver transplants into perennial streams in areas of beavers' historical range would cause impacts that are almost entirely beneficial to amphibians. The approval process for beaver transplants would require careful consideration of potential impacts to wildlife species in and around the release site, and there are likely no situations where beavers would not be transplanted because of potential negative impacts to amphibians.

2. Water Quality, Quantity, and Distribution

Existing Environment/Baseline Conditions (No Action Alternative):

Eligible streams for beaver transplants in Montana would have the appropriate hydrologic, geomorphic, and biological conditions in place for beavers to build dams and lodges and remain in the area long enough to bring about beneficial changes to the stream system. These conditions are outlined in Ritter et al. (2023) and would be used to evaluate and approve or not approve individual beaver transplants through an internal vetting process outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Montana has approximately 59,400 miles of perennial streams across seven major river drainages (Montana Department of Environmental Quality 2021). This includes everything from small mountain springs in the western part of the state to winding prairie streams in the eastern part of the state. While not all these streams have been assessed for their ecological health, it is well known that many stream lengths in areas of beavers' historical range in the state are in a condition that is below their ecological potential due to long-term degradation from a myriad of factors. These factors include, but are not limited to, stream incision and over-widening, direct stream channel manipulations, bank hardening, invasive or otherwise undesirable plant communities, and upslope management (e.g., timber harvest, road building). These sources of degradation directly affect how water moves through these stream systems and subsequently affect the quality, quantity, and distribution of water on the landscape.

Degraded stream systems generally transport water and sediment efficiently, essentially acting as flumes whereby water and sediment flush through the landscape quickly. This leads to minimal water storage from snowmelt and rain events in the stream channel and in adjacent floodplain soils, swales, and hyporheic flow exchanges. Because the water does not pass through wetlands, beaver ponds, and floodplain soils where microbial activity is higher and sediment has a chance to fall out of the water column, water quality is impaired. The widespread loss of beaver damming activity in suitable habitats in Montana has led to decreased landscape water storage which exacerbates the impacts of drought and degrades water quality. Beavers are an essential component of Montana's waterways, and their absence from vast swaths of their former range represents a serious and large-scale negative impact on water resources that affects both wildlife and humans.

The proposed action is to transplant a native species to biologically and socially suitable habitats within their native range. Beaver damming activity is a natural and, in many cases, essential part of the

geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to water quality, quantity, and distribution would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to minor, short-term, direct impacts to water quality, quantity, and distribution in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term, direct impacts to water quality, quantity, and distribution in Montana.

Establishment and implementation of the MBTP would cause some direct impacts to water quality, quantity, and distribution, but most of the more substantial impacts from beaver activity come about over time as beavers build up their infrastructure and can therefore best be described as secondary impacts.

Direct impacts to water quality would come about from activities related to working in the stream channel, flushes of sediment due to passive or active removal of dams at capture sites, and runoff from holding facilities entering nearby waterways. All these impacts are either negligible or can be mitigated.

Direct impacts to water quantity are unlikely during the beaver transplant process and would mostly come about due to passive or active removal of beaver dams at capture sites. This would occur either because the dams degrade due to beavers being removed resulting in lack of maintenance, or because humans remove the dams if the dams themselves were part of the beaver-human conflict situation. Some relatively small amounts of water would be needed during beaver quarantine and care to fill swimming tanks and to clean the facilities between beaver cohorts. All these impacts are short-term and significant adverse impacts can be avoided through mitigation efforts.

Direct impacts to the distribution of water on the landscape are also unlikely, and like those impacts to water quantity, mostly would be due to passive or active removal of beaver dams at capture sites that results in removal or reduction of beaver impoundments. Some minor dam building may occur relatively quickly where beavers are released, but that dam-building would cause negligible effects on water distribution. These direct impacts would be short-term, small in scale, and below the level considered significant.

Specific direct impacts to water quality, quantity, and distribution include:

Live-capture and removal of beavers:
Type: Adverse and/or beneficial, depending on the context.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distance downstream which would be dependent on how far impacts from beaver removal spread in a stream system.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.

Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. However, this effect may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area will likely be re-occupied later. In conflict situations, removal of beavers would be a benefit to humans as the damage caused by beavers would be reduced or eliminated. Adverse and beneficial impacts to water quality, quantity, and distribution could occur in conflict situations, depending on the context and the perspective of those involved. In non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the immediate area around the capture site. However, stipulations as to when and where beavers can be captured, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would reduce the probability of removing potentially beneficial beavers from a given site.

Where beavers are removed, dams that impound water may remain in place at least until the next major flood event, where they may be damaged or completely washed away due to lack of maintenance by beavers. Alternatively, dams may be removed alongside beavers if needed to relieve a conflict issue. Dam removals or degradation could result in a lowering of the water table above the dams and flushing of water and sediments that have built up behind the dams over time. Water quality downstream of the capture site could be temporarily impaired as fine sediments are flushed downstream. Water that was being stored behind the dams would be carried downstream and the stream channel would experience a short period of re-arrangement before finding a new equilibrium state. This would therefore be a one-off impact, and the beaver ponds would be unlikely to become a longer-term source of suspended fine sediments in the stream. Water that was being stored in floodplain soils and other flow pathways in the floodplain, dependent on the high-water table created by the beaver dams, would also be reduced. As the stream reconfigures back into a non-beaver-modified channel, it would likely return to a single-thread channel and the overall area inundated by water would be reduced.

Beavers would only be removed from areas under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches, and impacts would depend on the context (i.e., removal due to beaver-human conflict vs. removal from large and expansive beaver populations). Potentially significant, albeit short-term, adverse impacts to water quality, quantity, and distribution would only occur when beavers are removed from an area to relieve damage issues related to flooding and would therefore be a beneficial impact from the perspective of those experiencing the flooding issues. Direct impacts to water quality, quantity, and distribution would be far less likely in non-conflict situations because of restrictions on the situations where beavers can be removed, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would mitigate potential negative impacts of removing beavers from an area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would cause a level of dam degradation or destruction that would lead to significant, adverse impacts to water quality, quantity, and distribution.

The effects of beaver removal would vary by stream and by the unique hydrologic and geomorphic features of those streams. The guidelines and stipulations laid out in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) assure that careful evaluation of sites where beavers would be removed would occur prior to any transplant project, including consideration of potential direct impacts to water quality, quantity, and distribution.

Construction and maintenance of holding facilities:
Type: Adverse but can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.

Duration: Short-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Holding facilities for beavers would be located away from stream channels and wetlands where runoff from maintaining the facilities would not have an opportunity to impact water quality. Additionally, best management practices would be employed during construction activities to make sure no runoff from the construction site can impact water quality. Beaver holding facilities require use of water resources to repeatedly fill swimming tanks for the beavers and to clean out the facilities between beaver cohorts. However, these water resources would be negligible amounts that would not significantly impact water quantity or distribution in the areas where facilities are constructed.

Beaver quarantine and care:
Type: No impact.
Extent: The area around the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

Beaver quarantine and care facilities would be located far enough from streams and riparian areas that any runoff from cleaning out enclosures would not directly enter any waterbody in the state where it could impact water quality, quantity, and distribution. Facilities would be cleaned with disinfectant that would kill most organisms, then the runoff would be exposed to sunlight and ground filtration to remove any potential AIS or disease-causing agents that may have been washed off the beavers' fur or expelled during defecation. Those wishing to participate in the beaver transplant program would be a required to follow beaver quarantine and care facility standards outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Transporting and releasing beavers at the release site:
Type: Adverse and can be mitigated or beneficial, depending on the context.
Extent: Impacting the area targeted for beaver colonization.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: No impact to minor.

Beaver dam-building, vegetation harvest, and tunneling can cause significant impacts to the way water moves through the stream channel, riparian area, and floodplain. These potentially significant impacts are one of the main reasons a beaver transplant project would be proposed; Beavers can cause substantial changes to the form and function of streams which can lead to major benefits to water storage, water quality, wildlife habitat, and riparian health. However, these impacts come about through time as beavers build up their colony infrastructure, and therefore are best described as secondary impacts.

Direct impacts to water quality, quantity, and distribution from this aspect of beaver transplants would mostly come about through initial dam building and vegetation harvest by the released beavers. These activities could increase water turbidity where the beavers are active and for variable distances

downstream depending on the characteristics of the stream system. Beavers may start building dams relatively quickly after release, but substantial water storage behind dams and subsequent re-distribution of water would likely come as secondary impacts as the beavers build up their infrastructure.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No direct impacts to water quality, quantity, and distribution are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to water quality, quantity, and distribution at or near the release site(s).

Secondary Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to major, short-term and long-term, secondary impacts to water quality, quantity, and distribution in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term and long-term, secondary impacts to water quality, quantity, and distribution in Montana.

Transplanting beavers to suitable areas of their former range would cause secondary impacts to water quality, quantity, and distribution. The magnitude and direction of these impacts depend on the specific hydrologic, geomorphic, and biological components of the site where beaver damming activity is taking place. For example, beaver dams tend to increase water quantity in a stream system when they build dams in hydrologically gaining stream reaches, whereas beaver dams tend to push water into groundwater reserves in hydrologically losing reaches, potentially reducing instream flows but benefiting groundwater resources. Additionally, areas with more porous soils and substrates tend to soak up more water from beaver impoundments while areas with clay-like soils may not see as much of a water storage benefit. As with all aspects of beaver transplant site selection, careful consideration must be made following the rules, guidelines, and recommendations in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023), and site-specific evaluations by regional FWP staff would assure that no significant negative impacts to water resources would occur.

Adverse, secondary impacts to water quality could include increased water turbidity in areas where beavers are removed as well as areas where they are active, though dam-building activity often reduces turbidity once beavers get established in an area. Continued human activity at release sites and at conflict management sites can also cause temporary but repeated increases in turbidity as people work in the stream channel. Beavers can also be vectors for diseases like tularemia and giardia. Though they

are often not the original source of these diseases, beavers can act as amplifying hosts, potentially making the diseases more prevalent in streams where they have established colonies (Friend 2006, Tsui et al. 2018). Adverse, secondary impacts to water quantity and distribution could include prolonging water resources later into the year which could reduce the amount of water users are used to getting prior to the dry season, re-routing water away from areas where it is needed by humans, causing flooding-related damage to human infrastructure, and potentially pushing water out of stream channels and into groundwater where it may be less accessible to aquatic life and users of surface water (e.g., irrigation withdrawals from stream channels). Most of these adverse impacts can be mitigated by careful site selection for beaver transplants and through beaver-human conflict resolution efforts.

The beneficial aspects of beavers on the landscape for water quality, quantity, and distribution is one of the primary reasons the MBTP is being proposed, to reap the benefits of beavers to humans and Montana's fish and wildlife species and their habitats. Beneficial secondary impacts to water quality could include reduced turbidity due to impounded water behind dams allowing sediment to settle out of the water column, increases in hyporheic flow exchanges and groundwater exchanges that can lower water temperatures and reduce contaminants, creation of wetland complexes that force water through flow pathways where it can interact with microorganisms that help remove contaminants, and restoration of active floodplains and their innate ability to improve water quality through a myriad of natural processes.

Beneficial secondary impacts to water quantity and distribution include increased landscape-scale water storage as beaver dams and associated activities spread stream waters out in the larger floodplain and soak the valley bottom with water, allowing the water to be released more slowly throughout the year while benefitting plants and animals around the areas where the water is slowed down by beaver activity. Beaver activity can also restore degraded stream channels and floodplains, which have their own innate abilities to store water and distribute it across a larger area which includes a greater diversity of flow pathways through the valley bottom.

The most urgent needs for expanded beaver activity in Montana's perennial streams is to bolster water resources from snowmelt and rain events. Despite the specifics of various locations where beavers may be captured from or transplanted to, the overall goal of transplanting beavers is to slow the movement of water across the landscape, allowing that water to soak into floodplains and be released slower throughout the year. Anywhere where beaver dams can interrupt water's movement, this effect will be realized to some extent, and in some areas this effect can represent a substantial benefit to downstream water users, both humans and wildlife.

By avoiding areas where beavers are likely to come into conflict with humans, and by carefully selecting sites based on the range of criteria outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and Ritter et al. (2023), significant negative impacts to water quality, quantity, and distribution can be avoided, while significant benefits to these resources can be realized. The approval process for beaver transplants would require careful consideration of potential impacts to water resources in and around the release site(s), and a transplant would not be approved if significant negative impacts to water resources are anticipated. If unforeseen impacts do occur, beavers could be removed from that site and transplanted elsewhere or could be lethally removed.

Live-capture and removal of beavers:
Type: Adverse and/or beneficial, depending on the context.

Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distance downstream which would be dependent on how far impacts from beaver removal spread in a stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. However, this effect may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area will likely be re-occupied later. In conflict situations, removal of beavers would be a benefit to humans as the damage caused by beavers would be reduced or eliminated. Adverse and beneficial secondary impacts to water quality, quantity, and distribution could occur in conflict situations, depending on the context and the perspective of those involved. In non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the immediate area around the capture site. However, stipulations as to when and where beavers can be captured, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would reduce the probability of removing potentially beneficial beavers from a given site.

Where beavers are removed, dams that impound water may remain in place at least until the next major flood event, where they may be damaged or completely washed away due to lack of maintenance by beavers. This could result in a lowering of the water table above the dams and flushing of water and sediments that have built up behind the dams over time. This may reduce water storage at the site in the long-term. Water quality downstream of the capture site could be temporarily impaired as fine sediments are flushed downstream. Water that was being stored behind the dams would be carried downstream and the stream channel would experience a short period of re-arrangement before finding a new equilibrium state. This would therefore be a one-off impact, and the beaver ponds would be unlikely to become a long-term source of suspended fine sediments in the stream. Water that was being stored in floodplain soils and other flow pathways in the floodplains, dependent on the high-water table created by the beaver dams, would also be reduced in the long-term. As the stream reconfigures back into a non-beaver-modified channel, it would likely return to a single-thread channel and the overall area inundated by water would be greatly reduced.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Potentially significant, albeit short-term, adverse secondary impacts to water quality, quantity, and distribution would only occur when beavers are removed from an area to relieve damage issues related to flooding, and would therefore be a beneficial impact from the perspective of those experiencing the flooding issues. Secondary impacts to water quality, quantity, and distribution would be far less likely in non-conflict situations because of restrictions on the situations where beavers can be removed, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), that would mitigate potential negative impacts from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead to a level of dam degradation or destruction that would lead to significant, adverse secondary impacts to water quality, quantity, and distribution.

The effects of beaver removal would vary by stream and by the unique hydrologic and geomorphic features of those streams. The guidelines and stipulations laid out in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023) assure that careful

evaluation of sites where beavers would be removed would occur prior to any transplant project, including consideration of potential secondary impacts to water quality, quantity, and distribution.

Construction and maintenance of holding facilities:
Type: Adverse but can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Holding facilities for beavers would be located away from stream channels and wetlands where runoff from maintaining the facilities would not have an opportunity to introduce disease-causing agents or AIS to waterbodies that may impact water quality. Additionally, best management practices would be employed during construction activities to make sure no runoff from the construction site can impact water quality. Beaver holding facilities require use of water resources to repeatedly fill swimming tanks for the beavers and to clean out the facilities between beaver cohorts. However, these water resources would be negligible amounts that would not significantly impact water quantity or distribution in the areas where facilities are constructed.

Beaver quarantine and care:
Type: No impact.
Extent: The area around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

Beaver quarantine and care facilities would be located far enough from streams and riparian areas that any runoff from cleaning out enclosures would not directly enter any waterbody in the state where it could impact water quality, quantity, and distribution. Facilities would be cleaned with disinfectant that would kill most organisms, then the runoff would be exposed to sunlight and ground filtration to remove any potential AIS or disease-causing agents that may have been washed off the beavers' fur or expelled during defecation. Those wishing to participate in the beaver transplant program would be a required to follow beaver quarantine and care facility standards outlined in MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant and last from weeks to decades depending on project success.
Severity: Negligible to major.

Beaver dam-building, vegetation harvest, and tunneling can cause significant impacts to the way water moves through the stream channel, riparian area, and floodplain. These potentially significant impacts are one of the main reasons a beaver transplant project would be proposed; Beavers can cause substantial changes to the form and function of streams which can lead to major benefits to water storage, water quality, wildlife habitat, and riparian health. These impacts generally come about through time as beavers build up their colony infrastructure, and in some areas and contexts the impacts on water quality, quantity, and distribution can be substantial.

Secondary impacts to water quality, quantity, and distribution from this aspect of beaver transplants would mostly come about through dam building and vegetation harvest by the released beavers. These activities could increase water turbidity where the beavers are active and for variable distances downstream depending on the characteristics of the stream system. Beaver damming activity can lead to substantial water storage behind dams and subsequent re-distribution of water through various surface and subsurface flow pathways through the floodplain. If the manipulation of water by beaver dams does not interfere with irrigation infrastructure, this water storage and floodplain activation is a beneficial impact to both humans and wildlife. Humans get more water during the dry season as beaver dam complexes hold back snow melt and release it slower throughout the year. Fish and wildlife get more water during the dry season when water resources become scarce and water quality degrades due to high temperatures. One of the primary reasons for attempting to restore beavers to areas of their former range is to boost the ability of the landscape to store water, so significant secondary impacts in this aspect of the MBTP are highly desired when they can be brought about in the right contexts (e.g., without causing beaver-human conflicts).

Adverse secondary impacts to water quality, quantity, and distribution from releasing beavers at a site could come about if beavers leave the area where they are released and settle somewhere nearby where their activities cause conflicts with humans. Beavers can plug culverts, headgates, and irrigation ditches, resulting in adverse impacts to water distribution affecting humans. Beaver conflict resolution is an important part of the proposed MBTP, and requirements under the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) would assure that beavers are not transplanted without outreach to nearby landowners and a plan to mitigate conflicts should they arise.

Adverse secondary impacts can also occur if beavers build dams in hydrologically losing reaches where surface water flow is important to human access to water or to aquatic connectivity for aquatic life. The guidelines in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and Ritter et al. (2023) would help restoration practitioners assess potential release sites and avoid situations where beaver damming activity leads to changes to water movement across the landscape that may negatively impact aquatic and terrestrial life and/or human water users.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No secondary impacts to water quality, quantity, and distribution are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along

stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to water quality, quantity, and distribution at or near the release sites.

3. Geology

Existing Environment/Baseline Conditions (No Action Alternative):
Montana is a large and geologically complex state consisting of everything from towering mountain ranges in the west to mudstone and sandstone formations in the east. Beavers are a native species in Montana, and their damming activities are a natural part of many of Montana's perennial streams. Therefore, any impacts to geology in and around transplant capture and release sites would be consistent with historical conditions and natural processes and would only represent a human-induced expansion of those natural processes in areas where they historically occurred (i.e., areas of beavers' former range in Montana).

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to geology would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct and Secondary Impacts:
No significant direct or secondary impacts to Montana's geology are expected because of the proposed action. There are no significant, direct or secondary impacts anticipated for any of the five sub-actions under the proposed action of approving and implementing the MBTP. Construction and maintenance of holding facilities for beavers would require little to no ground moving and would cover a small footprint on the landscape.

4. Soil Quality, Stability, and Moisture

Existing Environment/Baseline Conditions (No Action Alternative):
Montana's floodplains associated with perennial streams have a wide range of soil types and moisture regimes. Generally, these floodplain areas are characterized by nutrient-rich, organic, relatively moist soils that provide green vegetation for a much larger portion of the year than more upland soils. These conditions are one of the main reasons floodplains throughout Montana have been developed to accommodate agriculture. Where active irrigation still occurs, these soils retain much of that moisture. But in areas without active irrigation, long-term lack of beavers alongside other sources of stream degradation has led to stream incision and over-widening. These issues then lead to lower water tables and simplified stream channels, resulting in drying out of floodplain soils.

Floodplain soils around the state are drier than they were historically when streams were better connected to their floodplains. Additionally, many degraded streams experience increased rates of erosion as simplified, single-thread stream channels that characterize degraded stream systems lack the ability to dissipate stream energy during high-flow events. These degraded streams also often lack wetlands and woody riparian vegetation that hold together stream banks and contribute to sediment deposition in the floodplain.

Beavers are a native species, and their damming activities are a natural part of many of Montana's perennial streams. Beaver dams historically were responsible for maintaining high water tables and for large amounts of nutrient-rich sediments being deposited in floodplains. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to soil quality, stability, and moisture would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to minor, short-term, direct impacts to soil quality, stability, and moisture in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term, direct impacts to soil quality, stability, and moisture in Montana.

Establishment and implementation of the MBTP would cause some direct impacts to soil quality, stability, and moisture, but most of the more substantial impacts from beaver activity come about over time as beavers build up their infrastructure and can therefore best be described as secondary impacts.

Direct impacts to soil quality, stability, and moisture would mostly come about from passive or active removal of beaver dams at capture sites. This would occur either because the dams degraded due to the beavers that would have maintained them being removed, or because humans came in and removed the dams if the dams were part of a beaver-human conflict situation. Removal or degradation of beaver dams could lead to changes in the way sediment is or is not deposited in the floodplain around those sites. Dam removal could also lead to increased erosion above the dams as the water table drops, and potentially temporary increases in erosion downstream if a large flush of water is let loose from the dams. As the water table drops above the dams, soil moisture in the floodplain around the beaver dams would be reduced and may not recover unless more beavers move in, or the stream is restored in some other way. All these potential impacts would be negligible to minor and would mostly be associated with beaver-human conflict situations, whereby removal of the beavers and their damming activity is usually the goal anyway. Stipulations for when and where beavers can be removed for non-conflict situations, as guided by the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would prevent any significant, direct impacts to soil quality, stability, and moisture at those source colonies.

Some soil disturbance and manipulation would occur as part of construction and operation of beaver holding facilities, but these would be negligible impacts occurring in small areas and on relatively poor soils for agriculture or other uses. Best management practices would be used during construction to prevent unnecessary erosion of soils around the sites.

Specific direct impacts to soil quality, stability, and moisture include:

Live-capture and removal of beavers:

Type: Adverse and can be mitigated.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distances upstream and downstream depending on how far from the beaver activity soils are being affected in a given stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. However, dams would likely stay in place until the next flood event unless actively removed by humans. Lack of beavers at the capture site may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area may be re-occupied later. In beaver-human conflict situations, removal of beavers would be a benefit to humans as the damage to infrastructure caused by beavers would be reduced or eliminated, though adverse impacts to soils could still occur. In non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the immediate area around the capture site. However, stipulations as to when and where beavers can be captured, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would reduce the probability of removing potentially beneficial beavers from a given site.

Where beaver dams degrade or are removed immediately after beavers are captured for a transplant project, the water table would lower above the dams as they drain. This would result in diminished soil moisture upstream of and surrounding the dams. As the water is vacated, bare soils would be exposed that may be vulnerable to erosion during rain or high-water events. The stream channel itself may increase its erosive abilities due to lack of dams that would normally slow the water down and spread it across a larger portion of the valley bottom. The stream would experience a short period of re-arrangement before finding a new equilibrium state as vegetation regrows on bare soils and the stream channel finds a new, stable flow pathway.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Potentially significant, albeit short-term, adverse impacts to soil quality, stability, and moisture would only occur when beavers are removed from an area to relieve damage issues related to flooding, and would therefore be a beneficial impact from the perspective of those experiencing the flooding issues. Direct impacts to soil quality, stability, and moisture would be far less likely in non-conflict situations because of restrictions on the situations where beavers can be removed, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), that would mitigate potential negative impacts from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead to a level of dam degradation or destruction that would lead to significant, adverse impacts to soil quality, stability, and moisture.

The effects of beaver removal would vary by stream and by the unique hydrologic and geomorphic setting of those streams. The guidelines and stipulations laid out in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023) assure that careful evaluation of sites where beavers would be removed would occur prior to any transplant project, including consideration of potential direct impacts to soil quality, stability, and moisture.

Construction and maintenance of holding facilities:
Type: Adverse but can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.

Duration: Short-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Holding facilities for beavers would be constructed using as small of a footprint as possible and best management practices would be used during construction to reduce the chances of excessive soil erosion. Holding facilities would be located away from prime agricultural soils. There would be no impacts to soil quality, stability, and moisture from maintenance of these facilities. All wastewater and other waste materials would be discarded in such a way as to not adversely impact soils.

Beaver quarantine and care:
Type: No impact.
Extent: The area around the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

Beaver quarantine and care would not cause any direct impacts to soil quality, stability, and moisture in Montana.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Area targeted for beaver colonization as well as areas upstream and downstream if beavers immediately move on from the release site.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: No impact to minor.

Direct impacts to soil quality, stability, and moisture from this aspect of beaver transplants would mostly come about through initial dam building and vegetation harvest by the released beavers. Where beavers are released, dam-building, vegetation harvest, and tunneling could start within 48 hours, but effects on soils would likely come about over longer time periods as beavers build up their colony infrastructure, and therefore are best described as secondary impacts. Soon after release, beavers may dig bank dens into the banks of streams for shelter, which can cause bank sloughing and the formation of holes adjacent to the stream. Beavers may also start harvesting vegetation which could fall in the stream and start small areas of increased erosion. If the released beavers build any dams immediately, these dams would impound water which could increase soil moisture and reduce erosion in areas upstream and around the dam structures.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.

Severity: No impact.

No direct impacts to soil quality, stability, and moisture are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to soil quality, stability, and moisture at or near the release sites.

Secondary Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to major, short-term and long-term, secondary impacts to soil quality, stability, and moisture in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term and long-term, secondary impacts to soil quality, stability, and moisture in Montana.

Transplanting beavers to suitable areas of their former range would cause secondary impacts to soil quality, stability, and moisture. The magnitude and direction of these impacts are highly variable and depend on the specific hydrologic, geomorphic, and biological components of the site. As with all aspects of beaver transplant site selection, careful consideration must be made following the guidelines and recommendations in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). Regional FWP biologists and their colleagues are the best source of information on site-specific impacts of beaver activity on soil quality, stability, and moisture, which is why their review of proposed projects and ability to recommend non-viability or implementation of mitigation measures is a key component of the proposed action.

Adverse, secondary impacts to soil quality, stability, and moisture could include lowered water tables and increased erosion of bare soils in areas where beaver dams degrade or are actively removed. A lack of beaver damming activity where there once was activity could lead to reductions in fine sediments being deposited in the floodplain which often contribute to soil quality. Floodplain soils would dry out where beaver dams are removed or degrade as the water table drops upstream of and surrounding the dam structures. Some small areas of soils could be adversely impacted where continued human activity occurs such as at release sites, around holding facilities, and at conflict management sites. Most of these adverse impacts can be mitigated by careful site selection for beaver transplants and through beaver-human conflict resolution efforts.

Beneficial secondary impacts to soil quality, stability, and moisture are numerous and are again a major motivating factor for attempting to restore beavers to areas of their former range. Where beavers build dams, a localized raising of the water table can greatly increase soil moisture in the floodplain. This effect is even more dramatic where series of dams are built along a stream, resulting in a higher water table across an entire stream section rather than just around a single dam. Beaver dams also slow down water and push it out onto the larger floodplain, both of which can lead to significant deposition of nutrient-rich, fine sediments in the valley bottom. This can both improve soil quality of existing soils and can create new areas of soil in the valley bottom. Beaver dams, vegetation harvest, and digging activities work to increase the complexity of floodplains, which dissipates flood energy and can help mitigate damaging erosion from high-water events. A higher water table, moving around of woody riparian vegetation clippings, and creation of exposed sediment beds can all contribute to greater rates of

wetland and woody vegetation growth around beaver-modified stream sections. This vegetation growth and re-growth can help hold together floodplain soils and contribute to long-term stream channel, riparian area, and floodplain health.

The beneficial aspects of beavers on the landscape for soil quality, stability, and moisture is one of the primary reasons the MBTP is being proposed, to reap the benefits of beavers to humans and Montana's fish and wildlife species and their habitats. Beaver activity can restore degraded stream channels and floodplains, which have their own innate abilities to capture and store nutrient-rich sediments, prevent excessive bank and bed erosion, and maintain high-quality soils with year-round moisture in floodplains.

Overall, potential secondary impacts of the proposed action on soil quality, stability, and moisture would be short- and long-term, negligible to major, consistent with historical impacts, and almost entirely beneficial. By avoiding areas where beavers are likely to come into conflict with humans, and by carefully selecting sites based on the range of criteria outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023), significant negative impacts to soil quality, stability, and moisture can be avoided, while significant benefits to these resources can be realized. The approval process for beaver transplants would require careful consideration of potential impacts to soil resources in and around the release site(s), and a transplant would not be approved if significant negative impacts to soils are anticipated. If unforeseen impacts do occur, beavers could be removed from that site and transplanted elsewhere or could be lethally removed by a licensed Montana trapper or wildlife control operator.

Specific secondary impacts to soil quality, stability, and moisture include:

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distance upstream and downstream depending on how far from the beaver activity soils are being affected in a given stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. Dams would likely stay in place until the next flood event, at which point they may degrade or blow out entirely. This would cause a localized lowering of the water table around the dam that would dry out floodplain soils. If no new beavers occupy the area, wetland and riparian plants may die or have reduced vigor due to the drier soils. Accumulated sediment behind the beaver dams may stay in place, be partially vacated downstream, or may be fully vacated downstream. The level of sediment flushing depends on many factors including stream gradient, substrate size, breach status of the dam, how long the dam has been in place, and the spacing and arrangement of dams in a dam complex. These flushes of sediment may cause changes in sediment deposition patterns around and downstream of the dam or set of dams.

Lack of beavers at the capture site may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area may be re-occupied later. If new beavers move in and repair dams and lodges relatively quickly, then short-term, negligible secondary impacts to soils at the capture sites would be expected. In conflict situations, removal of beavers would be a benefit as the damage to human infrastructure caused by beavers would be reduced or eliminated. Adverse and

beneficial secondary impacts to soil quality, stability, and moisture could occur in conflict situations, depending on the perspectives of those involved.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Potentially significant, albeit short-term, adverse secondary impacts to soil quality, stability, and moisture would only occur when beavers are removed from an area to relieve damage issues related to flooding, and would therefore be a beneficial impact from the perspective of those experiencing the flooding issues. Secondary impacts to soil quality, stability, and moisture would be far less likely in non-conflict situations because of restrictions on the situations where beavers can be removed, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), that would mitigate potential negative impacts from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead to a level of dam degradation or destruction that would lead to significant, adverse secondary impacts to soil quality, stability, and moisture.

The effects of beaver removal would vary by stream and by the unique hydrologic and geomorphic features of those streams. The guidelines and stipulations laid out in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023) assure that careful evaluation of sites where beavers would be removed would occur prior to any transplant project, including consideration of potential secondary impacts to soil quality, stability, and moisture.

Construction and maintenance of holding facilities:
Type: Adverse but can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Holding facilities for beavers would be constructed using as small of a footprint as possible and best management practices would be used during construction to reduce the chances of excessive soil erosion. Holding facilities would be located away from prime agricultural soils. There would be no impacts to soil quality, stability, and moisture from maintenance of these facilities. All wastewater and other waste materials would be discarded in such a way as to not adversely impact soils.

Beaver quarantine and care:
Type: No impact.
Extent: The area around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

Beaver quarantine and care would not cause any secondary impacts to soil quality, stability, and moisture in Montana. All waste from caring for beavers would be discarded in such a way as to not damage any important soils around the holding facility.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant and last from weeks to decades depending on project success.
Severity: Negligible to major.

When beavers build dams, they raise the water table upstream of the dam which increases the moisture of floodplain soils above the dam. There is often an increase in soil moisture around and downslope of the dam as well as water moves through floodplain soils and hyporheic flow exchanges to either be taken up by riparian plants or to reenter the stream downstream of the dam(s). This is one of the most substantial and motivating impacts of restoring beavers to areas of their former range, to increase the landscape's ability to soak up water and slow its movement. Therefore, although this secondary impact is short- and long-term, minor to major, and consistent with historical impacts, it is almost entirely beneficial.

Beavers may also cause localized disturbance to soils adjacent to the stream channel through bank den and lodge construction as well as the digging of tunnels and surface channels. These activities can cause bank sloughing and the formation of holes adjacent to the stream. These impacts may cause more sediment to enter the stream during digging and construction activities. However, the construction of dams around this type of activity can mitigate downstream impacts by capturing additional sediment behind the dams.

Removal of vegetation by beavers or death of vegetation due to flooding may cause localized changes to soil stability as plant roots die and no longer bind soils together. However, in general the activities of beavers promote substantially more vegetation growth than is lost due to harvest by beavers and flooding. Beavers raise the water table, move clippings of woody riparian vegetation around that can resprout through adventitious root growth, and induce natural disturbances in the stream system that lead to the establishment of new plants. Therefore, in most cases, soil disturbance due to changes to vegetation would be short-term, negligible to minor, and consistent with historical impacts. These changes are almost entirely beneficial in most situations.

Overall, adverse secondary impacts to soil quality, stability, and moisture from transporting and releasing beavers as part of a transplant project are negligible to minor as long as the project is well-designed following the guidelines and stipulations in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). Impacts classified as moderate and major are almost entirely those that are beneficial to humans and to the natural world.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No secondary impacts to soil quality, stability, and moisture are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to soil quality, stability, and moisture at or near the release sites.

5. Vegetation Cover, Quantity, and Quality

Existing Environment/Baseline Conditions (No Action Alternative):
The existing environment consists of perennial streams in Montana with suitable habitat conditions for beaver occupancy. Streams that fit this definition are spread across the state but are more concentrated in the western part of the state. These streams include everything from tiny mountain springs to meandering prairie streams. Most of these types of streams in Montana exist in a degraded state due to historical impacts associated with the fur trade, livestock grazing, water development, and human infrastructure. As a result, riparian zones are constricted compared to pre-European conditions and large portions of floodplains have shifted to upland vegetation types. Where this degradation has not occurred or where the stream system has recovered, streams often have multi-threaded channels and riparian vegetation makes up a substantial portion of the floodplain vegetation cover.

Beavers are a native species, and their damming activities are a natural part of many of Montana's perennial streams. Beavers and beaver dams historically were responsible for substantial effects on floodplain vegetation through harvest, redistribution of clippings, and disturbances associated with beaver activity that promote wetland and riparian vegetation establishment. These disturbances include raising of the water table around dams, deposition of fine sediments behind dams and in the broader floodplain, and introduction of woody material to the stream resulting in erosion and sediment deposition that can promote establishment of riparian plants. Overall, stream systems modified by beaver activity in Montana have greater amounts of wetland and woody riparian vegetation than unmodified stream systems.

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to vegetation cover, quantity, and quality would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to minor, short-term, direct impacts to vegetation cover, quantity, and quality in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to minor, short-term, direct impacts to vegetation cover, quantity, and quality in Montana.

Establishment and implementation of the MBTP would cause some direct impacts to vegetation cover, quantity, and quality, but most of the more substantial impacts from beaver activity come about over time as beavers build up their infrastructure and can therefore best be described as secondary impacts.

Direct impacts to vegetation cover, quantity, and quality would mostly come about from removal of beavers from a site, either for transplant or in response to a beaver-human conflict issue. This action would cease vegetation harvest by beavers at the site from which they were captured. However, removal could also result in passive or active removal of dams at capture sites, which could lower the water table and therefore reduce the vigor of wetland and riparian plants dependent on that higher water table. This would occur either because the dams degrade due to the beavers that would have maintained them being removed, or because humans come in and remove the dams if they were part of a beaver-human conflict situation. Removal or degradation of beaver dams could lead to vegetation regrowth on bare soils exposed due to lowering of the water table and from clippings of woody riparian plants that beavers had deposited around the colony over time. Removal or degradation of beaver dams could lead to vegetation death if riparian plants dry out too much or become more available to native and domestic grazing animals. All these potential impacts would be negligible to minor and would mostly be associated with beaver-human conflict situations, whereby removal of the beavers and their damming activity is usually the goal anyway. Stipulations for when and where beavers can be removed for non-conflict situations, as guided by the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would prevent any significant, direct impacts to vegetation cover, quantity, and quality at those source colonies.

Some disturbance and manipulation to vegetation would occur as part of construction and operation of beaver holding facilities, but these would be negligible impacts occurring in small areas and would likely not impact vegetation important for wildlife or human uses. Best management practices would be used during construction to prevent unnecessary removal or damage to native vegetation.

Specific direct impacts to vegetation cover, quantity, and quality include:

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as variable distances upstream and downstream depending on how far from the beaver activity vegetation is being affected in a given stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. However, dams would likely stay in place until the next flood event unless actively removed by humans. Lack of beavers at the capture site may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area may be re-occupied later. In beaver-human conflict situations, removal of beavers would be a benefit to humans as the damage to trees and infrastructure caused by beavers would be reduced or eliminated, though adverse impacts to vegetation could still occur. In non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the immediate area around the capture site. However, stipulations as to when and where beavers can be captured, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would reduce the probability of removing potentially beneficial beavers from a given site.

Where beavers are removed for a transplant project, vegetation harvest would likely cease immediately. Where beaver dams degrade or are removed immediately after beavers are captured, the water table would lower above the dams as they drain, potentially negatively affecting wetland and riparian plants

that were dependent on that high water table. As the water is vacated, bare soils would be exposed that may be re-colonized by wetland plants but may also be vulnerable to erosion during rain or high-water events. The stream would experience a short period of re-arrangement before finding a new equilibrium state as vegetation regrows on bare soils and the stream channel finds a new, stable flow pathway.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Potentially significant, albeit short-term, adverse impacts to vegetation cover, quantity, and quality would only occur when beavers are removed from an area to relieve damage issues related to flooding, and would therefore be a beneficial impact from the perspective of those experiencing the flooding issues. Direct impacts to vegetation cover, quantity, and quality would be far less likely in non-conflict situations because of restrictions on the situations where beavers can be removed, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), that would mitigate potential negative impacts from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead to a level of dam degradation or destruction that would lead to significant, adverse impacts to vegetation cover, quantity, and quality.

The effects of beaver removal would vary by stream and by the unique hydrologic and geomorphic features of those streams. The guidelines and stipulations laid out in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023) assure that careful evaluation of sites where beavers would be removed would occur prior to any transplant project, including consideration of potential direct impacts to vegetation cover, quantity, and quality.

Construction and maintenance of holding facilities:
Type: Adverse but can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Holding facilities for beavers would be constructed using as small of a footprint as possible and best management practices would be used during construction to reduce the chances of excessive vegetation removal. Holding facilities would be located away from potentially important vegetation for wildlife or human uses. There would be no significant impacts to vegetation cover, quantity, and quality from maintenance of these facilities. All wastewater and other waste materials would be discarded in such a way as to not adversely impact nearby vegetation.

Beaver quarantine and care:
Type: No impact.
Extent: The area around the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

Beaver quarantine and care would not cause any direct impacts to vegetation cover, quantity, and quality in Montana.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Area targeted for beaver colonization as well as areas upstream and downstream if beavers immediately move on from the release site.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: No impact to minor.

Direct impacts to vegetation cover, quantity, and quality from this aspect of beaver transplants would mostly come about through initial dam building and vegetation harvest by the released beavers. Where beavers are released, dam-building and vegetation harvest could start within 48 hours, but significant effects on vegetation would likely come about over longer time periods as beavers build up their colony infrastructure, and therefore are best described as secondary impacts. Soon after release, beavers may begin harvesting nearby vegetation as forage or to start dam construction, but these would be relatively small quantities of vegetation. Any effects on vegetation from the raising of the water table around dams would come about over longer time periods and would therefore be secondary impacts.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No direct impacts to vegetation cover, quantity, and quality are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to vegetation cover, quantity, and quality at or near the release site(s).

Secondary Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to major, short-term and long-term, secondary impacts to vegetation cover, quantity, and quality in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term and long-term, secondary impacts to vegetation cover, quantity, and quality in Montana.

Transplanting beavers to suitable areas of their former range would cause secondary impacts to vegetation cover, quantity, and quality. The magnitude and direction of these impacts are highly variable and depend on the specific hydrologic, geomorphic, and biological components of the site. As with all aspects of beaver transplant site selection, careful consideration must be made following the

rules, guidelines, and recommendations in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). Regional FWP biologists and their colleagues are the best source of information on site-specific impacts of beaver activity on vegetation cover, quantity, and quality, which is why their review of proposed projects and ability to recommend non-viability or implementation of mitigation measures is a key component of the proposed action.

Adverse secondary impacts to vegetation cover, quantity, and quality could include lowered water tables and increased erosion of bare soils in areas where beaver dams degrade or are actively removed. This could result in death of riparian vegetation or reduced vigor due to reduced access to water or undermining of soils the plants are dependent on. Lowering of the water table could also allow grazing animals better access to riparian vegetation, which can lead to significant damage or complete removal of these plants if grazing is not properly managed. Removing the disturbances caused by beavers in an area may lead to reductions in the establishment and growth of new riparian vegetation that may be dependent on erosion and depositional processes for the creation of suitable sediment beds for germination (e.g., willows, cottonwoods). Some small areas of vegetation could be adversely impacted where continued human activity occurs such as at release sites, around holding facilities, and at conflict management sites. Most of these adverse impacts can be mitigated by careful site selection for beaver transplants and through beaver-human conflict resolution efforts.

Beneficial secondary impacts to vegetation cover, quantity, and quality are numerous and are a motivating factor for attempting to restore beavers to areas of their former range. Where beavers build dams, a localized raising of the water table can greatly increase soil moisture in the floodplain leading to increased growth of wetland and riparian vegetation. This effect is even more dramatic where series of dams are built along a stream, resulting in a higher water table across an entire stream section rather than just around a single dam. Beavers also move thousands of woody riparian vegetation clippings around their colonies to build dams, lodges, food caches, and during regular foraging and feeding activities. These clippings often resprout and form new woody plants throughout the area where beavers are active. Beaver damming activity also introduces a beneficial source of disturbance to stream systems, resulting in erosion and depositional processes that promote establishment of woody riparian plants.

The beneficial aspects of beavers on the landscape for vegetation cover, quantity, and quality is one of the primary reasons the MBTP is being proposed, to reap the benefits of beavers to humans and Montana's fish and wildlife species and their habitats. Beaver activity can restore degraded stream channels and floodplains, which have their own innate abilities to create, enhance, and maintain floodplain vegetation over time and space.

Overall, potential secondary impacts of the proposed action on vegetation cover, quantity, and quality would be short- and long-term, negligible to major, consistent with historical impacts, and almost entirely beneficial. By avoiding areas where beavers are likely to come into conflict with humans, and by carefully selecting sites based on the range of criteria outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and Ritter et al. (2023), significant negative impacts to vegetation cover, quantity, and quality can be avoided, while significant benefits to these resources can be realized. The approval process for beaver transplants would require careful consideration of potential impacts to vegetation resources in and around the release site, and a transplant would not be approved if significant negative impacts to vegetation are anticipated. If unforeseen impacts do occur, beavers could be removed from that site and transplanted elsewhere or could be lethally removed by a licensed Montana trapper or wildlife control operator.

Specific secondary impacts vegetation cover, quantity, and quality include:

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distance upstream and downstream depending on how far from the beaver activity vegetation is being affected in a given stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced, including vegetation harvest. Dams would likely stay in place until the next flood event, at which point they may degrade or blow out entirely. This would cause a localized lowering of the water table around the dam that would dry out floodplain soils. If no new beavers occupy the area, wetland and riparian plants may die or have reduced vigor due to the drier soils. Sediment accumulated behind the dams and/or covered with water would be exposed and would eventually be colonized by plants. Sediments that flush downstream from the dams may change sediment deposition patterns and form new sediment beds for riparian plants to establish. Leftover clippings of woody riparian vegetation from beavers may sprout if in contact with water, including potentially substantial sprouting on dam, lodge, and food cache structures.

The extent of all these effects on vegetation around beaver capture sites depends on many factors. If the beavers being captured are not well-established in the area (i.e., newly dispersed beavers in a conflict situation), then secondary effects on vegetation would be short-term, negligible, and consistent with historical impacts. If the beavers are well-established, secondary effects on vegetation may be more significant. However, stipulations around where beavers can be captured from, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), should prevent situations where major changes to beaver-modified habitats at capture sites occur, unless those changes are desired by a landowner experiencing a conflict issue.

Lack of beavers at the capture site may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area may be re-occupied later. If new beavers move in and repair dams and lodges relatively quickly, then short-term, negligible secondary impacts to vegetation at the capture sites would be expected. In conflict situations, removal of beavers would be a benefit as the damage to human infrastructure caused by beavers would be reduced or eliminated. In non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the area around the capture site.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Potentially significant, albeit short-term, adverse secondary impacts to vegetation cover, quantity, and quality would only occur when beavers are removed from an area to relieve damage issues related to flooding, and would therefore be a beneficial impact from the perspective of those experiencing the flooding issues. Secondary impacts to vegetation cover, quantity, and quality would be far less likely in non-conflict situations because of restrictions on the situations where beavers can be removed, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), that would mitigate potential negative impacts from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead

to a level of dam degradation or destruction that would lead to significant, adverse secondary impacts to vegetation cover, quantity, and quality.

The effects of beaver removal would vary by stream and by the unique hydrologic and geomorphic features of those streams. The guidelines and stipulations laid out in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023) assure that careful evaluation of sites where beavers would be removed would occur prior to any transplant project, including consideration of potential secondary impacts to vegetation cover, quantity, and quality.

Construction and maintenance of holding facilities:
Type: Adverse but can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Holding facilities for beavers would be constructed using as small of a footprint as possible and best management practices would be used during construction to reduce the chances of excessive vegetation removal. Holding facilities would be located away from potentially important vegetation for wildlife or human uses. There would be no secondary impacts to vegetation cover, quantity, and quality from maintenance of these facilities. All wastewater and other waste materials would be discarded in such a way as to not adversely impact nearby vegetation.

Beaver quarantine and care:
Type: No impact.
Extent: The area around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

Beaver quarantine and care would not cause any secondary impacts to vegetation cover, quantity, and quality in Montana. All waste from caring for beavers would be discarded in such a way as to not damage any important plants around the holding facility.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant and last from weeks to decades depending on project success.
Severity: Negligible to major.

Beaver selectively cut vegetation within approximately 100 yards of the stream bank along the length of their colony boundaries (Muller-Schwarze 2011). Colony boundaries generally extend 100-200 yards upstream of the uppermost dam in their colony and 100-200 yards downstream of the lowermost dam

in their colony (Ritter 2018). Within this zone around the beaver colony, beavers will harvest woody riparian vegetation for food, construction materials, and to a lesser extent to keep travel pathways open.

Beaver harvest around colonies generally reduces the canopy cover of preferred woody vegetation (i.e., aspen, cottonwood, willow, alder). This effect is especially pronounced in the early stages of colony development as beavers must cut larger amounts of vegetation to build up dams, lodges, and food caches (Muller-Schwarze 2011). As the colony becomes well-established and the beavers switch to structure maintenance, the level of harvest decreases as the beavers must only harvest vegetation for food and minor repairs. Because of this dynamic, canopy cover may be significantly reduced early in the colonization process, but then vegetation establishment and re-growth often catches up and eventually outpaces beaver harvest. This is because preferred woody species for beavers respond to clipping with vigorous sprouting and suckering. When this sprouting and suckering is combined with the higher water table around the colony, clipped, newly established plants, and established plants on the periphery of the colony outside the beavers' feeding radius often grow quickly and vigorously (Muller-Schwarze 2011).

Vegetation cover, quantity, and quality are also affected by dam building rather than direct harvest by beavers. Generally, woody riparian plants that are consistently flooded above the root crown by a beaver impoundment will die within 1-3 years. This can result in a significant reduction in canopy cover in impounded areas. However, the raising of the water table in the floodplain generally offsets these plant deaths by promoting establishment of new plants elsewhere around the colony, either through natural establishment, increased growth of established plants, or sprouting of beaver clippings in the colony area.

All these effects on vegetation are dependent on the characteristics of the beaver dams, stream channel, and floodplain, and there would be variation across sites. Regional FWP biologists and their colleagues are the best source of information on site-specific impacts of beaver activity on vegetation cover, quantity, and quality, which is why their review of proposed projects and ability to recommend non-viability or implementation of mitigation measures is a key component of the proposed action. In general, when beavers are released into appropriate sites for colony establishment and success (Ritter et al. 2023), the overall effects on riparian and floodplain vegetation are positive and beneficial to the stream, riparian area, and floodplain (Muller-Schwarze 2011). One of the primary benefits to be realized from establishing beavers in areas of their former range is to encourage floodplain reconnection and expand the riparian zone. So, the significant impacts to vegetation cover, quantity, and quality are largely a desired secondary impact of beaver transplants.

Removal of vegetation by beavers or death of vegetation due to flooding may cause localized changes to soil stability as plant roots die and no longer bind soils together. However, in general the activities of beavers promote substantially more vegetation growth than is lost due to harvest by beavers and flooding. Beavers raise the water table, move clippings of woody riparian vegetation around that can resprout through adventitious root growth, and induce natural disturbances in the stream system that lead to the establishment of new plants. Therefore, in most cases, soil disturbance due to changes to vegetation would be short-term, negligible to minor, and consistent with historical impacts. These changes are almost entirely beneficial in most situations.

Overall, adverse secondary impacts to vegetation cover, quantity, and quality from transporting and releasing beavers as part of a transplant project are negligible to minor as long as the project is well-designed following the guidelines and stipulations in the MBTP Rules and Guidelines for Restoration

Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). Impacts classified as moderate and major are almost entirely those that are beneficial to humans and to the natural world.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No secondary impacts to vegetation cover, quantity, and quality are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to vegetation cover, quantity, and quality at or near the release sites.

6. Aesthetics

Existing Environment/Baseline Conditions (No Action Alternative):

The existing environment consists of perennial streams in Montana with suitable habitat conditions for beaver occupancy. Streams that fit this definition are spread across the state but are more concentrated in the western part of the state. These streams include everything from tiny mountain springs to meandering prairie streams. Montana's waterways contribute significantly to the aesthetics of the landscape. Photography, scenic views, and wildlife watching are enjoyed by Montana residents and visitors alike and streams, riparian areas, and floodplains contribute significantly to those values. Most streams that were historically beaver habitat in Montana exist in a degraded state, though this long-term impact may not be recognized by many residents and visitors. However, these degraded streams can still subtract from the beauty of the landscape. It is often not until these degraded streams are restored that people recognize the true potential of Montana's streams, riparian areas, and floodplains.

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to aesthetics would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:

No significant adverse, direct impacts to the aesthetics of Montana's perennial streams are expected because of the proposed action. Potential direct impacts of the proposed action on aesthetics would be short-term, negligible, consistent with historical impacts, and largely beneficial.

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on individual perspectives.
Extent: Area encompassed by the territory from which the beavers would be removed.

Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: Negligible.

Where beavers are captured for transplant, beaver activity would cease or be reduced. Dams would likely stay in place until the next flood event, at which point they may degrade or blow out entirely. Dams may also be removed as part of a beaver-human conflict if the dams are causing flooding damage. Whether the dams degrade naturally or are removed, the lowering of the water table could cause areas of bare sediments to be exposed, which could be unappealing to some people. However, these areas would be colonized with plants relatively quickly, so the period of exposed soils would be short-term and small in scale.

Removing beaver activity from an area may be aesthetically unappealing to those that wish to see more beaver activity on the landscape. Where beavers are captured and removed due to a conflict situation, the beaver activity needs to cease to solve the conflict issue, so impacts to aesthetics fall second to the need to solve the conflict issue. Restrictions on when and where beavers can be removed in non-conflict situations, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would mitigate potential negative impacts to aesthetics from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead to a level of dam degradation or destruction that would result in noticeable changes to the aesthetics of the area.

Construction and maintenance of holding facilities:
Type: Adverse and can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Construction and maintenance of holding facilities for beavers would add another building to the landscape as well as activity associated with that building. Holding facilities would necessarily need to be located in areas with minimal disturbance, so they would be out-of-the-way and unnoticed by most people. Additionally, these holding facilities can come in many different forms and levels of complexity, so while some facilities would be more elaborate constructions the size of a small garage, some would be simpler and may just be set up in a backyard only when there are beavers in need of transplant. Either way, holding facilities would be small, drab, and not require excessive maintenance, so there would be negligible impacts to aesthetics in Montana.

Beaver quarantine and care:
Type: No impact.
Extent: Area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Long-term.
Frequency: Would occur during every beaver transplant effort where quarantine is required.
Severity: No impact.

Beaver quarantine and care would not cause any direct impacts to aesthetics in Montana.

Transporting and releasing beavers at the release site:

Type: Adverse or beneficial, depending on individual perspectives.
Extent: Area targeted for beaver colonization as well as areas upstream and downstream if beavers move on from the release site immediately.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: Negligible.

Direct impacts to aesthetics from this aspect of beaver transplants would mostly come about through initial dam building and vegetation harvest by the released beavers. Where beavers are released, dam-building and vegetation harvest could start within 48 hours, but significant effects on the aesthetics of the area would likely come about over longer time periods as beavers build up their colony infrastructure, and therefore are best described as secondary impacts. The level of beaver activity that could be described as direct impacts would likely go unnoticed by most people visiting the area and would be consistent with historical impacts from a common native species.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: Negligible.

Monitoring sites where beavers were released as part of a transplant project would not cause any significant direct impacts to aesthetics in Montana. Game cameras and/or drones used to monitor beaver activity may be unappealing to people, but these impacts would be short-term and infrequent.

Secondary Impacts:

No adverse, secondary impacts on the aesthetics of Montana's perennial streams are expected because of the proposed action. Re-establishing beaver-modified floodplains would largely enhance the aesthetics of affected streams in Montana by returning them back to historical conditions. These historical conditions are characterized by expanded riparian zones and more complex floodplains, which in turn bring in plant, fish, and wildlife species that may not otherwise have been present, enhancing the aesthetic values of the area.

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on individual perspectives.
Extent: Area encompassed by the territory from which the beavers would be removed.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: Negligible to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. Dams would likely stay in place until the next flood event, at which point they may degrade or blow out entirely. Dams may also be removed as part of a beaver-human conflict if the dams are causing flooding damage. Whether the dams degrade naturally or are removed, the lowering of the water table could cause areas of bare sediments to be exposed, which could be unappealing to some people. However, these areas

would be colonized with plants relatively quickly, so the period of exposed soils would be short-term and small in scale.

Removing beaver activity from an area may be aesthetically unappealing to those that wish to see more beavers and beaver-related activity on the landscape. Where beavers are captured and removed due to a conflict situation, the beaver activity needs to cease to solve the conflict issue, so impacts to aesthetics fall second to the need to solve the conflict issue. Restrictions on when and where beavers can be removed in non-conflict situations, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would mitigate potential negative impacts to aesthetics from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead to a level of dam degradation or destruction that would result in noticeable changes to the aesthetics of the area.

Construction and maintenance of holding facilities:
Type: Adverse and can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term, depending on the facility.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Construction and maintenance of holding facilities for beavers would add another building to the landscape as well as activity associated with that building. Holding facilities would necessarily need to be located in areas with minimal disturbance, so they would be out-of-the-way and unnoticed by most people. Additionally, these holding facilities can come in many different forms and levels of complexity, so while some facilities would be more elaborate constructions the size of a small garage, some would be simpler and may just be set up in a backyard only when there are beavers in need of transplant. Either way, holding facilities would be small, drab, and not require excessive maintenance, so there would be negligible secondary impacts to aesthetics in Montana.

Beaver quarantine and care:
Type: No impact.
Extent: Area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Long-term.
Frequency: Would occur during every beave transplant effort where quarantine is required.
Severity: No impact.

Beaver quarantine and care would not cause any secondary impacts to aesthetics in Montana.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on individual perspectives.
Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant and last from weeks to decades depending on project success.
Severity: Negligible to major.

Beavers have the ability to dramatically alter the stream systems in which they are active. These changes may be seen as aesthetically unappealing by some people, but may be seen as highly aesthetically appealing by others. Stipulations as to when and where beavers can be released, as outline in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would assure that beavers are not released into any areas except those that are part of their historical range. Therefore, beaver activity that may be seen as unappealing by some would not occur except in areas where it would have occurred naturally prior to European colonization of North America. Therefore, secondary impacts to aesthetics would be consistent with historical impacts and largely beneficial, at least to those that enjoy seeing beaver-modified streams, riparian areas, and floodplains. It is important to note that many of the more aesthetically pleasing stream systems in Montana that are within the historical range of beavers owe large parts of their appearance and function to beaver activity in those systems over millennia (Muller-Schwarze 2011, Levine and Meyer 2014).

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

Monitoring sites where beavers were released as part of a transplant project would not cause any secondary impacts to aesthetics in Montana.

7. Air Quality

Existing Environment/Baseline Conditions (No Action Alternative):

The existing environment consists of perennial streams in Montana with suitable habitat conditions for beaver occupancy. Streams that fit this definition are spread across the state but are more concentrated in the western part of the state. These streams include everything from tiny mountain springs to meandering prairie streams. Air quality in the state is generally controlled by much larger processes than those that could be attributed to these perennial stream systems. Factors such as bare ground, wind patterns, wildfires (both in-state and out-of-state), climate, industry, and transportation affect air quality in various ways across the state and these effects fluctuate seasonally as well as over longer time periods.

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to air quality would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:

No adverse, direct impacts on air quality are expected because of the proposed action. Capturing and moving beavers, construction of holding facilities, and conflict mitigation work would require the use of

automobiles that would expel exhaust and kick up dust when travelling to and from capture and release sites. Similarly, construction of holding facilities for beavers may also involve some ground-disturbance that could temporarily affect air quality in small areas. Potential direct impacts of the proposed action on air quality would therefore be short-term, negligible, and consistent with historical impacts.

Other than those negligible impacts listed above, there are no significant, direct impacts to air quality anticipated for any of the five sub-actions under the proposed action of approving and implementing the MBTP.

Secondary Impacts:

No adverse, secondary impacts on air quality in Montana are expected because of the proposed action. Potential secondary impacts to air quality from transporting and releasing beavers at the release site would come about as beavers build up their infrastructure and start having a greater impact on water, sediment, and vegetation in the floodplain. In some areas, beaver-modified floodplains can form effective fire breaks due to the high-water table and vigorous riparian vegetation growth (Fairfax and Whittle 2020). Wildfire smoke is one of the biggest sources of reduced air quality in Montana, so returning beavers to areas of their former range can help lessen the impacts of wildfires and subsequent smoke on Montana residents and visitors. Follow-up monitoring of beaver capture and release sites, as well as potential conflict resolution work, would require the use of automobiles that would expel exhaust and kick up dust when travelling. Potential secondary impacts of the proposed action on air quality would therefore be short-term, negligible to minor, consistent with historical impacts, and largely beneficial.

Other than those negligible to minor secondary impacts listed above, there are no significant, secondary impacts to air quality anticipated for any of the five sub-actions under the proposed action of approving and implementing the MBTP.

8. Unique, Endangered, Fragile, or Limited Environmental Resources

Existing Environment/Baseline Conditions (No Action Alternative):

The proposed action would affect streams, riparian areas, and floodplains in perennial streams across Montana where there are suitable habitat conditions for beaver occupancy and would therefore have the potential to impact ecosystem resources associated with those habitats. See Section VII, General Setting of the Affected Environment (statewide), for more detailed information related to the affected existing environment.

Montana is home to 128 vertebrate and invertebrate wildlife species classified by the MTNHP as Species of Greatest Conservation Need (SGCN; MFWP 2015). Montana is also home to 12 vertebrate wildlife species and five invertebrate/plant species that are listed as Threatened or Endangered under the ESA. Impacts analyses for these species are mostly covered under the "Terrestrial, Avian, and Aquatic Life and Habitats" section above, though some more specific potential impacts will be outlined in this section of the Impacts Analysis. Not all the SGCN in Montana use habitats that may be modified by beaver activity. For those that do occur in habitats potentially modified by beavers, potential impacts of beaver activity are mostly beneficial, though in some situations and for some species negative impacts can occur.

Within the project area, there are 11 federally threatened species: Canada lynx, grizzly bear, yellow-billed cuckoo (*Coccyzus americanus*), bull trout (*Salvelinus confluentus*), meltwater lednian stonefly

(*Lednia tumana*), western glacier stonefly (*Zapada glacier*), Spalding's catchfly (*Silene spaldingii*), Ute Ladies'-tresses (*Spiranthes diluvialis*), whitebark pine (*Pinus albicaulis*), red knot (*Calidris canutus*), and piping plover (*Charadrius melodus*). Additionally, there are six species listed as endangered under the Endangered Species Act: whooping crane (*Grus americana*), northern myotis, least tern (*Sternula antillarum*), pallid sturgeon (*Scarphirynchus albus*), white sturgeon (*Acipenser transmontanus*), and black-footed ferret. Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), which are protected by the Bald and Golden Eagle Protection Act, use habitats throughout the proposed project area. The proposed project area may also have important animal habitat such as bat roosting areas (i.e., maternity roosts, hibernacula, bachelor roosts), bird rookeries, and important stopover sights for migrating birds that provide critical resources for their annual migrations. See *Section VIII, General Setting of the Affected Environment (statewide)*, for more detailed information related to the affected existing environment.

In 2022, biologists with FWP and the Montana Natural Heritage Program (MTNHP) conducted a literature review and expert analysis on the impacts of beaver activity on SGCN in Montana (Ritter et al. 2023). The results of this analysis, summarized in Table 5, reveal that beaver activity can be a significant benefit to the majority of terrestrial SGCN in the state. While aquatic SGCN are much more complicated in terms of the effects of beaver activity on their habitats, in the right situations there are substantial benefits to aquatic SGCN as well. It is important to note that beaver activity was not assessed to be entirely negative for any SGCN in Montana.

Under the no-action alternative, the restoration of beavers to areas of their former range would be limited in scope. Therefore, the ability of FWP and its partners to restore some of the most biologically rich habitats in the state would be diminished, and potentially substantial benefits to SGCN and some ESA-listed species would not be realized.

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to unique, endangered, fragile, or limited environmental resources would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to minor, short-term, direct impacts to unique, endangered, fragile, or limited environmental resources in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to minor, short-term, direct impacts to unique, endangered, fragile, or limited environmental resources in Montana.

No significant, adverse, direct impacts on unique, endangered, fragile, or limited environmental resources are expected because of the proposed action.

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on the context.
Extent: Area encompassed by the territory from which the beavers would be removed.

Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: Negligible to moderate.

Potential direct impacts to unique, endangered, fragile, or limited environmental resources from capturing and moving beavers would come about from impacts associated with lack of maintenance on beaver infrastructure at the capture sites. Lack of maintenance could cause draining of beaver ponds; full or partial degradation of dams, lodges, caches, and other beaver infrastructure; and associated lowering of the water table, exposure of bare soils, and potential erosion of deposited sediments behind dams. The rate and intensity of these impacts would vary depending on initial site conditions and the presence of other beavers in the area. For example, if existing beaver infrastructure is located on a low-gradient stream with low stream flow, then the beaver infrastructure is unlikely to catastrophically fail, and the stream will gradually adjust to a new stable state without substantial changes to its form and function. Conversely, if the beaver infrastructure is in a high-energy stream, then impacts from lack of maintenance may be more pronounced, and beaver infrastructure may be washed away relatively quickly. Also, if lots of other beaver colonies are nearby then the vacated territory may be re-occupied quickly, and the existing beaver infrastructure may be maintained by the new set of beavers. In conflict situations, this may require additional beaver captures and/or mechanical removal of beaver infrastructure to solve the conflict issue. In non-conflict situations, beavers would not be removed if there was a potential for substantial negative impacts due to lack of maintenance of beaver infrastructure per the conditions set forth in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Overall, the direct impacts of removing beavers may cause localized changes in wetland and riparian habitats that are unique, endangered, fragile, or limited environmental resources on their own, but also host a wide variety of plant and animal species that may be considered unique, endangered, fragile, or limited environmental resources. Direct impacts to these resources would come from immediate loss of habitat or habitat-related resources if removing beavers from a site causes immediate changes to the habitat. However, many impacts would come later as the habitat goes through successional stages post-beaver, and would therefore best be described as secondary impacts.

The extent of direct effects on unique, endangered, fragile, or limited environmental resources around beaver capture sites depends on many factors that would be different at each capture location. Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Overall, while some potential negative impacts could occur at relatively small scales at localized sites, in general, impacts from removing beavers for transplant would be mitigated by stipulations and guidelines put in place through the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). These documents, and the involvement of regional fisheries and wildlife biologists with every project, would prevent the removal of beavers in areas where their absence would cause significant negative impacts to unique, endangered, fragile, or limited environmental resources, unless that removal was necessary due to a beaver-human conflict issue that could not be resolved without major changes to beaver-modified habitats that are causing the conflict issue.

Setting traps to capture beavers could result in capture or injury to non-target species. Approved traps for beavers would include suitcase-style traps, cage traps, and modified cable snares, all of which have the potential to capture or injure non-target species. In general, careful trap type selection and placement can avoid these non-target captures or can make it so non-target captures can be released relatively unharmed. However, there will always be a potential for non-target captures that are injured

or killed by the traps. It is extremely unlikely that any deaths or injuries from non-target captures would be at a level that would cause significant negative impacts to any populations of a wildlife species in Montana, though a limited number of individuals may be affected.

To mitigate potential negative impacts from non-target captures, those conducting live-trapping operations for beavers would be required to have experience live-trapping beavers or would have been trained by an experienced trapper. All non-target captures would be released as quickly as possible or humanely euthanized if they are severely injured. Of the ESA-listed species in Montana, only the Canada lynx and the grizzly bear have the potential to encounter and be affected by live-traps set for beavers. Neither of these species are likely to be negatively impacted by suitcase-style or cage traps because these traps are small and/or are set within the water. Both of these species could become captured in modified cable snares, but all cable snares for live captures would be required to have breakaway mechanisms. Additionally, snare placement in beaver colonies generally focuses on heavily used pathways by beavers which are generally too small and densely vegetated to be used frequently by Canada lynx or grizzly bears.

Where beavers are live captured for transplant purposes, a potential source of prey for bears, mountain lions, coyotes, and other large predators would be immediately removed from the area. However, these large carnivores generally have a varied diet, and there is no evidence that any of these predator species are entirely reliant on beavers in Montana for food.

Construction and maintenance of holding facilities:
Type: Adverse.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Construction of holding facilities for beavers would cause some ground disturbance and work with machinery that could kick up dust and expel exhaust fumes, but these impacts would affect a small area and be temporary. These impacts would be mitigated by using best management practices when constructing the facilities if they are near any unique, endangered, fragile, or limited environmental resources.

Beaver quarantine and care:
Type: No impact.
Extent: Area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

There are no direct impacts to unique, endangered, fragile, or limited environmental resources anticipated from the proposed action. Beaver quarantine and care would be guided by the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and would therefore have stipulations in place to avoid any byproducts from the holding facility (e.g., waste products, AIS, disease) being released into the environment where they could impact unique, endangered, fragile, or limited environmental resources.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Area targeted for beaver colonization and areas upstream and downstream if beavers move on from the release site immediately.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: Negligible to minor.

Direct impacts to unique, endangered, fragile, or limited environmental resources from this aspect of beaver transplants would mostly come about through initial dam building and vegetation harvest by the released beavers. These activities could impact habitats and habitat features considered unique or fragile and subsequently could impact SGCN and Threatened or Endangered species associated with those habitats and habitat features. Where beavers are released, dam-building and vegetation harvest could start within 48 hours, but potential impacts to unique, endangered, fragile, or limited environmental resources would likely come about over longer time periods as beavers build up their colony infrastructure, and therefore are best described as secondary impacts. Overall, the proposal is to transplant a native species into areas of its former range, so any direct impacts to unique, endangered, fragile, or limited environmental resources would be consistent with historical impacts and largely beneficial.

Monitoring of release sites:
Type: Adverse.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: Negligible.

Potential direct impacts to unique, endangered, fragile, or limited environmental resources from monitoring of beaver release sites would come from minor disturbances to the areas where beavers are released due to the presence of vehicles and humans. This could cause some animals in the area to be temporarily displaced, but this impact is expected to be negligible and would only occur occasionally at the release site(s). A benefit of beaver monitoring could be the detection of other species of interest to FWP on game cameras set up to monitor beaver activity.

Secondary Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to major, short-term and long-term, secondary impacts to unique, endangered, fragile, or limited environmental resources in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term and long-term, secondary impacts to unique, endangered, fragile, or limited environmental resources in Montana.

No significant, adverse, secondary impacts on unique, endangered, fragile, or limited environmental resources in Montana are expected because of the proposed action.

Transplanting beavers to suitable areas of their former range would cause secondary impacts to unique, endangered, fragile, or limited environmental resources, though these impacts would largely be beneficial. The magnitude and direction of these impacts are variable and depend on the specific hydrologic, geomorphic, and biological components of the site(s). Regional FWP biologists and their colleagues are the best source of knowledge across Montana when it comes to these site-specific impacts, and one of the key parts of the proposed action is early and often coordination with regional biologists for every beaver transplant project to prevent significant, adverse impacts to unique, endangered, fragile, or limited environmental resources. As with all aspects of beaver transplant site selection, careful consideration must be made following the guidelines and recommendations in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Secondary impacts to unique, endangered, fragile, or limited environmental resources would mostly come about from major changes to habitats beavers occupy or are removed from. Beavers are ecosystem engineers, so their presence or absence in an area has a significant effect on the form and function of habitat and habitat components in those areas. One of the primary reasons for transplanting beavers is to bring about these changes, which are mostly beneficial to the unique, endangered, fragile, or limited environmental resources being considered in this section of the Impacts Analysis. However, in some specific areas and under some specific circumstances, negative impacts could occur.

Overall, potential secondary impacts of the proposed action on unique, endangered, fragile, or limited environmental resources would be short- and long-term, negligible to major, consistent with historical impacts, and almost entirely beneficial. By avoiding areas where beavers are likely to come into conflict with humans, and by carefully selecting sites based on the range of criteria outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023), significant negative impacts to unique, endangered, fragile, or limited environmental resources can be avoided, while significant benefits to these resources can be realized. The approval process for beaver transplants would require careful consideration of potential impacts to unique, endangered, fragile, or limited environmental resources in and around the release site(s), and a transplant would not be approved if significant negative impacts are anticipated. If unforeseen impacts do occur, beavers could be removed from that site and transplanted elsewhere or could be lethally removed.

Specific secondary impacts to unique, endangered, fragile, or limited environmental resources include:

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distance upstream and downstream.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. Dams would likely stay in place until the next flood event, at which point they may degrade or blow out entirely. This would cause a localized lowering of the water table around the dams. If no new beavers occupy the area, wetland and riparian plants may die or have reduced vigor due to the drier soils. Sediment

accumulated behind the dams and/or covered with water would be exposed and would be colonized by plants. Sediments that flush downstream from the dams may change sediment deposition patterns.

Any SGCN that are dependent on beaver-modified habitats may be adversely impacted by removal of beavers from an area. Similarly, unique, fragile, or limited habitat types that are associated with beaver activity may be negatively impacted by removal of beavers from an area.

The extent of all these effects around beaver capture sites depends on many factors that may be vary depending on the capture location. If the beavers being captured are not well-established in the area (i.e., newly dispersed beavers in a conflict situation), then secondary effects on habitats and associated SGCN would be short-term, negligible, and consistent with historical impacts. If the beavers are well-established, secondary effects on habitats and associated SGCN may be more significant. However, stipulations around where beavers can be captured from, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would prevent situations where major changes to beaver-modified habitats at capture sites occur, unless those changes are desired by a landowner experiencing a conflict situation. Regional FWP biologists would be integral in the evaluation and ultimate approval or disapproval of capture locations for beavers to be transplanted, and their knowledge of site-specific impacts would be a key mitigation measure to prevent adverse impacts to unique, endangered, fragile, or limited environmental resources for every transplant project proposed in Montana.

Lack of beavers at the capture site may only be temporary as settlement in a location by beavers often indicates suitable habitat conditions and the area may be re-occupied later. If new beavers move in and repair dams and lodges relatively quickly, then short-term, negligible secondary impacts to habitats and associated SGCN at the capture sites would be expected. In conflict situations, removal of beavers would be a benefit as the damage to human infrastructure caused by beavers would be reduced or eliminated. In non-conflict situations, removal of beavers could result in lack of beneficial beaver activities in the area around the capture site.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Potentially significant, albeit short-term, adverse secondary impacts to unique, endangered, fragile, or limited environmental resources would only occur when beavers are removed from an area to relieve damage issues related to flooding, and would therefore be a beneficial impact from the perspective of those experiencing the flooding issues. Secondary impacts to unique, endangered, fragile, or limited environmental resources would be far less likely in non-conflict situations because of restrictions on the situations where beavers can be removed, as outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), that would mitigate potential negative impacts from removing beavers from a given area. These requirements are meant to prevent the removal of beavers from non-conflict situations that would lead to a level of dam degradation or destruction that would lead to significant, adverse secondary impacts to unique, endangered, fragile, or limited environmental resources.

The effects of beaver removal would vary by stream and by the unique hydrologic and geomorphic features of those streams. The involvement of local FWP biologists and their colleagues with every beaver transplant project, as well as the guidelines and stipulations laid out in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023) assure that careful evaluation of sites where beavers would be removed would occur prior to any transplant

project, including consideration of potential secondary impacts to unique, endangered, fragile, or limited environmental resources.

Construction and maintenance of holding facilities:
Type: Adverse but can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Holding facilities for beavers would be constructed using as small of a footprint as possible and best management practices would be used during construction to reduce the chances of excessive ground disturbance and associated vegetation removal. Holding facilities would be located away from potentially important areas that may contain unique, endangered, fragile, or limited environmental resources. There would be no impacts to unique, endangered, fragile, or limited environmental resources from maintenance of these facilities. All wastewater and other waste materials would be discarded in such a way as to not adversely impact nearby waterways, vegetation, or other resources.

Beaver quarantine and care:
Type: No impact.
Extent: The area around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

There are no secondary impacts to unique, endangered, fragile, or limited environmental resources anticipated from the proposed action. Beaver quarantine and care would be guided by the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and would therefore have stipulations in place to avoid any byproducts from the holding facility (e.g., waste products, AIS, disease) being released into the environment where they could impact unique, endangered, fragile, or limited environmental resources.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant and last from weeks to decades depending on project success.
Severity: Negligible to major.

Transporting beavers and releasing them at approved release sites could cause significant secondary impacts to unique, endangered, fragile, or limited environmental resources. One of the main purposes for the proposed action is to bring about the benefits of beaver-modified habitats on the landscape, which includes major changes to the habitats and associated environment where beavers become established.

As part of every individual beaver transplant project, restoration practitioners would be required to consider how changes brought about by bringing beavers into the area would affect unique, endangered, fragile, or limited environmental resources. Well-designed projects would almost always be entirely beneficial to unique, endangered, fragile, or limited environmental resources in Montana, and may improve these resources in many ways. For example, water is becoming a fragile and limited resource in Montana, and beaver damming activity can bring about substantial benefits to natural water storage on the landscape. Furthermore, beaver-modified stream systems are themselves a unique, endangered, fragile, or limited environmental resource in that they represent diverse wetland and riparian habitat types that are limited on the landscape relative to historical conditions. Beaver-modified wetland complexes can benefit a large number of SGCN in Montana (Ritter et al. 2023), so releasing beavers into areas of their former range can be a substantial benefit to these unique and fragile species.

During any action that significantly changes the form and function of major habitat types, some plant and animal species will benefit, and some will be adversely impacted. The proposed action is to transplant and native species into areas of its former range, so associated impacts would be consistent with historical conditions and associated impacts.

Overall, adverse secondary impacts to unique, endangered, fragile, or limited environmental resources from transporting and releasing beavers as part of a transplant project are negligible to moderate as long as the project is well-designed following the guidelines and stipulations in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). Impacts classified as moderate and major are almost entirely those that are beneficial to humans and to the natural world.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No secondary impacts to unique, endangered, fragile, or limited environmental resources are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to unique, endangered, fragile, or limited environmental resources at or near the release sites.

9. Historical and Archaeological Sites

Existing Environment/Baseline Conditions (No Action Alternative):

Prehistorical use of floodplains associated with perennial streams in Montana occurred by indigenous peoples across Montana. Historical use occurred by indigenous people, homesteaders, trappers, pioneers, and travelers passing through the state. Floodplains were important to all these historical peoples as places to find relatively easy travel routes, obtain food and water resources, and develop

settlements. Floodplains and associated areas were important components of prehistorical and historical cultures from a spiritual and religious perspective as well. Due to these past uses, floodplains can contain important sites and artifacts relevant to Montana's history and pre-history. However, floodplains associated with perennial streams are also naturally dynamic systems. Archeological evidence of prehistorical and historical use does not remain in place as consistently as in other habitat types because of channel migration, beaver colony establishment and abandonment, and flooding. Therefore, impacts to historical and archaeological sites in floodplains may be expected regardless of inputs from humans related to restoration activities, including beaver transplants.

No significant adverse effects to historic or archaeological sites would be expected because of the proposed action. The proposal covered in this EA establishes a process for beaver restoration and translocation but does not propose or authorize any specific projects. Any future restoration efforts supported by beaver transplants will undergo separate environmental review and cultural resource compliance, including consultation with the State Historic Preservation Office (SHPO). In keeping with the Montana Antiquities Act and Section 106 of the National Historic Preservation Act, all FWP undertakings are assessed by a qualified archaeologist or historian for their potential to affect cultural resources. This process may include a cultural resource inventory and evaluation of cultural resources within or near a project area. If cultural resources that are eligible for the National Register of Historic Places are recorded, they will be protected from adverse effects through project redesign or cancellation if no alternatives are available. If cultural resources are unexpectedly discovered during project implementation, FWP will cease implementation and contact the FWP Heritage Program for further evaluation. FWP also consults with all Tribal Historic Preservation Offices (THPOs) affiliated with each property in accordance with FWP's Tribal Consultation Guidelines.

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to historical and archaeological sites would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts and Secondary Impacts:

Direct and secondary impacts to historical and archaeological sites from the proposed action are similar enough that they are grouped together in this section of the Impacts Analysis.

- Transplanting beavers into perennial stream systems in areas of their former range would have minor beneficial direct or secondary impacts to historical and archaeological sites in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term and long-term, direct and secondary impacts to historical and archaeological sites in Montana.

Where beavers are established in areas of their former range, expansion of the riparian zone and re-establishment of floodplain connection has the potential to flood out or otherwise disturb historical structures and artifacts that are present in floodplains. It is important to note that many historical structures were built after the widespread removal of beavers and simplification of floodplains that occurred during European colonization of Montana's waterways, representing a major departure from

historical conditions that allowed for construction within floodplains that would have otherwise been relatively uninhabitable. Disturbance to prehistorical sites due to beaver activity from released beavers is unlikely. Indigenous people were more limited in their use of floodplains in Montana that were within the historical range of beavers due to these areas having saturated soils, dense vegetation, and complex wetlands and stream channels.

Negative impacts to historical and archaeological sites would be minimized through cultural resource inventories conducted by the State Historic Preservation Office that are generally required for stream restoration efforts that use public funding or occur on public lands. However, some negative effects on historical and archaeological sites would still be expected as streams are returned to a more dynamic state with greater floodplain connectivity that is reflective of historical conditions and natural processes.

Specific direct and secondary impacts to historical and archaeological sites include:

Live-capture and removal of beavers:
Type: Beneficial.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distance upstream and downstream.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to minor.

Potential direct and secondary impacts to historical and archaeological sites from capturing and moving beavers would come about from effects associated with lack of maintenance on beaver infrastructure at the capture sites. Lack of maintenance could cause draining of beaver ponds; full or partial destruction or degradation of dams, lodges, caches, and other beaver infrastructure; and associated lowering of the water table, exposure of bare soils, and potential erosion of deposited sediments behind dams. The rate and intensity of these impacts would vary depending on initial site conditions and the presence of other beavers in the area. For example, if existing beaver infrastructure is located on a low-gradient stream with low stream flow, then the beaver infrastructure is unlikely to catastrophically fail, and the stream will gradually adjust to a new stable state without substantial changes to its form and function that could impact nearby historical and archaeological sites. Conversely, if the beaver infrastructure is in a high-energy stream, then impacts from lack of maintenance may be more pronounced, and beaver infrastructure may be washed away relatively quickly, potentially affecting historical and archaeological sites nearby. Also, if lots of other beaver colonies are nearby then the vacated territory may be re-occupied quickly, and the existing beaver infrastructure may be maintained by the new set of beavers. In conflict situations, this may require additional beaver captures and/or mechanical removal of beaver infrastructure to solve the conflict issue. In non-conflict situations, beavers would not be removed if there was a potential for substantial negative impacts due to lack of maintenance of beaver infrastructure per the conditions set forth in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials).

Overall, these impacts of removing beavers from an area would only affect historical and archaeological sites if those sites were located at or near the beaver colony from which the beavers were removed. Most often, potential damage to historical and archaeological sites would be reduced as the stream becomes less dynamic due to the removal of beavers from the area. However, beavers may re-occupy the area soon, as settlement in an area often indicates suitable habitat that other beavers may move into later.

Consultation with the State Historic Preservation Office (SHPO) as part of the development of this EA indicated no concerns generally about direct and secondary impacts to historical and archaeological sites in Montana. The proposed action is to transplant a native species into areas of its historical range in Montana, so any subsequent impacts to historical and archaeological sites would be consistent with historical impacts.

Construction and maintenance of holding facilities:
Type: Adverse and can be mitigated.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: No impact to negligible.

Construction of holding facilities for beavers would cause some ground disturbance, but these impacts would affect a small area and be temporary. Any ground disturbing activities on public lands would require consultation with the SHPO and mitigating actions would be taken if required/requested by SHPO. Negative impacts would be mitigated by using Best Management Practices when constructing the facilities, which includes cessation of work and consultation with SHPO if historical and archaeological artifacts are discovered during construction. Maintenance of holding facilities would not cause any impacts to historical and archaeological sites.

Beaver quarantine and care:
Type: No impact.
Extent: Area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: No impact.

There are no direct or secondary impacts to historical and archaeological sites anticipated from the proposed action due to beaver quarantine and care.

Transporting and releasing beavers at the release site:
Type: Adverse but can be mitigated, or beneficial, depending on the context.
Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant and last from weeks to decades depending on project success.
Severity: Negligible to moderate.

Direct impacts to historical and archaeological sites from this aspect of beaver transplants would mostly come about through initial dam building and vegetation harvest by the released beavers. These activities could impact historical and archaeological sites if they are located within the floodplain or the stream channel. Where beavers are released, dam-building and vegetation harvest could start within 48 hours, but potential impacts to historical and archaeological sites would likely come about over longer time periods as beavers build up their colony infrastructure, and therefore are best described as secondary impacts.

Secondary impacts to historical and archaeological sites from this aspect of beaver transplants would mostly come about through the expansion of the riparian zone and establishment of floodplain connection brought about by beaver activity. This could result in damage to historical structures that were built in Montana's floodplains due to flooding, bank erosion, or increased vegetation growth. It is important to note that most of these structures were built after widespread removal of beavers and subsequent manipulations to floodplains occurred after European settlement of North America. These structures are therefore built in areas that would normally have been uninhabitable due to beaver damming activity and other modifications. Because the proposal is to only release beavers in areas of their former range, any historical structures that may be impacted would be those that were built within what was historically an active floodplain, and therefore damage to these structures may be an inevitable outcome when restoring historical habitat conditions. Disturbance to prehistorical sites due to beaver activity from released beavers is unlikely. Indigenous people were more limited in their use of floodplains in Montana that were within the historical range of beavers due to these areas having saturated soils, dense vegetation, and complex wetlands and stream channels.

Overall, adverse secondary impacts to historical and archaeological sites from transporting and releasing beavers as part of a transplant project are negligible to minor and can be mitigated through consultation with the State Historic Preservation Office. The proposal is to transplant and native species into areas of its former range, so any direct or secondary impacts to historical and archaeological sites would be consistent with historical impacts. Beaver activity is unlikely to completely destroy historical and archaeological sites, but may make them more difficult to access, investigate, and/or excavate.

Monitoring of release sites:
Type: No impact.
Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: No impact.

No direct or secondary impacts to historical and archaeological sites are anticipated from activities related to monitoring beaver activity after beavers are released. These assessments would involve walking along stream channels, flying drones, and/or downloading aerial imagery, none of which would cause impacts to historical and archaeological sites at or near the release sites.

10. Demands on Environmental Resources of Land, Water, Air, and Energy

Existing Environment/Baseline Conditions (No Action Alternative):

Perennial streams and their associated floodplains throughout Montana provide critical resources for agriculture, recreation, municipalities, and transportation infrastructure. This includes land that is used for growing crops and harboring livestock and water resources that are used for agricultural operations and recreation (e.g., floating and fishing). There are no air or energy related environmental resources that would be affected by the proposed action. See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment.

The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to demands on environmental resources of land, water, air, and energy would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to minor, short-term, direct impacts to demands on environmental resources of land, water, air, and energy in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to minor, short-term, direct impacts to demands on environmental resources of land, water, air, and energy in Montana.

Beaver transplants would only occur in areas where the potential to conflict with human uses and infrastructure is minimized or can be mitigated. In many cases, beavers would be captured from areas where they conflict with humans related to these resources. As identified previously through the analyses of potential impacts to water quality, quantity, and distribution; soil quality, stability, and moisture; vegetation cover, quantity, and quality; and air quality; some impacts to the environmental resources of land, water, and air may occur because of the proposed project. However, any such impacts would be consistent with current and historical impacts and mitigated by careful site selection and conflict management. A limited amount of increased fuel use would be required for capturing and transporting beavers as part of the proposed project, and therefore any impacts to the environmental resource of energy would be short-term and negligible.

Specific direct impacts to demands on environmental resources of land, water, air, and energy include:

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on the context.
Extent: Area encompassed by the territory from which the beavers would be removed.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: Negligible to minor.

Potential direct impacts to demands on environmental resources of land, water, air, and energy from capturing and moving beavers would come about from impacts associated with lack of maintenance on beaver infrastructure at the capture sites. Lack of maintenance could cause draining of beaver ponds; full or partial destruction or degradation of dams, lodges, caches, and other beaver infrastructure; and associated lowering of the water table, exposure of bare soils, and potential erosion of deposited sediments behind dams. The rate and intensity of these impacts would vary depending on initial site conditions and the presence of other beavers in the area.

Overall, these direct impacts of removing beavers may cause localized changes in vegetation that could increase or reduce the availability of forage to livestock. Forage availability may increase due to less areas being flooded and due to establishment of new plants on exposed soils where water levels drop

after beavers are removed. Forage availability may decrease due to a lower water table in the area leading to less water available for plants. This could increase the demand for water resources to irrigate those areas where the water table dropped after beaver removal.

Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Overall, while some potential negative impacts could occur at relatively small scales at localized sites, in general impacts from removing beavers for transplant would be mitigated by stipulations and guidelines put in place through the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). These documents would prevent the removal of beavers in areas where their absence would cause significant negative impacts to demands on environmental resources of land, water, air, and energy, unless that removal was necessary due to a beaver-human conflict issue that could not be resolved without major changes to beaver-modified habitats that are causing the conflict issue.

Construction and maintenance of holding facilities:
Type: Adverse.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Construction of holding facilities for beavers would cause some increased fuel and water use, and the amounts would depend on the type of facility being constructed (e.g., large, permanent facility vs. small, temporary facility). Holding facilities would cover a small a footprint as possible so demands on land area would be negligible.

Beaver quarantine and care:
Type: Adverse.
Extent: Area of the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: Negligible.

Direct impacts to demands on environmental resources of land, water, air, and energy from beaver quarantine and care would include increased use of water resources to provide quarantined beavers water for drinking, swimming, and defecation. Some increased fuel use would be associated with checking on the beavers, cleaning the facility, and providing food and water. All these impacts would be negligible as relatively small amounts of water and fuel would be needed.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Area targeted for beaver colonization and areas upstream and downstream if beavers move on from the release site immediately.
Duration: Short-term.
Frequency: Would occur during every beaver transplant.
Severity: Negligible to minor.

Direct impacts to demands on environmental resources of land, water, air, and energy from this aspect of beaver transplants would mostly come about through use of fuel to transport beavers and negligible to minor impacts from initial vegetation harvest and dam building at the release site(s). The amount of fuel needed would be negligible and would be consistent with fuel uses by FWP staff and partners for other species and habitat restoration actions. In areas where released beavers begin building dams immediately, similar changes to forage availability for livestock could occur as those outlined in "*live-capture and removal of beavers*". However, all these impacts would be negligible, as the more significant impacts would come about as beavers build up their infrastructure over time (i.e., secondary impacts). Overall, the proposal is to transplant and native species into areas of its former range, so any direct impacts to demands on environmental resources of land, water, air, and energy would be consistent with historical impacts.

Monitoring of release sites:
Type: Adverse.
Extent: Impacting the area targeted for beaver colonization.
Duration: Short-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: Negligible.

Potential direct impacts to demands on environmental resources of land, water, air, and energy from monitoring of beaver release sites would come from minor increases in fuel use to conduct monitoring activities.

Secondary Impacts:

- Transplanting beavers into perennial stream systems in areas of their former range would bring about beneficial, negligible to major, short-term and long-term, secondary impacts to demands on environmental resources of land, water, air, and energy in Montana.

- Transplanting beavers into perennial stream systems in areas of their former range would bring about adverse, negligible to moderate, short-term and long-term, secondary impacts to demands on environmental resources of land, water, air, and energy in Montana.

Where beavers are established due to transplants, significant changes to the environment may occur. This is one of the primary purposes for transplanting beavers, to bring about changes to the streams they inhabit that can benefit humans and wildlife. However, some of these changes may cause impacts to demands on environmental resources of land, water, air, and energy in Montana. Overall, careful site selection and project planning, as required by the stipulations and guidelines outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would mitigate any significant, adverse impacts to demands on environmental resources of land, water, air, and energy.

Where beavers become established, changes to forage availability for livestock could occur. Forage availability may decrease where beaver dams flood vegetation or make it otherwise inaccessible to livestock. Forage availability may increase due to a higher water table that can sub-irrigate potential forage resources in the floodplain. Whether the overall impact to forage availability is beneficial or adverse depends on current land uses in the area, the underlying soils in the area, the level of stream

degradation, and the length of time the beavers are active in the area. Careful site evaluation and selection would occur in consultation with local FWP biologists and landowners whose lands have the potential to be affected by a transplant project.

The raising of the water table due to beaver dam-building may reduce the amount of land available for other uses. However, if beavers can flood an area with their dams, it is almost always an indication that area is within an active floodplain, and therefore those impacts could be considered to be consistent with historical impacts. Again, careful site selection and project planning would assure that beaver transplant projects do not take place in areas where there is potential to disrupt agriculture, development, or other land uses. In fact, one of the purposes of the proposed action is to give agricultural producers and others an additional tool in the toolbelt for dealing with potential negative impacts of beavers to demands on environmental resources of land and water.

Beaver activity can significantly change the way water moves across the landscape. One of the primary motivations for restoring beavers to areas of their former range is because of the substantial benefits beavers can bring to conserving water resources in Montana. However, because of their ability to majorly manipulate water flow on the landscape, there are situations where beavers may decrease or increase the demand for water resources in an area. Likely, decreased demand for water would be the most common outcome. Increasing demand for water resources could come about where beavers completely change the flow pathway of a stream or where beaver damming activity causes reductions in surface flow (e.g., losing stream reaches). All these potential negative impacts can be mitigated by careful site selection for beaver transplant sites.

Beaver transplants would only occur in areas where the potential to conflict with human uses and infrastructure is minimized or mitigated. In many cases, beavers would be captured from areas where they conflict with humans related to these resources.

Specific secondary impacts to demands on environmental resources of land, water, air, and energy include:

Live-capture and removal of beavers:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area encompassed by the territory from which the beavers would be removed as well as a variable distance upstream and downstream.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant.
Severity: No effect to moderate.

Where beavers are captured for transplant, beaver activity would cease or be reduced. Dams would likely stay in place until the next flood event, at which point they may degrade or blow out entirely. This would cause a localized lowering of the water table around the dams. If no new beavers occupy the area, wetland and riparian plants may die or have reduced vigor due to the drier soils. Sediment accumulated behind the dams and/or covered with water would be exposed and would be colonized by plants. Sediments that flush downstream from the dams may change sediment deposition patterns.

Potential secondary impacts to demands on environmental resources of land, water, air, and energy from capturing and moving beavers would come about from impacts associated with lack of maintenance on beaver infrastructure at the capture sites. Lack of maintenance could cause draining of beaver ponds; full or partial destruction or degradation of dams, lodges, caches, and other beaver

infrastructure; and associated lowering of the water table, exposure of bare soils, and potential erosion of deposited sediments behind dams. The rate and intensity of these impacts would vary depending on initial site conditions and the presence of other beavers in the area.

Overall, secondary impacts of removing beavers may cause localized changes in vegetation that could increase or reduce the availability of forage to livestock. Forage availability may increase due to less areas being flooded and due to establishment of new plants on exposed soils where water levels drop after beavers are removed. Forage availability may decrease due to a lower water table in the area leading to less water available for plants. This could increase the demand for water resources to irrigate those areas where the water table dropped after beaver removal.

The extent of secondary impacts on demands on environmental resources of land, water, air, and energy around beaver capture sites depends on many factors that may vary between capture locations. Beavers would only be removed from an area that is not part of a beaver-human conflict situation under specific conditions meant to minimize negative impacts to current beaver-modified stream reaches. Overall, while some potential negative impacts could occur at relatively small scales at localized sites, in general impacts from removing beavers for transplant would be mitigated by stipulations and guidelines put in place through the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). These documents would prevent the removal of beavers in areas where their absence would cause significant negative impacts to demands on environmental resources of land, water, air, and energy, unless that removal was necessary due to a beaver-human conflict issue that could not be resolved without major changes to beaver-modified habitats that are causing the conflict issue. Regional FWP biologists would be integral in the evaluation and ultimate approval or disapproval of capture locations for beavers to be transplanted, and their knowledge of site-specific impacts would be a key mitigation measure to prevent adverse impacts to demands on environmental resources of land, water, air, and energy for every transplant project proposed in Montana.

Construction and maintenance of holding facilities:
Type: Adverse.
Extent: Impacting the area of the holding facility and within ~50 feet radius around the holding facility.
Duration: Short-term and long-term.
Frequency: Would occur occasionally where holding facilities are developed and would be a one-time impact for construction and an ongoing impact for maintenance.
Severity: Negligible.

Construction of holding facilities for beavers would cause some increased fuel and water use, and the amounts would depend on the type of facility being constructed (e.g., large, permanent facility vs. small, temporary facility). Holding facilities would cover a small a footprint as possible so demands on land area would be negligible.

Beaver quarantine and care:
Type: Adverse.
Extent: Area of the holding facility.
Duration: Short-term.
Frequency: Would occur during every beaver transplant where quarantine is required for a period from 72 hours to 21 days, depending on how long the beavers remain at the facility.
Severity: Negligible.

Secondary impacts to demands on environmental resources of land, water, air, and energy from beaver quarantine and care would include increased use of water resources to provide quarantined beavers water for drinking, swimming, and defecation. Some increased fuel use would be associated with checking on the beavers, cleaning the facility, and providing food and water. All these impacts would be negligible as relatively small amounts of water and fuel would be needed.

Transporting and releasing beavers at the release site:
Type: Adverse or beneficial, depending on the context.
Extent: Impacting the area targeted for beaver colonization as well as areas upstream and downstream as beavers become an established part of the disturbance regime in the stream system.
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant and last from weeks to decades depending on project success.
Severity: Negligible to major.

Transporting beavers and releasing them at an approved release site could cause significant secondary impacts to demands on environmental resources of land, water, air, and energy. One of the main purposes for the proposed action is to bring about the benefits of beaver-modified habitats on the landscape, which includes major changes to the habitats and associated environment where beavers become established. This can lead to changes to the surrounding landscape as water tables rise and beavers harvest vegetation.

As part of every individual beaver transplant project, restoration practitioners would be required to consider how changes brought about by bringing beavers into the area would affect demands on environmental resources. Beavers would not be transplanted to areas where they could increase demand for water resources, make land that was previously suitable for other uses unsuitable, or create situations where significant amounts of energy are needed to get around or mitigate beaver activity.

Well-designed projects would almost always be entirely beneficial to demands on environmental resources of land, water, air, and energy. Beaver damming activity can reduce the need for water resources as more water is stored in higher elevation floodplains and is released slower throughout the year. Not only can this decrease the demand on water resources more broadly, it could specifically reduce the demand for water resources later in the year when demand is highest and supply is lowest. Raised water tables around beaver dam complexes may reduce the demand for grazing ground as higher quality forage may be available due to sub-irrigation of floodplain plants by beaver dams. However, if beaver dams flood out current grazing grounds, increasing demand for land for grazing could occur. Some minor increases in fuel use would be associated with transporting beavers to release sites. Additionally, if released beavers become a beaver-human conflict concern, additional fuel and supplies may be needed to implement lethal or non-lethal conflict resolution actions.

Overall, adverse secondary impacts to demands on environmental resources of land, water, air, and energy from transporting and releasing beavers as part of a transplant project are negligible to minor as long as the project is well-designed following the guidelines and stipulations in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) and in Ritter et al. (2023). Impacts classified as moderate and major are almost entirely those that are beneficial to humans and to the natural world.

Monitoring of release sites:
Type: Adverse.

Extent: Impacting the area targeted for beaver colonization as well as 1-2 miles upstream and downstream of the release site(s).
Duration: Short-term and long-term.
Frequency: Would occur during every beaver transplant when requested/required, at least once within six months, then again at least once within one year.
Severity: Negligible.

Potential secondary impacts to demands on environmental resources of land, water, air, and energy from monitoring of beaver release sites would come from minor increases in fuel use to conduct monitoring activities over time.

B. Evaluation and Summary of Potential Impacts of the Proposed Project on the Human Environment

1. Social Structures and Mores

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to social structures and mores would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse direct impacts to social structures and mores would be expected because of the proposed project. Any direct impacts would be consistent with historical impacts and would largely be beneficial. The proposed project would not change current land use or human activities in the affected area, but could bolster water resources and soil moisture, thereby supporting agricultural producers. Enhanced and expanded wildlife habitat could benefit anglers, hunters, trappers, photographers, and wildlife-watchers. Therefore, the proposed project would not negatively impact any pre-project social structures, customs, values, and conventions in the affected area.

Secondary Impacts:
No secondary impacts to pre-project social structures and mores would be expected to occur except those already outlines as direct impacts that would continue over time if the proposed action were implemented. Therefore, no significant adverse secondary impacts would be expected because of the proposed project.

2. Cultural Uniqueness and Diversity

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream

systems. Therefore, any direct, secondary, or cumulative impacts to cultural uniqueness and diversity would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant impacts to cultural uniqueness and diversity in the affected area would be expected because of the proposed project. The proposed action would not result in any significant changes to employment opportunities. Therefore, the proposed project would not be expected to result in any relocation of people and no impacts to the existing cultural uniqueness and diversity of the affected area would be expected because of the proposed project.

Secondary Impacts:
No secondary impacts to pre-project cultural uniqueness and diversity would be expected to occur. Therefore, no significant, adverse secondary impacts would be expected because of the proposed project.

3. Access to and Quality of Recreational and Wilderness Activities

Existing Environment (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to access to and quality of recreational and wilderness activities would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse direct impacts to access to and quality of recreational and wilderness activities would be expected because of the proposed project.

Removing beavers from an area for transplants may temporarily reduce the number of beavers available to trappers in those areas. In beaver-human conflict situations, this impact would be negligible to minor, as trappers may be sought out less often to deal with these conflicts. In non-conflict situations, removal of beavers from an area of expansive beaver colonies would represent a small portion of the beavers in that area, thereby minimizing impacts to trapping opportunities.

Construction of holding facilities, quarantining and caring for beavers, and monitoring release sites would have no direct impacts on access to and quality of recreational and wilderness activities.

Overall, direct impacts to access to and quality of recreational and wilderness activities of the proposed action would be short-term, minor, and consistent with historical impacts.

Secondary Impacts:
No significant, adverse secondary impacts to access to and quality of recreational and wilderness activities would be expected because of the proposed project.

In areas where beavers become well-established and expand after a transplant effort, single-thread stream channels with limited riparian vegetation may shift to multi-thread channels, wetland complexes, and dense riparian vegetation. This may make accessing these streams for fishing, hunting, wildlife viewing, and trapping more difficult due to deep waters and dense vegetation. However, the expansion of floodplain habitats can enhance habitats for fish, game, nongame, and furbearer species, potentially enhancing these outdoor activities along perennial streams in Montana. Impacts would be user-specific, as some users would be supportive of such changes to stream systems and may see their access to and quality of recreational and wilderness activities enhanced by beaver-related habitat changes, while others would see it as a diminishing of these resources.

Construction of holding facilities, quarantining and caring for beavers, and monitoring release sites would have no secondary impacts on access to and quality of recreational and wilderness activities.

Overall, secondary impacts to access to and quality of recreational and wilderness activities would be short- and long-term, minor to moderate, consistent with historical impacts, and mostly beneficial.

4. Local and State Tax Base and Tax Revenue

Existing Environment/Baseline Conditions (No Action Alternative):
The proposed action would have no impact on local and state tax base and tax revenue.

Direct Impacts:
No significant, adverse direct impacts to local and state tax base and tax revenue would occur because of the proposed project.

Secondary Impacts:
No significant, adverse secondary impacts to the local tax base and tax revenues would be expected to occur. Therefore, no significant, adverse secondary impacts would be expected because of the proposed project. There may be some minor increased economic activity in areas associated with beaver transplants as workers purchase fuel, food, supplies, and lodging while capturing, holding, releasing, and monitoring beavers. Construction workers may be hired to construct larger holding facilities. These impacts would be negligible to minor and entirely beneficial to the local tax base.

5. Industrial, Commercial, and Agricultural Activities and Production

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to demands for government services would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse direct impacts would be expected because of the proposed project. There may be some minor increased economic activity in areas associated with beaver transplants as workers purchase fuel, food, supplies, and lodging while capturing, holding, releasing, and monitoring beavers.

Construction workers may be hired to construct larger holding facilities. These impacts would be negligible to minor and beneficial to commercial activities and production in the area.

Using beaver transplants as a tool for relieving beaver-human conflicts would benefit agricultural producers, local and state government agencies, other private landowners, and municipalities as beavers could be removed from areas where they are plugging culverts and headgates, flooding property, or toppling trees, but where lethal removal is not desired, difficult, or impossible. Therefore, any direct impacts would only be to agricultural production and to individuals and entities experiencing beaver-human conflict issues, and would therefore be short- and long-term, minor to moderate, and beneficial.

Secondary Impacts:
No significant, adverse secondary impacts would be expected because of the proposed project.

Beaver transplants have the potential to benefit agricultural production by establishing beavers in areas of their former range where their activities can hold more water on the landscape in headwater streams and release it more slowly throughout the year. This can help mitigate the impacts of drought that negatively affect farms and ranches across Montana. In situations where beavers can be tolerated on a farm or ranch, beavers establishing dams can increase soil moisture in the floodplain leading to longer and more vigorous growth of floodplain plants even relatively large distances from the stream channel itself.

Using beaver transplants as a tool for relieving beaver-human conflicts would further benefit agriculture as beavers could be removed from areas where they are plugging culverts and headgates, flooding agriculture fields, or toppling trees but where lethal removal is not desired, difficult, or impossible. The proposed action would have minor direct impacts on industrial or commercial activities and production because fur trappers and wildlife control operators (WCOs) may get fewer calls to lethally remove beavers that are in conflict with humans. However, many of these same trappers and WCOs could maintain or increase the amount of beaver-related business by participating as partners in the transplant program.

The construction of holding facilities for beavers would increase business for some commercial activities through purchase of materials and services (e.g., concrete pouring). These facilities would be small and need to be located in relatively quiet areas so they would not interfere with normal business in any location where they are built.

The implementation of beaver conflict resolution in areas around transplant sites would increase business for some commercial activities through purchase of materials (e.g., pond leveler tubes, culvert fencing), or through the hiring of trappers or WCOs to lethally remove beavers if needed. The internal authorization process for conducting beaver transplants carefully considers potential impacts to surrounding landowners. This internal vetting process therefore provides a mitigation measure for reducing the chances that transplanted beavers come into conflict with humans elsewhere, but the possibility of new conflict developing cannot be avoided entirely.

Based on the above potential secondary impacts from the proposed action, secondary impacts to industrial, commercial, or agricultural production would be short- and long-term, minor to moderate, and largely beneficial. Adverse impacts would be mitigated through habitat-based site selection, outreach to potentially affected landowners, and help from FWP and/or our partners with beaver-human conflict resolution if issues arise in the area.

6. Human Health and Safety

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment (statewide), for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to human health and safety would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse direct impacts to human health and safety in the affected area would be expected because of the proposed project. Trappers and others who participate in beaver live-capture efforts would be exposed to an increase chance of injury or sickness from capturing and handling beavers, though this risk is not significantly higher than for recreational trapping efforts. Those participating in quarantining and caring for beavers to be transplanted would also be exposed to risk of bites or disease transmission from captured beavers. Beavers can injure humans primarily through biting with their powerful jaws. People involved with live-capturing and caring for beavers would be required to follow protocols outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) meant to minimize the probability of being bitten by captured beavers. In general, the protocols outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) are designed to minimize the amount of handling needed to transplant beavers, thereby minimizing opportunities for bites to occur. Injury could also occur from the use of traps to capture beavers and during transport of beavers to release sites. However, these hazards are not above the baseline of normal animal capture and transport operations.

Beavers can carry many diseases that may be transferrable to humans, with the main diseases of concern being tularemia and giardia. Proper beaver capture and handling protocols to minimize the chance of disease transmission would be a requirement of participating in a beaver transplant effort, and these protocols are outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials). As a part of these same protocols, beavers would be evaluated and monitored for evidence of disease and euthanized if needed to avoid spreading disease to handlers, other beavers in the holding facility, or to other beavers at or near the release site(s).

Releasing beavers into a stream may introduce pathogens to that stream that were not there prior to the beaver transplant. Proper quarantine and care protocols, outlined in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials), would minimize this risk. Additionally, restricting where beavers can be moved within a drainage would assure that beavers are not being moved abnormally long distances that could not be reasonably accomplished by existing beaver populations given enough time (i.e., outside the normal effective dispersal range).

Beavers can be an amplifying host for giardia, meaning that although they are not usually the original sources of giardia in a stream, their activities and the environments they create can make it more prevalent in a stream. It is therefore possible that humans recreating in streams where beavers have been released could have a higher risk of getting giardia than in that stream prior to occupancy by beavers. However, beavers would only be released in areas of their former range, so impacts to the load of giardia in the stream would be consistent with historical impacts. Giardia and other diseases can be

transmitted to humans in almost any stream in Montana, regardless of beaver activity, so overall the direct impacts to human health and safety would be short- and long-term, no impact to minor, and consistent with historical impacts.

Outbreaks of tularemia in beaver populations have been reported from across North America, but whether or not beavers increase the risk of tularemia exposure to humans or other animals is not known. Beavers have been on the landscape for the entire history of Montana, and cases of direct transmission of tularemia to humans are rarely reported. Tularemia is transmitted to humans through direct contact with the blood, excrement, or saliva of beavers, so the main risk is to trappers and other workers who are handling captured beavers, whether the beavers are dead or alive. Proper use of personal protective equipment and adherence to the rules and guidelines in the MBTP Rules and Guidelines for Restoration Practitioners (EA Supplemental Materials) would minimize the risk of tularemia transmission to those capturing and handling beavers.

Beaver-human conflict resolution work involves working in the stream and using tools and materials that could cause injury. Workers would use best management practices and would have proper training and safety equipment to minimize the chances of injury, so the impact would be minor and easily mitigated.

Secondary Impacts:
No significant, adverse secondary impacts to human health and safety would be expected because of the proposed project.

Beavers can be an amplifying host for giardia, meaning that although they are often not the original source of the parasite, once it is in the system beavers can facilitate an increase in the amount of giardia in the area, thereby increasing the risk of transmission to humans or pets that may recreate in those waters. However, beavers would not be transplanted to any location outside their native range, and the social suitability of the area, including landowner tolerances for giardia risk, would be assessed as part of each beaver transplant project. Restoring beavers to areas of their former range may also increase the risk of transmission of other diseases that beavers may carry, including tularemia, to humans and pets. However, the risk of disease transmission from wildlife to humans is present across Montana and its native wildlife, so transplanting beavers would not represent a significant secondary impact because it is in line with historical conditions and associated impacts.

Beavers that were released as part of a transplant project, if successful, may spread in the drainage where they were released, and their success may facilitate expansion of the beaver population into other areas. Beaver activity can bring with it increased risk to humans through flooding of human infrastructure, toppling of trees or creation of hazard trees, and damage to infrastructure from digging activities. Many of these potential hazards would be mitigated by the proposed action, as transplanted beavers would often be taken from beaver-human conflict situations, but there is always the possibility of creating a conflict somewhere else. The proposed action includes beaver-human conflict resolution as an important component of the MBTP, so although the proposed action would increase risks to human health and safety in limited circumstances, those increased risks can be mitigated.

Overall, secondary impacts to human health and safety would be short- and long-term, negligible to minor, consistent with historical impacts, and mitigated through careful site selection and implementation of beaver-human conflict resolution when needed.

7. Quantity and Distribution of Employment

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to the quantity and distribution of employment would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse impacts to the quantity and distribution of employment in the affected area would be expected because of the proposed project. Some trappers and wildlife control operators (WCOs) may be negatively affected by the proposed action as fewer beaver damage complaints may be available for their services. However, this impact would be below the level of "significant" and would likely affect a small number of people in the state. Many trappers and WCOs may be eager to get involved with beaver transplants and may find a new source of jobs and revenue from helping with beaver transplant efforts. Additionally, while removal of beavers in one area may reduce the need for trappers and WCOs in that area, increases in beaver populations in other areas because of beaver transplants may increase the need for trappers and WCOs in those areas if beaver damage complaints increase. Therefore, the overall impact of the proposed action on the quantity and distribution of employment would be negligible, short- and long-term, and largely either beneficial or neutral.

Secondary Impacts:
No significant, adverse secondary impacts to the quantity and distribution of employment would be expected because of the proposed project. While some areas may see a decreased need for trappers and WCOs because of beaver transplants, other areas may see an increased need. Therefore, any secondary impacts to the quantity and distribution of employment related to beaver capture and release sites for transplants would be short- and long-term, negligible to minor, and consistent with current and historical impacts on the landscape.

8. Density and Distribution of Human Population and Housing

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to demands for government services would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse direct impacts to the density and distribution of human population and housing would occur because of the proposed project.

Secondary Impacts:
No secondary impacts to the density and distribution of human population and housing would be expected to occur. While establishing beavers in areas of their historic range may cause new areas to be

flooded or otherwise affected by the beaver activity, floodplain and other development regulations generally prevent housing from occurring in habitats that can be majorly modified by beavers, and therefore beavers do not represent a significant impact on where housing can be developed. Furthermore, beavers are a native species who have been impacting Montana's waterways for thousands of years. Therefore, the proposed action mimics historical conditions and natural processes, and no significant, adverse secondary impacts would be expected because of the proposed project.

9. Demands for Government Services

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to demands for government services would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse direct impacts to demands for government services would occur because of the proposed project. Additional FWP staff time and funding would be devoted to trapping, caring for, and transporting beavers, but the potential benefits of the program align well with the job duties of the positions that would be affected by the proposed action (i.e., conservation of Montana's fish and wildlife species and ecosystem functionality and resilience).

Construction of beaver holding facilities may require FWP funding in some instances, though partnership with other organizations and acquiring grants would also be used to help fund these facilities. These expenses would be relatively small compared to the potential ecological and social benefits of transplanting beavers and would be at the discretion of the regional staff seeking to build these facilities and if their budgets can allow for it.

Overall, direct impacts to demands for government services from the proposed action would be short-term, negligible to minor, and adverse or beneficial depending on one's perspective on what government staff and resources should be devoted to.

Secondary Impacts:
No adverse secondary impacts to demands for government services would be expected to occur. Additional FWP staff time and funding would be devoted to running, and participating in, the beaver transplant program, but the potential benefits of the program align well with the purposes of the positions that would be affected by the proposed action (i.e., conservation of Montana's fish and wildlife species and ecosystem functionality and resilience).

Where beaver holding facilities are constructed or operated on government-owned properties, additional electricity, fuel, food, and water would be needed to care for the beavers. However, these should be minor expenses after the initial investment in constructing the holding facility.

Beaver-human conflict resolution may require additional staff time and materials from whichever agency is responding to or dealing with the conflict issue. However, these expenses and staff time should be relatively small and therefore represent negligible to minor impacts to demands for

government services. Partnership with groups like the Montana Beaver Conflict Resolution Project and the Montana Trappers Association would help support conflict mitigation work and reduce demands on government services.

Overall, secondary impacts to demands for government services from the proposed action would be short- and long-term, negligible to minor, and adverse or beneficial depending on one's perspective on what government staff and resources should be devoted to.

10. Locally Adopted Environmental Plans and Goals

Existing Environment/Baseline Conditions (No Action Alternative):
See Section VIII, General Setting of the Affected Environment, for more detailed information related to the affected existing environment. The proposed action is to transplant a native species to biologically and socially suitable habitats within its native range. Beaver damming activity is a natural and, in many cases, essential part of the geomorphology and ecology of many of Montana's perennial stream systems. Therefore, any direct, secondary, or cumulative impacts to the locally adopted environmental plans and goals would be consistent with historical impacts from beaver activity and would mimic or promote existing natural processes related to beaver dispersal and settlement in affected stream drainages.

Direct Impacts:
No significant, adverse direct impacts to locally adopted environmental plans and goals in the affected area would be expected because of the proposed project. Analysis of any locally adopted environmental plans and goals would be part of the review process for all activities related to beaver capture and release because restoration practitioners would be required to reach out to landowners that have a reasonable chance of being affected by the beaver transplant. As a result, beaver transplants would not occur in areas where locally adopted environmental plans and goals conflict with the beaver transplant effort or would only occur if mitigations could be put in place that satisfy conditions laid out in those locally adopted environmental plans and goals.

Secondary Impacts:
No significant, adverse secondary impacts to locally adopted environmental plans and goals in the affected area would be expected because of the proposed project. Analysis of any locally adopted environmental plans and goals would be required as part of the review process for all activities related to beaver capture and release because restoration practitioners would be required to reach out to landowners that have a reasonable chance of being affected by the beaver transplant. As a result, beaver transplants would not occur in areas where locally adopted environmental plans and goals conflict with the beaver transplant effort or would only occur if mitigations could be put in place that satisfy conditions laid out in those locally adopted environmental plans and goals.

XIII. Determining the Significance of Impacts

If the EA identifies impacts associated with the proposed action FWP must determine the significance of the impacts. This determination forms the basis for FWP's decision as to whether it is necessary to prepare an environmental impact statement. FWP considered the criteria identified in **Table 6** below to determine the significance of each impact on the quality of the physical and human environment. ARM 12.2.431.

The significance determination is made by giving weight to these criteria in their totality. For example, impacts identified as moderate or major in severity may not be significant if the duration is short-term. However, moderate or major impacts of short-term duration may be significant if the quantity and quality of the resource is limited and/or the resource is unique or fragile. Further, moderate or major impacts to a resource may not be significant if the quantity of that resource is high or the quality of the resource is not unique or fragile.

Table 6: Determining the Significance of Impacts

	Criteria Used to Determine Significance
1	The **severity, duration, geographic extent,** and **frequency** of the occurrence of the impact **"Severity"** describes the density of the potential impact, while **"extent"** describes the area where the impact will likely occur, e.g., a project may propagate ten noxious weeds on a surface area of 1 square foot. Here, the impact may be high in severity, but over a low extent. In contrast, if ten noxious weeds were distributed over ten acres, there may be low severity over a larger extent. **"Duration"** describes the time period during which an impact may occur, while **"frequency"** describes how often the impact may occur, e.g., an operation that uses lights to mine at night may have frequent lighting impacts during one season (duration).
2	The probability that the impact will occur if the proposed project occurs; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur
3	Growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts
4	The quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources and values
5	The importance to the state and to society of each environmental resource or value that would be affected
6	Any precedent that would be set as a result of an impact of the proposed project that would commit FWP to future actions with significant impacts or a decision in principle about such future actions
7	Potential conflict with local, state, or federal laws, requirements, or formal plans

XIV. Private Property Impact Analysis (Takings)

The 54th Montana Legislature enacted the Private Property Assessment Act, now found at § 2-10-101. The intent was to establish an orderly and consistent process by which state agencies evaluate their proposed projects under the "Takings Clauses" of the United States and Montana Constitutions. The Takings Clause of the Fifth Amendment of the United States Constitution provides: "nor shall private property be taken for public use, without just compensation." Similarly, Article II, Section 29 of the Montana Constitution provides: "Private property shall not be taken or damaged for public use without just compensation..."

The Private Property Assessment Act applies to proposed agency projects pertaining to land or water management or to some other environmental matter that, if adopted and enforced without due process of law and just compensation, would constitute a deprivation of private property in violation of the United States or Montana Constitutions.

The Montana State Attorney General's Office has developed guidelines for use by state agencies to assess the impact of a proposed agency project on private property. The assessment process includes a careful review of all issues identified in the Attorney General's guidance document (Montana Department of Justice 1997). If the use of the guidelines and

checklist indicates that a proposed agency project has taking or damaging implications, the agency must prepare an impact assessment in accordance with Section 5 of the Private Property Assessment Act.

Table 7: Private Property Assessment Act (Taking and Damaging Assessment)

PRIVATE PROPERTY ASSESMENT CHECKLIST			
Does the Proposed Action Have Takings Implications under the PPAA?	**Question #**	**Yes**	**No**
Does the project pertain to land or water management or environmental regulations affecting private property or water rights?	1	☐	☒
Does the action result in either a permanent or an indefinite physical occupation of private property?	2	☐	☒
Does the action deprive the owner of all economically viable uses of the property?	3	☐	☒
Does the action require a property owner to dedicate a portion of property or to grant an easement? (If answer is NO, skip questions 4a and 4b and continue with question 5.)	4	☐	☒
Is there a reasonable, specific connection between the government requirement and legitimate state interest?	4a	☐	☐
Is the government requirement roughly proportional to the impact of the proposed use of the property?	4b	☐	☐
Does the action deny a fundamental attribute of ownership?	5	☐	☒
Does the action have a severe impact of the value of the property?	6	☐	☒
Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public general? (If the answer is NO, skip questions 7a-7c.)	7	☐	☒
Is the impact of government action direct, peculiar, and significant?	7a	☐	☐
Has the government action resulted in the property becoming practically inaccessible, waterlogged, or flooded?	7b	☐	☐
Has the government action diminished property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?	7c	☐	☐
Does the proposed action result in taking or damaging implications?		☐	☒
Taking or damaging implications exist if **YES** is checked in response to Question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if **NO** is checked in response to question 4a or 4b.			
If taking or damaging implications exist, the agency must comply with MCA § 2-10-105 of the PPAA, to include the preparation of a taking or damaging impact assessment. Normally, the preparation of an impact assessment will require consultation with agency legal staff.			
Alternatives: The analysis under the Private Property Assessment Act, §§ 2-10-101-112, MCA, indicates no impact. FWP does not plan to impose conditions that would restrict the regulated person's use of private property to constitute a taking.			

XV. Public Participation

Scoping

Scope is the full range of issues that may be affected if an agency implements a proposed action or alternatives to the proposed action. The scope of the environmental review is described through a definition of those issues, a reasonable range of alternatives considered, a description of the impacts to the physical and human environments, and a

description of reasonable mitigation measures that would ameliorate the impacts. Scoping is the process used to identify all issues that are relevant to the proposed action.

Depending on the level of impact associated with a proposed action, the scoping process may include a request for public participation in the identification of issues.

Scoping provides an opportunity for public and agency involvement during the early planning stages of the analysis. The intent of the scoping process is to gather comments, concerns, and ideas from those who have an interest in or who may be affected by the *Proposed Action*.

Scoping also includes efforts to engage internal and affected external agencies. For the proposed project, these scoping efforts included queries to the following websites/databases/personnel:

- Montana Natural Heritage Program (MTNHP)
- Montana State Historic Preservation Office (SHPO)
- Montana Department of Natural Resource and Conservation (DNRC)
- Montana Department of Environmental Quality (DEQ)
- Montana Department of Transportation (DOT)
- Montana Department of Health and Human Services (DPHHS)
- Montana Beaver Working Group (MBWG)
- Montana Trapper's Association (MTA)
- Relevant biologists and other staff with the U. S. Forest Service (USFS)
- Relevant biologists and other staff with the U. S. Bureau of Land Management (BLM)

Public Review of Environmental Assessments

The level of analysis in an EA will vary with the complexity and seriousness of environmental issues associated with a proposed action. The level of public interest will also vary. FWP is responsible for adjusting public review to match these factors (ARM 12.2.433(1)). For the proposed project, FWP determined the following public notice strategy will provide an appropriate level of public review:

- An EA is a public document and may be inspected upon request. Any person may obtain a copy of an EA by making a request to FWP.
- Public notice will be served on the FWP website at: https://MFWP.mt.gov/public-notices.
- Public notice will be served on the Montana Environmental Quality Council's MEPA Document List website at: https://leg.mt.gov/mepa/search/.
- As applicable, copies will be distributed to neighboring landowners to ensure their knowledge of the proposed project and opportunity for review and comment on the proposed action.
- FWP maintains a mailing list of persons interested in a particular action or type of action. FWP will notify all interested persons and distribute copies of the EA to those persons for review and comment (ARM 12.2.433(3)).

Public notice announces availability of the Draft EA for public review, summarizes the proposed project, identifies the time-period available for public comment, and provides direction for submitting comments.

- **Duration of Public Comment Period:** The public comment period begins on the date of publication of legal notice in area newspapers (see above). Written or e-mailed comments will be accepted until 5:00 p.m., Mountain Time, on the last day of public comment, as listed below:

  Length of Public Comment Period: 30 days

Public Comment Period Begins: 09/26/2025

Public Comment Period Ends: 10/27/2025

Comments must be addressed to the FWP contact listed below.

- **Where to Mail or Email Comments on the Draft EA:**

  Name: Torrey Ritter

  Email: torrey.ritter@mt.gov

  Mailing Address:

  Montana Fish, Wildlife and Parks – Region 2

  Attn: Torrey Ritter

  3201 Spurgin Road

  Missoula, MT 59804

XVI. Recommendation for Further Environmental Analysis

NO further analysis is needed for the proposed action	☒
FWP must conduct **EIS** level review for the proposed action	☐

XVII. EA Preparation and Review

	Name	**Title**
EA prepared by:	Torrey Ritter	FWP Region 2 Nongame Wildlife Biologist
EA reviewed by:	Nathan Kluge	FWP Furbearer Coordinator

Appendix A – List of Species of Greatest Conservation Need (2015 SWAP) and Threatened and Endangered Species that may be affected by the proposed action.

Species Group	Common Name	Scientific Name	SGCN/ESA Rank
Amphibians	Great Plains Toad	Anaxyrus cognatus	S2
Amphibians	Idaho Giant Salamander	Dicamptodon aterrimus	S2
Amphibians	Northern Leopard Frog	Lithobates pipiens	S1,S4
Amphibians	Western Toad	Anaxyrus boreas	S2
Birds	Alder Flycatcher	Empidonax alnorum	S3B
Birds	American Bittern	Botaurus lentiginosus	S3B
Birds	American White Pelican	Pelecanus erythrorhynchos	S3B
Birds	Baird's Sparrow	Centronyx bairdii	S3B
Birds	Black Swift	Cypseloides niger	S1B
Birds	Black Tern	Chlidonias niger	S3B
Birds	Black-billed Cuckoo	Coccyzus erythropthalmus	S3B
Birds	Black-crowned Night-Heron	Nycticorax nycticorax	S3B
Birds	Black-necked Stilt	Himantopus mexicanus	S3B
Birds	Bobolink	Dolichonyx oryzivorus	S3B
Birds	Brewer's Sparrow	Spizella breweri	S3B
Birds	Brown Creeper	Certhia americana	S3
Birds	Burrowing Owl	Athene cunicularia	S3B
Birds	Common Loon	Gavia immer	S3B
Birds	Great Blue Heron	Ardea herodias	S3
Birds	Great Gray Owl	Strix nebulosa	S3
Birds	Greater Sage-Grouse	Centrocercus urophasianus	S2
Birds	Harlequin Duck	Histrionicus histrionicus	S2B
Birds	Horned Grebe	Podiceps auritus	S3B
Birds	LeConte's Sparrow	Ammospiza leconteii	S3B
Birds	Lewis's Woodpecker	Melanerpes lewis	S2B
Birds	Loggerhead Shrike	Lanius ludovicianus	S3B
Birds	Long-billed Curlew	Numenius americanus	S3B
Birds	Nelson's Sparrow	Ammospiza nelsoni	S3B
Birds	Northern Hawk Owl	Surnia ulula	S3
Birds	Pacific Wren	Troglodytes pacificus	S3
Birds	Peregrine Falcon	Falco peregrinus	S3
Birds	Pileated Woodpecker	Dryocopus pileatus	S3
Birds	Red-headed Woodpecker	Melanerpes erythrocephalus	S3B
Birds	Sedge Wren	Cistothorus platensis	S3B
Birds	Sharp-tailed Grouse	Tympanuchus phasianellus	SX,S4
Birds	Trumpeter Swan	Cygnus buccinator	S3
Birds	Veery	Catharus fuscescens	S3B
Birds	White-faced Ibis	Plegadis chihi	S3B
Birds	Whooping Crane	Grus americana	S1M, Endangered
Birds	Yellow Rail	Coturnicops noveboracensis	S3B
Birds	Yellow-billed Cuckoo	Coccyzus americanus	S3B
Fish	Arctic Grayling	Thymallus arcticus	S1
Fish	Bull Trout	Salvelinus confluentus	S2, Threatened
Fish	Columbia River Redband Trout	Oncorhynchus mykiss gairdneri	S1
Fish	Iowa Darter	Etheostoma exile	S3
Fish	Northern Pearl Dace	Margariscus nachtriebi	S2
Fish	Northern Redbelly Dace	Chrosomus eos	S3
Fish	Northern Redbelly X Finescale Dace	Chrosomus eos x Chrosomus neogaeus	S3
Fish	Pygmy Whitefish	Prosopium coulteri	S3

Fish	Shortnose Gar	Lepisosteus platostomus	S1
Fish	Spoonhead Sculpin	Cottus ricei	S3
Fish	Torrent Sculpin	Cottus rhotheus	S3
Fish	Trout-perch	Percopsis omiscomaycus	S2
Fish	Westslope Cutthroat Trout	Oncorhynchus clarkii lewisi	S2
Fish	Yellowstone Cutthroat Trout	Oncorhynchus clarkii bouvieri	S2
Mammals	Arctic Shrew	Sorex arcticus	S1S3
Mammals	Canada Lynx	Lynx canadensis	S3, Threatened
Mammals	Eastern Red Bat	Lasiurus borealis	S3
Mammals	Fisher	Pekania pennanti	S3
Mammals	Fringed Myotis	Myotis thysanodes	S3
Mammals	Grizzly Bear	Ursus arctos	S2S3, Threatened
Mammals	Hoary Bat	Lasiurus cinereus	S3
Mammals	Little Brown Myotis	Myotis lucifugus	S3
Mammals	Northern Bog Lemming	Synaptomys borealis	S2
Mammals	Northern Myotis	Myotis septentrionalis	S2, Endangered
Mammals	Pallid Bat	Antrozous pallidus	S3
Mammals	Spotted Bat	Euderma maculatum	S3
Mammals	Townsend's Big-eared Bat	Corynorhinus townsendii	S3
Mammals	Western Pygmy Shrew	Sorex hoyi	S3
Mammals	Wolverine	Gulo gulo	S3, Threatened
Reptiles	Plains Hog-nosed Snake	Heterodon nasicus	S2
Reptiles	Smooth Greensnake	Opheodrys vernalis	S2
Reptiles	Snapping Turtle	Chelydra serpentina	S3
Reptiles	Spiny Softshell	Apalone spinifera	S3
Invertebrates	Western Pearlshell Mussel	Margaritifera falcata	S2

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