Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Northern Region, Helena-Lewis and Clark National Forest July 2025

Forestwide Prescribed Fire Project

Environmental Assessment and Draft Decision

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Project Information

Project Name: Helena-Lewis and Clark National Forest Forestwide Prescribed Fire Project

Project Initiation Date: April 7, 2023, Proposed Action finalized Jan. 17, 2025

Proponent Name: Helena-Lewis and Clark National Forest

Responsible Official: Emily Platt, Forest Supervisor

District Name: All districts within the Helena-Lewis and Clark National Forest: Lincoln, Helena, Townsend, Judith-Musselshell, White Sulphur Springs – Belt Creek, and Rocky Mountain.

Counties: Broadwater, Cascade, Chouteau, Fergus, Gallatin, Glacier, Golden Valley, Jefferson, Judith Basin, Lewis and Clark, Meagher, Park, Pondera, Powell, Sweet Grass, Teton, Wheatland.

Anticipated Implementation: 2025-2044

PALS Tracking Number: 63783

Project File: Box/HLF – Forestwide Rx Fire NEPA

Project Webpage: https://www.fs.usda.gov/project/hlcnf/?project=63783

General Location: Central Montana

Applicable Geographic Areas: Big Belts, Castles, Crazies, Divide, Elkhorns, Highwoods, Little Belts, Rocky Mountain Range, Snowies, Upper Blackfoot; Designated wilderness is excluded.

Watersheds: The project area straddles the Continental Divide with most of the project located on the eastern side in the Upper Missouri River headwaters region, and a smaller area on the western side in the headwaters of the Columbia River Basin. The project contains drainage areas for the Arrow, Belt, Blackfoot, Boulder, Flatwillow, Judith, Middle Fork, Flathead, Musselshell, Shields, Smith, Sun, Teton, Two Medicine, Upper Clark Fork, and Upper Missouri River systems.

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Introduction

The Helena-Lewis and Clark National Forest (HLF) is proposing a forestwide approach to reducing wildfire impacts by applying prescribed fire, mechanical treatments, and hand treatments. This approach would increase our ability to maintain live forest over the long-term, better protect communities, increase safety during wildfire management operations, and reduce the cost to taxpayers of managing wildfires. Prescribed fire and other strategic fuels reduction work are important actions the Forest Service can take to effectively meet the wildfire crisis across this landscape (Agee and Skinner 2005, Martinson and Omi 2013, Hessburg et al. 2019, Hood et al. 2021, Prichard et al. 2021).

The 2.9-million-acre Helena-Lewis and Clark National Forest is a frequent-disturbance landscape, meaning wildfires and mortality from insects, disease, and other disturbances are common (table 1). These disturbances are expected to increase in frequency and severity into the future due to longer fire seasons and multiple forest stressors such as drought and insect attacks (Vose et al. 2012). Forest density and tree species composition has shifted in many dry forests (Arno et al. 1995, Naficy et al. 2010, Hood et al. 2021), forest patterns have been homogenized (more contiguous forest areas, loss of age class diversity or structural diversity) in forests with a more mixed severity fire regime (Heyerdahl et al. 2006, Naficy et al. 20, Hood et al. 2021), and climate conditions are changing (Rocca et al. 2014, Parks and Abatzoglou 2020). For example, fire frequency has increased by about 500 percent since the 1970s and burned area has increased by 1700 percent in the in the Rockies (Hood et al. 2021, Westerling 2016). Current conditions make forests susceptible to high levels of mortality and make it challenging to support persistence of important habitats. Current conditions also pose a heightened risk to communities in and around central Montana.

Historically, 38 percent of the Helena-Lewis and Clark burned every 1-35 years at low or mixed severity (1,214,264 acres). Cover types associated with this fire regime include ponderosa pine, dry Douglas-fir and mountain sagebrush. Another 21 percent burned every 35-200 years at low or mixed severity (686,748 acres). Cover types associated with this fire regime include Wyoming big sagebrush, low sagebrush, riparian systems, limber pine/Rocky Mountain juniper, dry lodgepole, moist Douglas-fir, and whitebark pine. Another 7 percent burned every 1-35 years at high severity (213,263 acres). Cover types for this fire regime include grasslands and Great Plains shrublands. An additional 29 percent of the Helena-Lewis and Clark every burned 35-200 years at high severity (937,182 acres). Cover types associated with this fire regime include aspen, moist lodgepole, subalpine fir, and Engelmann spruce. Finally, 2 percent of the Helena-Lewis and Clark burned at greater than 200 years (poor site lodgepole and subalpine forbs and grasses) (56,960 acres). Thus, historically, the forest would have had an average of about 78,000 acres burn at low or mixed severity every year and would have experienced an average of over 20,000 acres of high severity fire every year. Of course, these are averages, and wildfire is highly variable, so many years would have less fire or more fire.

The Helena-Lewis and Clark currently implements between about 8,000 and 15,000 acres of mechanical, hand, and prescribed fire fuel treatments each year. Over the last 10 years, the national forest has experienced an average of roughly 24,000 acres a year of wildfire. Inclusive of wildfire, we currently don’t meet half of what burned historically. Needless to say, this doesn’t allow us to address the extreme fire deficit or account for longer fire seasons, increased drought conditions, and larger and more severe wildfires. This depicts a problem common across forests in western North America; the current pace and scale of fuel reduction management activities, and particularly prescribed fire, do not match the scale of the challenge (Kolden 2019, Parks and Abatzoglou 2020, Prichard et al. 2021). This matters because of

how it sets the landscape up for wildfires today and how that affects the trajectory of forests moving forward over time.

Historical fire exclusion drastically reduced area burned across the Rockies between the 1860s and 1930s, including in remote areas beginning in the 1940s. The general result is homogenized spatial pattern of non-forest and forest vegetation types and reduced forest age and structural diversity (Hood et al. 2021). Dry forests have experienced lengthened fire return intervals and change in stand structure, composition and fuels (Hood et al. 2021). Dry forests have experienced an increase in tree density and shifts in species composition towards more shade-tolerant species such as Douglas-fir, true firs, or lodgepole pine (Brown et al. 1994, Arno et al.1995, Keeling et al. 2006, Hood et al. 2016, Hood et al. 2021). Numerous studies highlight how quickly composition can shift to shade tolerant species in the absence of frequent low severity fire in dry conifer forests (North et al. 2007, Hood et al. 2020, Hagmann et al. 2021[1], Hood et al. 2024). Higher densities of fire intolerant species and Douglas-fir and greater density directly equates to a greater risk of high severity fire (Berkey et al. 2021).

Simplified landscape patterns in mixed severity fire regime forests have reduced biotic diversity and increased the risk of large, spreading disturbances while jeopardizing remaining old forest patches (Binkley et al. 2007, Raffa et al. 2008, Moritz et al. 2011, Perry et al. 2011, Kitzberger et al. 2012, Hessburg et al. 2016). Moreover, we now have large contiguous areas of early successional habitat created by intense fire, as well as large expanses where these pre-forest conditions are completely absent. The medium-scale mosaic of early successional, pre-forest conditions dispersed across landscapes is often missing (Hessburg et al. 2016). Historically, patch size distributions of early successional conditions tended to represent few large patches (greater than approximately 1,000 ha) and many small patches (several hectares or hundreds of hectares) (Perry et al. 2011, Hessburg et al. 2016). Early successional conditions included a broad distribution of patch sizes, but the very large patches that are typical after contemporary wildfires are absent from historical distributions (Hessburg et al. 2016). Much of the mixed severity forest landscape is highly altered and susceptible to intense fires, seasonal and longer droughts, and large-scale, protracted insect outbreaks (Hessburg et al. 2016). Restoring natural spatial and temporal variation in forest successional patchworks is fundamental to restoring forest resilience (Keane et al., 2009, Hessburg et al. 2019).

Where high severity fire was an important component of the fire regime, fire exclusion effects are most evident as reduced landscape diversity of age classes (Hood et al. 2021). The changes in subalpine forests have been more subtle and include infilling of subalpine meadows and some loss of landscape mosaic diversity though effects are generally more limited (Hood et al. 2021).

Table 1. Historical fire frequency and severity across the Helena-Lewis and Clark

Fire frequency and severity	Cover types	Associated acreage
1-35 years at low or mixed severity	Ponderosa pine, dry Douglas-fir and mountain sagebrush	1,214,264

[1] Baker et al. published a paper in 2023 countering evidence offered in this particular article. The Baker et al. paper draws sweeping conclusions from limited on the ground data, with no actual data from Montana or the Northern Rockies. Nevertheless, we note that our analysis aligns with conclusions from both papers: forests are denser today than they were historically and species composition has shifted, sometimes dramatically (Hagmann et al.) and mixed severity fire regimes were a substantial and important portion of the historical fire regimes and management should operate with this knowledge (Baker et al.).

Fire frequency and severity	Cover types	Associated acreage
35-200 years at low or mixed severity	Wyoming big sagebrush, low sagebrush, riparian systems, limber pine/Rocky Mountain juniper, dry lodgepole, moist Douglas-fir, and whitebark pine	686,748
1-35 years at high severity	Grasslands and Great Plains shrublands	213,263
35-200 years at high severity	Aspen, moist lodgepole, subalpine fir, and Engelmann spruce	937,182

As a result of these changes, the Helena-Lewis and Clark has less ponderosa pine forest than it had historically, and we are managing towards an increase (USDA FS 2021). Similarly, Douglas-fir and lodgepole pine forest have greatly increased from historical levels, and we're managing towards a reduction (USDA FS 2021). Also of note is the lack of large and very large trees and the overabundance of small trees (USDA FS 2021). The forest plan calls for managing toward more large and very large trees and fewer small trees. Meadows and grasslands are being encroached in some areas by trees that shrink these unique and special segments of the landscape (Schoennagel et al. 2004). Across the national forest, the average size of early successional forest patches (one measure of successional diversity) is at the low end of the natural range of variability area weighted mean patch size, but the simple average early successional patch size is larger now than it was historically (USDA FS 2021). This could be the result of effectively suppressing small and medium-sized wildfires while the recent fires that have occurred have been relatively large, consistent with the scientific literature. Managing toward each of these broad desired conditions will increase forest resistance and resilience to wildfire (i.e., ability to survive wildfires and recover from wildfires, respectively).

This project aligns with the Wildfire Crisis Strategy and meets the desired conditions of the Helena-Lewis and Clark National Forest 2021 Land Management Plan (Forest Plan). Scientific literature strongly supports this strategy, with multiple studies confirming that prescribed fire and mechanical treatments reduce fire severity, slow fire spread, and improve forest resilience. Given longer fire seasons and increased drought likelihood, this proactive management approach is critical to protecting both ecosystems and communities.

Purpose and Need and Proposed Action

Purpose and Need

There is a need for wildfire resistant and resilient ecosystems that align with the Wildfire Crisis Strategy and meet the desired conditions of the Helena-Lewis and Clark 2021 Land Management Plan (Forest Plan). This project aims to reduce the impacts of severe wildfire and improve forest resilience in the Helena-Lewis and Clark National Forest through prescribed fire and mechanical/hand fuel reduction treatments. The approach prioritizes flexibility by allowing treatments to be based on real-time ecological conditions, ensuring timely and effective wildfire mitigation. The purpose of this project is to reduce the impacts from severe wildfire and influence how wildfire and other disturbances will shape the landscape and impact local communities for example by enabling the Helena-Lewis and Clark to maintain more live forest over the long-term, better protect communities, increase safety during wildfire management operations, and reduce the cost to taxpayers of managing wildfires. This project will also reduce the need for intensive fuels treatments within the next couple decades by moving an estimated 17 percent of the national forest into a maintenance mode that would allow fire managers to strategically utilize prescribed

fire or wildfire to manage forest vegetation (assuming roughly half of the 40,000 acres are maintenance prescribed fire).

A key aspect of this project is shifting away from rigid, site-specific planning that takes decades to implement and instead embracing a landscape-scale, adaptive approach. By decoupling fuel reduction work from commercial timber sales, managers can prioritize areas based on ecological and social risk, rather than economic timber value. The project will enable managers to adapt to quickly changing ecological conditions and address the known need for prescribed fire to reduce the severity and impacts of wildfire across a wide range of forest types and conditions.

The Helena-Lewis and Clark National Forest is now and was historically shaped by frequent disturbances (Hood et al. 2021, USDA Forest Service 2021). As noted in the introduction, the forest had an average of about 78,000 acres burn at low or mixed severity every year and would have experienced an average of over 20,000 acres of high severity fire every year. For much of the last century, wildfire area burned has diminished compared to historical conditions (Marlon et al. 2012, Hood et al. 2021). Effective fire suppression has led to the unintentional and dramatic landscape changes described in the introduction.

Given longer fire seasons, higher likelihood of drought conditions, and higher likelihood of hot weather conditions, wildfires are expected to become more frequent than they were in the past (Westerling 2006, Littell et al. 2009, Marlon et al. 2012, Parks and Abatzoglou 2020). Because of the increased number of homes in the wildland-urban interface (Noonan-Wright and Seielstad 2022), these wildfires also carry a much greater risk to the safety of local residents and their homes and businesses.

Prescribed fire has been shown to increase heterogeneity in fuels to modify fire behavior and decrease fire severity (Arkle et al. 2012, Safford et al. 2012, Stephens et al. 2014, Tubbesing et. al. 2019.) Mechanical and burning treatments combined are typically the most effective at both changing forest structure (e.g., reducing both density and ladder fuels that support high severity fires) and composition (promoting more fire-tolerant species) and reducing surface fuels that carry fire across the landscape and directly impact how quickly a fire burns (Fule et al. 2012, Martinson and Omi 2013, Hood et al. 2024). Fuel reduction treatments can greatly increase resistance to insect attacks and maintain lower wildfire hazard (Hood et al. 2024). Safford et al. (2012) share their view that quantitative assessments of fuel treatment effects on fire severity in frequent-fire forest types “hardly merit further effort” because the benefits are so obvious and well-known in terms of their ability to reduce the severity of wildfire (for instance, reduce the amount of mortality caused by wildfires) and reduce the speed with which wildfires burn across the landscape (Safford et al. 2012, Hood et al. 2024, Stephens et al. 2014). Safford et al. (2012) further conclude that fuel treatments that incorporate explicit removal of surface fuels can be expected to significantly reduce fire severity and canopy tree mortality, even under relatively extreme weather conditions.

The response of forests to fire derives from its resistance (ability to survive a fire) and its ability to recover after fire, or its resilience (Hood et al. 2021). Generally, a resistant and resilient landscape consists of a diversity of age classes, species composition, and successional stages so not all areas are susceptible to the same disturbances (USDA FS 2021). Particularly in light of changing climate conditions (such as increase in fire frequency of 500 percent and an increase in burned area of 1700 percent), managing toward natural range of variability or the center of the natural range of variability is a high-risk strategy. Instead, managing for a wide range of conditions across the landscape that better mimic the high diversity of the area’s natural fire regimes (Hood et al. 2021) may be more effective at supporting forests’ resistance and resilience to disturbances.

When fueled by extreme disturbance or climatic events, apparent landscape stability can shift abruptly, changing the distribution of age classes, species, or structures (Hessburg et al. 2020). Broad-scale and

abrupt landscape changes can be difficult for plants, animals, and human communities to withstand (Liu et al. 2007, Spies et al. 2014). Managers need to plan for this uncertainty and be ready to adapt as natural systems change by developing practical, adaptive approaches (Folke et al. 1996, Shafritz et al. 2005, Millar et al. 2007, Wellstead et al. 2013, Angeler and Allen 2016). This project increases the adaptability of management policy to changing conditions in the dynamic landscapes within the analysis area.

The scientific literature repeatedly demonstrates the failure of rigid management policies in dynamic systems (Holling 1973, Stephens et al. 2013, Chaffin et al. 2014). Inflexible plans and administrative or operational constraints will likely fail over time (Herrfahrdt-Pahle and Pahl-Wostl 2012, Gaines et al. 2022). The need for flexibility to adapt to changing conditions is clear, particularly in light of anticipated changes in climate (Shafritz et al. 2005, Millar et al. 2007, Wellstead et al. 2013, Angeler and Allen 2016).

Not surprisingly then, the Forest Service has frequently been in a position of spending 2 to 3 years on environmental analysis for a site-specific prescribed burning project only to have a wildland fire come through and burn part or all of the project area prior to National Environmental Policy Act analysis completion or project implementation, including several recent projects: Cabin Gulch, Boulder Baldy and Middleman. The approach for this project allows for proposed treatments to be aligned with the conditions on the ground at the time of implementation. For prescribed burning, this is particularly necessary since site-specific conditions that allow for safe burning can be quite dynamic. This provides the ability to place burn units in the right place at the right time. In addition, landscape-level planning allows managers to choose among several areas for implementation, providing opportunities for smoke dispersion and flexibility between the planning and the implementation stages. Also critical is that this project enables fuels work to be divorced from planning and implementing the forest's commercial timber sale program. Sometimes commercial timber and fuels priorities overlap, and sometimes they don't. This project allows managers to more easily implement fuels work in areas where there is little to no commercial timber value but other important values at risk, such as people's homes, or unique and hard-to-replace habitats such as old growth forests. There is significant and pressing ecological and social need for more prescribed fire on the landscape, as described above, and our traditional planning approach does not come close to meeting this very real, very pressing need. With our traditional approach, it would take us at least 70 years (with ideal timelines and no delays) to plan across this project landscape, and even at 70 years, many important areas would be missed. That is just for planning. For implementation, additional years would be required. Ecologically and socially, we don't have the luxury of that kind of time before impacts from wildfires are realized, such as setting our forests on trajectories that can't be changed in our lifetimes, or lost homes, or more tragically, more lost lives.

While this project is focused on reducing the social and ecological impacts of severe wildfire (e.g., many thousands of acres of contiguous forest mortality, hazardous levels of smoke in communities, dangerous firefighting conditions, high taxpayer costs of fighting fires), it will also have ancillary benefits. One such benefit is the increased ability of the forest to use wildfire to achieve these same management objectives. Another ancillary benefit is that the project would improve forest resistance to insects, disease, and drought (fewer trees would die from various disturbances) as tree growth and vigor increases from reduced resource competition.

Project Location

The project is located on approximately 2,295,000 acres in portions of the Rocky Mountain, Lincoln, and Helena Ranger Districts and the entire Townsend, Belt Creek-White Sulphur Springs, and Judith-Musselshell Rangers Districts on the Helena-Lewis and Clark National Forest in Montana (appendix A, figures 17-21). There are an additional approximately 33,500 acres on the Beaverhead-Deerlodge

National Forest, in the Elkhorns Geographic Area, that are included as part of this project area. The project area does not include designated wilderness or research natural areas (figure 21).

Table 2. Forest Service acres in the project area by geographic area

Geographic area	Acres
Big Belts	282,133
Castles	69,610
Crazies	57,618
Divide	202,577
Elkhorns	159,021
Highwoods	42,315
Little Belts	796,802
Rocky Mountain Range	324,003
Snowies	114,506
Upper Blackfoot	246,413
TOTAL	2,294,998

Proposed Action

The Helena-Lewis and Clark National Forest proposes to authorize prescribed burning, hand treatments, and mechanical treatments of vegetation across the national forest in areas needing restoration or maintenance outside of designated wilderness or research natural areas (see figure 17, an overview map of the project area). Approximately 33,500 acres of the Beaverhead-Deerlodge National Forest (Elkhorns) is also included. Project activities would include thinning of live small diameter trees under 10 inches diameter-at-breast height, fuel re-arrangement, fireline construction, and prescribed burning. These activities would be accomplished using chainsaws, hand tools, mechanical equipment, or aerial ignitions. The amount of land treated annually would depend on a variety of factors, including weather conditions, air quality, complexity of prescribed fire operations, resource protection measures, and resources available to accomplish management goals. The proposed action includes about 2,295,000 acres for treatment of the 2,877,580 total project area acres. However, the maximum number of acres that would be burned annually is anticipated to be no greater than 40,000 acres across the project area. While management activities could occur at any time of year, they would most likely occur in the spring and fall. Management may occur within riparian areas associated with this proposal. For the past 10 years, burn blocks have ranged from 3 to about 1,100 acres, with an average of 134 acres and a median of 18 acres. Burn blocks are likely to trend larger in the future if the forest prioritizes more non-wildland-urban interface areas to meet objectives including changing the severity of fires that burn across the landscape or protecting remaining old forests (figure 19).

Prescribed burning would reduce fuel loading through the application of fire over a designated burn unit. Burning prescriptions would be identified so that fire could be applied to meet the purpose, need, and conditions of this project. Both ground and aerial ignition could be used. Aerial ignitions would be avoided within the inner portion of riparian management zones and any location where project design features limit its use. Access to prescribed burning treatment units may occur on any system road or trail, including those authorized for administrative use by the district ranger such as maintenance level 1 roads, which are maintained to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. No new road construction is proposed as part of this project. Cross-country travel of ground disturbing equipment would be restricted to slopes less than 40 percent and periods when

the soil is dry or frozen. Other limiting considerations may include vegetative conditions and soil erodibility and instability. After treatment completion, any signs of cross-country travel would be obliterated. Thinning of small diameter trees, fuel re-arrangement, and fireline construction would be used, where prescribed, to prepare areas for the effective use of prescribed fire. Mastication or brushing of system road surfaces may be completed prior to implementation.

Where prescribed fire can be used to obtain the desired outcomes (e.g., low-severity fire to reduce fuel in historical low severity fire regimes forests or mixed severity fire in mixed severity regimes with adequate controls on fire spread), only prescribed fire will be used. Snow, roads, ridges and bare openings will be prioritized for burn unit boundaries to minimize the impacts of control lines and the need for mechanical work. Estimated amount of mechanized control line per geographic area would be less than 20 miles. Hand treatment of fuels will be used if needed to retain openings in grasslands where fire only would not halt conifer encroachment, or to create control lines where the snow line, water features, roads or other topographic features are not available to function adequately as control lines. Mechanical fuels reduction will be used for burn preparation such as for safety along control lines or unit boundaries where there is a heavy load of dead and down wood or along private lands boundaries or to reduce fuels to levels that make low or mixed severity fire achievable in associated forest types. In historical mixed severity fire regimes, some mechanical work at the edge of a burn unit to control fire behavior at the edge of such units may be needed.

Fireline would be constructed where existing features such as roads, trails, or wet drainages are not sufficient to meet prescribed fire control objectives. The amount of fireline required would vary depending on the size of the burn area and site-specific conditions. Fireline construction may include removing vegetation and clearing all vegetation down to mineral soil using mechanical, ground-based equipment, or hand tools, including chainsaws. Firelines would consist of narrow, hand-dug line (hand line) or mechanically constructed lines generally 2 to 4 feet wide or wider. Fireline placement would be selected strategically in places that would be easiest to restore. All fireline would be rehabilitated. Fireline would be rehabilitated as needed to prevent erosion and unauthorized use.

Control lines are used instead of roads or natural features for prescribed fire under several conditions:

- Lack of Suitable Natural Barriers – If existing roads, streams, or other natural features are not in the right location, are too far apart, or do not provide a reliable firebreak.
- Fuel Continuity – When vegetation is continuous, and there are no breaks to slow fire spread, constructed control lines help contain fire within the intended area.
- Topographic Challenges – In steep, rugged terrain where roads or natural features may not be effective in controlling fire movement due to upslope fire behavior.
- Fire Behavior Considerations – If expected fire behavior (e.g., spotting potential, wind-driven fire) requires a more secure boundary than what existing features provide.
- Resource Protection – To protect sensitive areas, cultural sites, or wildlife habitat where fire needs to be carefully managed.
- Safety and Access – When existing roads are not safe or accessible for fire personnel, a control line can be constructed in a more strategic location.
- Operational Objectives – If prescribed fire plans require holding lines that align with burn unit boundaries, strategic ignition patterns, or long-term management goals.

Control lines can be created by hand crews, excavator, or other mechanical equipment and may include blacklining (burning out vegetation along the line) to strengthen them before ignition. Mechanized equipment would only be used when it is unsafe for hand crews or existing fuel loading (e.g., heavy dead and down) would require machinery to remove these concentrations from the burn unit boundary. The estimated amount of mechanized control line per geographic area would be less than 20 miles.

Hand treatment of vegetation would include, cutting, piling, lopping and scattering, pruning, and girdling. Mechanical treatments would include thinning small trees, mastication, in-woods piling and chipping. These types of vegetation management activities may be essential in some places before prescribed fire could be safely or effectively introduced. For example, one common treatment practice uses the following sequence:

- Hand thin trees less than eight inches in diameter, while favoring desired species.
- Prune leave trees (remove branches) from the ground up to eight feet high.
- Pile cut material or scatter it if there isn't enough material to build a pile.
- Burn piles.
- Follow up with an understory burn to reduce surface fuels.

Fuels treatments without the addition of prescribed fire would be limited to areas where resource concerns dictate the need to reduce fuel loading but risk to the resource values from prescribed fire are too high. Examples of such areas might include mining sites or heritage sites where fuels can safely be reduced (lop and scatter, chipped and left onsite, or cut and removed off site) but risk to fragile soils, water, or archeological areas from prescribed fire is not desired. Another example may be in areas immediately adjacent to private lands with high invasive plant infestations. In these areas fuel reduction treatments are needed but because weed spraying may not be performed before or after burning on private lands, prescribed burning may exacerbate the spread of undesired invasive species on National Forest System lands. Another example includes areas of mixed ownership where the Forest Service possesses very small "island" parcels that would benefit from fuels reduction projects but are too small or difficult to effectively conduct prescribed fire activities on (rough terrain, limited control line locations, limited access, etc.).

Commercial activity is allowed but given constraints and purpose of the project, this is not traditional commercial logging, which generally requires both permanent and temporary road building. No road building will occur as part of this project, and the diameter limit is a natural and intentional constraint as well. Road maintenance and road reconstruction (with limits as described in the design features) may occur. This project would allow commercial activity so that, for instance, small post and pole or commercial firewood sales could be offered to help offset the extraordinary cost of fuels work where it's needed before we can safely reintroduce fire to restore these landscapes. We estimate between zero and 100 log truck loads annually across the entire project area, with the expectation that we'll be much closer to zero. In addition, there would be no more than five log trucks per day.

Project activities could include re-treatments (generally prescribed fire alone) in areas that have already been thinned or burned to maintain investments in the wildland-urban interface or capitalize on fuel treatments/useful landscape patterns and heterogeneity that wildfires or management have created in the past. Fuels management tends to be effective (for instance, dampen fire behavior) for about 10-15 years (e.g., Finney et al. 2006; Omi et al. 2007).

All project activities would be consistent with the Forest Plan and relevant laws, regulations, and policies. For activity cards that describe when each potential activity would be used, see appendix D. For sample preliminary silvicultural prescriptions, see appendix I.

Prioritization of Project Activities

Project activities would be implemented using the following considerations to create a general prioritization for unit implementation:

- High wildfire risk near private lands and/or important for community wildfire protection.
- Ecological need. For example, areas where management can be used to maintain or restore low or mixed severity wildfire regimes, consistent with historical fire severity for given forest types. Or areas where prescribed fire would support aspen growth or protect old forests.
- Areas within or near past management or natural disturbances like wildfire in order to maintain landscape fuels heterogeneity. (Reduces risk of large-scale, high severity fires.)
- Ability to align forests with desired conditions as outlined in the Forest Plan, including cover type dominance, existing and desired tree species presence, and existing and desired size class distribution.
- Municipal or source water protection.
- Improved ability to manage wildfire.
- Practical ability to implement project (such as capacity, funding, complexity, or site conditions).

As implementation areas are identified, the national forest will inform stakeholders to share planned activity locations and other relevant information.

Management in subalpine forests is not a high priority because of the more subtle changes wrought by fire suppression in such areas. However, prescribed fire may be used to maintain meadows or support historical landscape heterogeneity in these areas as resources allow. Given the varied conditions and community context across the project area, additional information highlighting specific priorities by geographic area is also included below. There are ten geographic areas within the Helena-Lewis and Clark. They are: Little Belts, Castles, Crazies, Highwoods, Snowies, Elkhorns, Big Belts, Divide, Upper Blackfoot, and Rocky Mountain Range (see table 2 for acreages and appendix A, figure 20 for a map).

- Within the Little Belts, Castles, Crazies, Highwoods and Snowies geographic areas, the following areas would be initially prioritized for management:
    a. Lower elevation ponderosa pine and Douglas-fir forests.
    b. Areas along the interface with private land or other ownerships.
    c. Areas within or near previous disturbances (management or natural).
    d. The area to the west of the Tenderfoot Creek Experimental Forest.
- Across the Elkhorns, Big Belts, and Divide geographic areas, the Elkhorns Geographic Area would initially be prioritized, then the northern portion of the Divide Geographic Area (north of the highway to the Lincoln Ranger District), then the Big Belts. Areas within or near previous disturbances would also be prioritized in these geographic areas, as would areas adjacent to private lands. In the Elkhorns, a primary focus will be on maintaining openings/meadows.
- In the Upper Blackfoot Geographic Area, areas within or near previous disturbances would initially be prioritized.

- In the Rocky Mountain Range Geographic Area, areas within or near previous disturbances would be prioritized, as would the wildland-urban interface areas around Dearborn-Falls Creek, Arrowleaf, and Heart Butte.

Geographic area priorities would be reviewed by Forest line officers (forest supervisor, deputy forest supervisor, and district rangers) and relevant staff on an annual basis. Capacity and likely acreage to be managed each year given capacity would also be reviewed annually. Forestwide priorities would be determined by the forest supervisor and deputy forest supervisor.

The total potential acreage for all geographic areas in table 3 adds up to more than the total acreage across the forest because while projects will be distributed across the landscape, they will not occur in every geographic area every year. Larger projects outside of the wildland-urban interface may occur across several thousand acres. Within each burn area, not every acre will be burned. We expect the acreage we're able to burn to increase gradually over the course of the project. As we are able to include more maintenance prescribed fire, we hope to increase the acreage toward the higher end of the range. Maintenance prescribed fire maintains relatively low levels of surface fuels (twigs, needles, branches) and will help reduce the number of seedlings. As implied, maintenance treatments help maintain the investment we have made in reducing surface and ladder fuels to reduce fire severity in strategically selected locations. If we are able to reach the higher end of the range (40,000 acres) as the project progresses, and inclusive of wildfire, we still do not reach historical levels of burning and do not address the "wildfire backlog". However, critically important progress towards the project purpose will be made in priority areas. Table 3 lists each geographic area and the estimated maximum acreage that would be managed annually in each area.

Table 3. Annual estimated acreage by forest plan geographic area

Geographic area	Maximum acres/year	Proportion per geographic area	Portion of 40k	Forest Service acres in project area	Percent treated per year	Percent treated after 20 years*	Percent burn	Percent non-mechanical fuels reduction	Percent mechanical fuels reduction	Percent mechanical thinning
Big Belts	5,000	11.9%	4,762	282,133	1.7%	16.9%	60-75%	10-20%	5-10%	5-10%
Castles	1,500	3.6%	1,429	69,610	2.1%	20.5%	40-60%	50-70%	40-60%	0%
Crazies**	1,500	3.6%	1,429	57,618	2.5%	24.8%	0%	0%	0%	0%
Divide	3,000	7.1%	2,857	202,577	1.4%	14.1%	30-50%	40-50%	5-10%	5-10%
Elkhorns***	8,000	19.1%	7,619	159,021	4.8%	47.9%	30-50%	40-50%	5-10%	5-10%
Highwoods	1,500	3.6%	1,429	42,315	3.4%	33.8%	90-100%	0-10%	0-10%	0-3%
Little Belts	8,000	19.1%	7,619	796,802	1.0%	9.6%	90-100%	0-10%	0-10%	0-3%
Rocky Mountain Range	5,000	11.9%	4,762	324,003	1.5%	14.7%	70-100%	0-10%	20-40%	0-30%
Snowies	1,500	3.6%	1,429	114,506	1.3%	12.5%	60-80%	10-30%	0-10%	0-3%
Upper Blackfoot	7,000	16.7%	6,667	246,413	2.7%	27.1%	70-90%	10-30%	10-30%	0-3%
Total	42,000	100.00	40,000	2,294,998	1.7%	17.4%	NA	NA	NA	NA

*Assumes half of burn acres are re-treatment

**Not a priority

***5-8,000 acres per year for 5 years, repeating twice over the life of the project.

Monitoring and Public Engagement

The Helena-Lewis and Clark is committed to monitoring and engaging with the public as we implement this project. Every year, we will share information with the public about which project areas we intend to manage and with which management activities. Every year, we will also share a summary of what was accomplished the previous year. We intend to share this information in a meeting to enable two-way communication. The meeting will likely be virtual to enable participation across the landscape in a single meeting. Local districts may choose to host a virtual connection from their district offices. The forest will share out-year data (e.g., 3- to 5-year plans) when they are developed as well.

Through a combination of field work and modeling, the Helena-Lewis and Clark will monitor:

- Change in flame length intensity (a surrogate for severity) by forest type in areas that have been managed (evaluated in Fire, Fuels, and Air Quality Appendix),
- Presence or growth of invasive weed populations, and
- The effectiveness of our design criteria at protecting various resources.

The Forest would also like to monitor items that may be of interest to members of the public or collaborative groups. Additional monitoring may require partnerships given limited current capacity, but we are open to and excited about this potential. We envision the monitoring work associated with this program growing and adapting as collaboratives or members the public engage with the national forest over the course of implementation and as we learn more from the data we collect.

Minimally, every 5 years, the national forest will assess:

- The effectiveness of the project at meeting the purpose and need (a key measure being change in flame length intensity/fire severity),
- The effectiveness of restoring the process of fire to the landscape as measured by what kind of fire over how much of a stand or area (by fire regime),
- Whether any changes should be made to the project (some changes might require additional environmental analysis) based on monitoring data, information shared by the public, or newly available science.

A summary of the national forest's assessment will be made available to the public and shared at the annual meeting described above.

If the effects of implementation are outside the scope of our analysis, we will stop further implementation in a particular geographic area or forest type until an additional assessment/analysis is conducted.

Project Design Features

Project design features have been developed to assure project conformation with the Forest Plan and to mitigate potential impacts to resources caused by implementing the proposed action. These project design features are an integral part of the proposed action and ensure project compliance with all applicable laws, regulations, and policies.

The project design features can be found in appendix B.

Implementation Process

Activities that would be authorized under the environmental assessment may take several months to several years to move through the required implementation process (see appendices C, D, and E). Therefore, at any given time there would be multiple activities in different stages of implementation. Each year, a suite of planned activities would be shared with the public and partners. The purpose of this sharing process is to keep the public apprised of upcoming activities and is independent of the public involvement requirements of NEPA, which would be fulfilled prior to signing a decision for this project. Please see the complete implementation plan and checklists in appendix C for additional details.

No-action (Current Management) Alternative

The Potentially Affected Environment section considers current and ongoing activities and trends in the analysis area and generally discusses continued trends if the proposed action is not taken (consideration of no action/current management). Additional discussion, including effects of the no action (current management), can be found under the Environmental Impacts section.

Potentially Affected Environment

The Forestwide Prescribed Fire Project area encompasses a total of 2,627,936 acres across the Helena-Lewis and Clark National Forest, which is located in Broadwater, Cascade, Chouteau, Fergus, Gallatin, Glacier, Golden Valley, Jefferson, Judith Basin, Lewis and Clark, Meagher, Park, Pondera, Powell, Sweet Grass, Teton, and Wheatland counties in the State of Montana. The project area also includes approximately 33,500 acres of the Beaverhead-Deerlodge National Forest.

The Forest has delineated ten geographic areas for analysis purposes. These are Big Belts, Castles, Crazies, Divide, Elkhorns, Highwoods, Little Belts, Rocky Mountain Range, Snowies, and Upper Blackfoot. Descriptions of ecological characteristics for these geographic areas are in the Forest Plan, chapter 3.

Fire, Fuels, and Air Quality

Natural Resources

Fire is a critical ecological function across the Helena-Lewis and Clark National Forest that plays a central role in providing quality habitat for both plant and wildlife species. It is expected that the climate will continue to trend warmer and drier than historical conditions (Halofsky et al. 2018). Larger and more intense and severe fires are already occurring due to increasingly warmer, drier conditions, and increasing occurrence and severity of droughts (Vose et al. 2012, Parks and Abatzoglou 2020, Hood et al. 2021a). Parks et al. (2020) demonstrate an eightfold increase in high severity fire in the western United States from 1985 to 2017. Concurrent with warming and drying, fire frequency in the Rockies has increased roughly 500 percent since the 1970s and burned area has increased 1,700 percent (Westerling 2016, Hood et al. 2021).

Wildland fire spread is affected by three primary factors: topography, weather, and fuels. In wildland fire, fuel is all combustible plant-derived material including grass, litter, duff, down dead woody debris, exposed roots, plants, shrubs, and trees. This plant-derived material can be dead or alive. Plant parts that are not consumed, such as the trunks of live trees, are not considered fuel. These factors are used to predict fire behavior in areas by considering topographic inputs, predicted weather, and known or representative fuels conditions for a site or landscape. Weather and topography are fixed environmental

factors that cannot be manipulated for the purpose of effecting fire behavior. Fuels on the other hand, can be changed. Fuels are the only influence on wildland fire we can manipulate to modify fire behavior.

Fuel loading that's greater than desired conditions significantly contributes to the effects of a fire disturbance. Human activities, including approximately one hundred years of widespread fire suppression and past management practices, and climate have resulted in areas with uncharacteristic fuel loading and continuity that do not meet the Helena-Lewis and Clark National Forest Plan's desired conditions (figures 1 and 2) (Agee and Skinner 2005, and Helena-Lewis and Clark National Forest Plan). Current conditions set the stage for wildfires that result in large-scale forest mortality and threaten communities as well as public and firefighter safety.

Figure 1. Forest understories crowded with dead and dying trees and high fuel loading

Figure 2. Fuel loading in a stand of Mountain Pine Beetle killed Ponderosa Pine

Figure 3. Dense tree stands that are contiguous across tens of thousands of acres set the stage for large-scale wildfires and high levels of forest mortality

Historical fire exclusion drastically reduced the area burned across the Rockies between the 1860s and 1930s, including in remote areas beginning in the 1940s. The general result is a homogenized spatial pattern of non-forest and forest vegetation types and reduced forest age and structural diversity (Hood et al. 2021a). Dry forests have experienced lengthened fire return intervals and change in stand structure, composition and fuels. Dry forests have experienced an increase in tree density and shifts in species composition towards more shade-tolerant species such as Douglas-fir, true firs, or lodgepole pine (Brown et al. 1994, Arno et al.1995, Keeling et al. 2006, Hood et al. 2016, Hood et al. 2021a). Numerous studies highlight how quickly composition can shift to shade tolerant species in the absence of frequent low severity fire in dry conifer forests (North et al. 2007, Hood et al. 2020, Hagmann et al. 2021, Hood et al. 2024). Higher densities of fire intolerant species and Douglas fir and greater density directly equates to a greater risk of higher intensity and more severe fire (Berkey et al. 2021). In addition, decades of fire

exclusion in many areas have allowed enough time for some shade-tolerant species to develop thick bark and become resistant to fire, such that even if fire is reintroduced survival is much higher (Hood et al. 2016).

The lack of openings and continuous nature of trees across tens of thousands of acres in forests that historically had mixed severity fire regimes has increased the risk of large, spreading disturbances while jeopardizing remaining old forest patches (Binkley et al. 2007, Raffa et al. 2008, Moritz et al. 2011, Perry et al. 2011, Kitzberger et al. 2012 Hessburg et al. 2016). Moreover, we now have large, contiguous areas of pre-forest conditions or very young forests created by intense fire, as well as large expanses where these pre-forest conditions are completely absent. The medium-scale mosaic of openings and patchiness dispersed across landscapes is often missing (Hessburg et al. 2016). Historically, patch size distributions of early successional conditions (for instance, openings or young forest) tended to represent few large patches (>~2,470 acres) and many small patches (several acres or hundreds of acres) (Perry et al. 2011, Hessburg et al. 2016). Early successional conditions included a broad distribution of patch sizes, but the very large patches that are typical after contemporary wildfires are absent from historical distributions (Hessburg et al. 2016). Much of the mixed severity forest landscape is highly altered and susceptible to intense and severe fires, seasonal and longer droughts, and large-scale, protracted insect outbreaks (Hessburg et al. 2016). Restoring natural spatial and temporal variation in forest patchiness is fundamental to restoring forest resilience (Keane et al. 2009, Hessburg et al. 2019).

Researchers have demonstrated the importance of restoring the variability created by the mix of historical fire regimes and forest types across the landscape (Odion et al. 2004, Baker et al. 2007). The “profound homogenization” of forest structure that has occurred in mixed severity fire regime forests is associated with a significant loss of heterogeneity, which in turn has led to a loss of resilience to disturbances (Berkey et al. 2021). In other words, the range of conditions created by the historical mix of low and high severity wildfires and small and medium-sized fires is lacking today, and this lack of patchiness creates a landscape exceptionally vulnerable to large-scale forest mortality. Variability in fire return intervals at the landscape scale would allow some areas to develop a greater resistance to damaging wildfire, which equates to lower intensity and severity wildfires (Perry et al. 2011). Patches of grass or shrubland are a key element of mixed severity fire regime forest diversity, and both the amount and configuration play an important role in the overall resistance (ability to persist/live through disturbance like wildlife) and resilience (ability to recover from disturbance) of forests (Hessburg et al. 2016). Irregularly spaced trees, large and small openings, and resulting variation in fuelbeds all limit the potential for crown fire initiation and spread and reinforce similar post-fire vegetation patterns (Stephens et al. 2008). Across many mixed severity fire regime landscapes, historical fire regimes maintained overall forest density and biomass at levels far below carrying capacities, figure 3 (Hessburg et al. 2000, Bond and Keeley 2005). That is, large areas of non-forest were commonly interspersed with forest patches, creating a benign to moderate fire regime (Hessburg et al. 2016). These non-forest openings have a stabilizing effect on wildfire by limiting fire spread, and severity, even under extreme weather conditions (Hessburg et al. 2016, Povak et al. 2023).

Figure 4 shows one example of a mixed severity fire regime in which some fire would be low severity, leaving most of the forest that burned alive while removing smaller trees. Some areas would burn at higher severity, killing most of the trees and creating a patchy landscape of open and closed forest over time. Mixed severity fire regimes are incredibly diverse, with innumerable potential configurations.

Figure 4. Example of a mixed severity fire regime

As with mixed severity fire regime forests, fire suppression has induced homogeneity and increased vulnerability of lodgepole forests to unnaturally large fires (Barrett 1993). Where high severity fire was an important component of the fire regime, fire exclusion effects are most evident as reduced landscape diversity of age classes (Hood et al. 2021a). The changes in subalpine forests have been more subtle and include infilling of subalpine meadows and some loss of landscape mosaic diversity though effects are generally more limited (Hood et al. 2021a).

Although thinning and prescribed burning have been shown to be highly effective at mitigating the collective effect of the changes described, the current scale and pace of these treatments do not match the scale of the management challenge (Kolden 2019, Prichard et al. 2021). Forest structure, composition and landscape patterns must be modified at a scale that is consistent with the scale of the current vulnerabilities (North et al. 2012, Stine et al. 2014). Landscape-level approaches are needed that reduce live and dead fuel connectivity and limit large crown fires (Hessburg et al. 2016). Landscape-scale restoration that fosters spatial heterogeneity in forest structure and composition, including managing for open patches is also essential (Hood et al. 2021a).

Given the dramatic changes already occurring in forests across the west and this project area and the prediction of continued and increasing change, researchers from many field note the critical importance of administrative flexibility, including in planning processes, in order to adapt quickly enough to ecological changes and in order to meet the challenges of managing for conversation ends in a quickly changing environment (Doremus 2001, Brown 2003, Millar et al. 2007, Reiners 2011, Vose et al. 2012, Wellstead et al. 2013, Angeler et al. 2016).

Infrastructure Resources

Wildfires pose a significant threat to infrastructure resources within Montana's wildland-urban interface, where human development meets undeveloped wildland. The increasing frequency and intensity of wildfires has exacerbated the risks to life and property. In addition, over the past several decades new construction and the expansion of communities near forests has increased the wildland-urban interface area at an accelerated rate. Some new construction has used modern fire-resistant designs and materials. Most of the construction in the wildland-urban interface have not and poses the greatest risk to life and property (CWPC 2021, FEMA 2022).

Montana does not have a statewide law that specifically mandates defensible space around structures and fire safe building codes (resistant to wildfire damage or loss). However, there are several frameworks and regulations aimed at wildfire prevention and management. The Montana State Fire Plan is a statewide initiative that encourages risk reduction through community preparedness, including the establishment of defensible space around homes. The Montana Department of Natural Resources and Conservation promotes Firewise principles and provides guidance on creating defensible spaces. While not a law, their recommendations are aimed at risk reduction. All counties in Montana have developed Community Wildfire Protection Plans that identify wildfire risks and outline strategies for mitigating those risks, often including home protection measures (DNRC 2019, DNRC 2024, University of Nevada, Reno Extension 2022).

Air Quality

The Clean Air Act of Montana, Title 75, Chapter 2, focuses on the regulation and management of air quality within the state to ensure the protection of public health and the environment. This legislation aims to achieve and maintain national air quality standards by establishing a comprehensive framework for the control of air pollutants through various means, including emissions standards, permitting processes for industrial sources, and monitoring requirements. The Act also empowers state authorities to develop plans and regulations that address air quality issues, promote public awareness, and encourage collaboration among stakeholders to mitigate air pollution effectively (Montana 2024).

The EPA has the primary role of establishing ambient air quality standards and ensuring compliance to those standards through the Clean Air Act. In Montana, air quality is managed at three levels of government: EPA, Montana Department of Environmental Quality (MDEQ), and local health departments (county rules or ordnances). The Montana Department of Environmental Quality is the State agency that has Federal delegation of authority for meeting the Clean Air Act requirements and manages prescribed burning under Title 17 (MDEQ 2024).

Title 17 defines prescribed burning as any planned open burning, either deliberately or naturally ignited, that is conducted on forest land or relatively undeveloped rangeland to: (a) improve wildlife habitat; (b) improve range conditions; (c) promote forest regeneration; (d) reduce fire hazards resulting from forestry practices, including reduction of log deck debris when the log deck is close to a timber harvest site; (e) control forest pests and diseases; or (f) promote any other accepted silvicultural practices.

Montana's smoke management program aims to mitigate the adverse effects of smoke from prescribed burns and wildfires on human health and the environment. The program is designed to protect air quality and public health, particularly during periods of increased smoke production. The program involves continuous monitoring of air quality to assess smoke levels and ensure they remain within safe limits for the public. This helps identify times when smoke may pose a risk to vulnerable populations, such as those with respiratory conditions, young children and the elderly. The program provides information to the public about smoke events, including forecasts, health advice, and protective measures. This transparency helps residents prepare and respond appropriately during smoke episodes. Also, the program includes guidelines for planning prescribed burns to minimize smoke impact. This includes considerations for meteorological conditions like atmospheric dispersal conditions (mixing heights and transport winds), burn timing, the amount of smoke produced, and location — all of which help reduce smoke dispersion into populated areas. This collective approach helps ensure that both prescribed fires and wildfires are managed effectively to protect public health.

Under Title 17, the Montana Department of Environmental Quality manages open burning and prescribed fire smoke emissions by classifying the burning operations into two categories (MDEQ 2024).

"Major open burning source" means any person, agency, institution, business, or industry conducting any open burning that, on a statewide basis, will emit more than 500 tons per calendar year of carbon monoxide or 50 tons per calendar year of any other pollutant regulated under chapter 17.8.6, except hydrocarbons. Prior to open burning, a major open burning source must apply to the department for an air quality major open burning permit.

"Minor open burning source" means any person, agency, institution, business, or industry conducting any open burning that is not a major open burning source. Unless required to obtain an open burning permit under another provision of subchapter 17.8.6, a minor open burning source need not obtain an air quality open burning permit.

The overall intent of Montana's smoke management program is to balance the ecological benefits of fire management with the need to protect human health from the harmful effects of smoke. By implementing these strategies, the program seeks to reduce the incidence of smoke-related health issues, particularly among sensitive populations, while allowing necessary burning practices to continue safely.

Wildlife

There are more than 300 terrestrial wildlife species known or expected to occur on the Helena-Lewis and Clark National Forest (USDA Forest Service 2021a), most of which may occur in the project area. Habitat for native wildlife species in the project area consists of riparian habitats, grass and shrub habitats, dry and mixed conifer habitats, hardwood tree habitats, high elevation habitats, late successional forest including large trees and old growth, and snags and coarse woody debris.

Elk are an important component of native wildlife diversity and are socially and economically important in Montana for a variety of reasons. However, viability of elk and the persistence of elk populations are not currently a concern in Montana or on the Helena-Lewis and Clark National Forest (USDA Forest Service 2020b).

There are three federally threatened wildlife species (grizzly bear, *Ursus arctos horribilis*; Canada lynx, *Lynx canadensis*; and North American wolverine, *Gulo gulo luscus*), two federally proposed wildlife species (monarch butterfly, *Danaus plexippus*; Suckley's cuckoo bumble bee, *Bombus suckleyi*), and two species of conservation concern wildlife (flammulated owl, *Psiloscops flammeolus*; Lewis's woodpecker, *Melanerpes lewis*) known to occur in the project area. Designated critical habitat for Canada lynx also occurs in the project.

The Wildlife Affected Environment (Environmental Baseline) is described in detail in each of the corresponding wildlife reports: Wildlife Diversity, Birds of Conservation Concern, Elk, Wildlife Species At Risk, and Wildlife Species Biological Assessment. Consultation with the U.S. Fish and Wildlife Service per the ESA is ongoing.

Grizzly Bear

Based on recent observations of grizzly bears in the Big Belt Mountains and on private land between the Little Belt and Highwoods mountain ranges, the U.S. Fish and Wildlife Service has indicated that grizzly bears 'may be present' throughout most of the project area, except for the Snowies, Crazies, and Castles geographic areas and the portion of the Big Belts geographic area that lies south of U.S. Highway 12. Between 2009 and 2018 there were several verified observations of grizzly bears between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem populations including in or near the Elkhorn, Big Belt, and Little Belt mountain ranges on the Helena-Lewis and Clark National Forest (USDA Forest Service 2020a).

The Rocky Mountain Range geographic area and the north half of the Upper Blackfoot geographic area are within the Northern Continental Divide Ecosystem recovery zone/primary conservation area, where grizzly bears have been known to occur before they were listed under the Endangered Species Act. The grizzly bear population in the Northern Continental Divide Ecosystem has more than tripled in size and their occupied range has expanded since the species was listed in 1975. The grizzly bear population in this region is currently estimated to be above 1,100 individuals and increasing (USDI Fish and Wildlife Service 2022, Costello and Roberts 2022). Habitat protection measures for grizzly bears since the species listing have focused primarily on providing secure habitat and reducing direct and indirect sources of mortality (usually associated with livestock or other attractants on non-Federal lands).

Grizzly bear habitat that is considered 'secure' is generally considered to be physically removed from areas of recurring human use. The amount of secure habitat needed in an area depends on management objectives, habitat type, food availability, and other factors. Connectivity is another key factor in ensuring distribution of grizzly bears throughout the Northern Continental Divide Ecosystem, including maintaining genetic health of the Northern Continental Divide Ecosystem and other grizzly bear populations (for example, the Greater Yellowstone Ecosystem). Human activities such as roads and developments are the primary causes of grizzly bear habitat fragmentation (Servheen 2001).

There are approximately 1.7 million acres of potentially secure habitat for grizzly bears within 21 grizzly bear analysis units and 15 bear management subunits on the Helena-Lewis and Clark National Forest. Within zone 1, about 39 percent of each grizzly bear analysis unit is potentially secure habitat. Within zone 2, between 18 and 59 percent of each grizzly bear analysis unit is potentially secure habitat. Within zone 3, between 5 and 63 percent of each grizzly bear analysis unit is potentially secure habitat. Tables 5, 6, 9, and 10 in the Wildlife Species At Risk Report list the amount of secure and secure core habitat and the miles of motorized routes within grizzly bear analysis units and bear management subunits in the project.

Canada Lynx

On the Helena-Lewis and Clark National Forest, Canada lynx are resident throughout the Rocky Mountain Range and Upper Blackfoot geographic areas and in the northern portion of the Divide Geographic Area. Based on the most current information provided by the U.S. Fish and Wildlife Service, lynx may be present anywhere on the Helena-Lewis and Clark National Forest and in the project area (USDA Forest Service 2020a).

The portion of Canada lynx range in the Northern Rocky Mountain Range geographic area is within the northwestern Montana/northeastern Idaho core area (Interagency Lynx Biology Team 2013). A 'core area' is an area "with the strongest long-term evidence of the persistence of lynx populations supported by a sufficient quality and quantity of habitat" (USDI Fish and Wildlife Service 2005). Canada lynx are considered transient in 'secondary' and 'peripheral' areas, which include the remaining geographic areas in the project (USDA Forest Service 2020a).

No reliable information is available regarding the number of Canada lynx or the trend of the lynx population on the Helena-Lewis and Clark National Forest. Efforts by the Forest Service to maintain lynx populations have focused on maintaining habitat (USDA Forest Service 2020a).

There are approximately 1.4 million acres of lynx habitat within 75 lynx analysis units (LAUs) that overlap the project on the Helena-Lewis and Clark National Forest. The amount of lynx habitat within each LAU is between 26 and 92 percent. Twelve LAUs (16 percent of LAUs in the project) currently have

more than 30 percent of their lynx habitat in early stand initiation structural stage that is not yet providing winter snowshoe hare habitat. See tables 13 and 14 in the Wildlife Species At Risk Report.

Canada Lynx Critical Habitat

The U.S. Fish and Wildlife Service Final Rule (50 CFR Part 17) designating critical habitat for Canada lynx in the contiguous United States has been in effect since March 2009. In 2014, the U.S. Fish and Wildlife Service published a revised designation of critical habitat (USDI Fish and Wildlife Service 2014), which was subsequently proposed for revision in November 2024 (USDI Fish and Wildlife Service 2024). In the project area, designated critical habitat occurs in the Rocky Mountain Range, Upper Blackfoot, and Divide geographic areas.

Lynx critical habitat contains the physical and biological elements essential to the conservation of Canada lynx, known as the primary constituent element (PCE) and its components. The primary constituent element for lynx critical habitat is "boreal forest landscapes supporting a mosaic of differing successional forest stages". These landscapes support snowshoe hares and their preferred habitats (PCE 1a), winter snows that are generally deep and fluffy for extended periods of time (PCE 1b), sites for lynx denning that have abundant coarse woody debris (PCE 1c), and a matrix of habitats that do not support snowshoe hares but that Canada lynx are likely to travel through within a home range (PCE 1d) (USDI Fish and Wildlife Service 2014, USDA Forest Service 2020a).

The project occurs in 37 lynx analysis units that contain lynx critical habitat on the Helena-Lewis and Clark National Forest. The acres of lynx critical habitat within each lynx analysis unit are listed in table 20 in the Wildlife Species At Risk Report.

Wolverine

Wolverines have been documented in all geographic areas on the Helena-Lewis and Clark National Forest except the Highwoods and Snowies, although the Elkhorns, Crazies, and Castles each have only one historical (more than 25 years) record. Wolverines were recently estimated to be at population capacity within the Northern Continental Divide Ecosystem portion of the northern U.S. Rocky Mountains wolverine population center. This area primarily occurs outside of the project within the Bob Marshall Wilderness Area, where most of the wolverine habitat on the Helena-Lewis and Clark National Forest occurs. Wolverine habitat occurs elsewhere on the Helena-Lewis and Clark National Forest, including within the project area. However, not all the areas with wolverine records or habitat are thought to have potential to support reproduction (U.S. Department of Agriculture 2020a). Within the project area, most of the habitat suitable for use by reproductive females (maternal habitat) occurs within the Rocky Mountain Range, Upper Blackfoot, and Little Belts geographic areas.

Wolverine maternal and primary habitats are primarily situated at higher elevations and have relatively low road densities compared to dispersal habitat, which occupies lower elevation areas with high levels of human access. Primary and maternal habitats support a wide range of potential wolverine prey, including small and medium-sized mammals, deer, elk, moose, bighorn sheep, and mountain goat. Dispersal habitat generally lies between primary and maternal habitat; it is used to move between patches of suitable high elevation habitat or for other exploratory movements. Dispersal habitats generally are not suitable for the establishment of wolverine home ranges and reproduction (USDI Fish and Wildlife Service 2013). The amounts of maternal, primary, and dispersal (female and male) wolverine habitat in the project are listed in table 24 in the Wildlife Species At Risk Report.

Botany

Whitebark Pine

Whitebark pine occurs on exposed ridgetops on harsh sites, generally above 6,500 feet in the Flathead, Rocky Mountain Front, Garnet, Big Belt, Little Belt, Highwood, Big Snowy, Boulder Batholith, Elkhorn, Crazy, Castle, and Lewis Mountain Ranges. Modeled habitat indicates approximately 990,111 acres of suitable habitat within the action area. This acreage represents the greatest amount of potential whitebark pine habitat, but occupied habitat is less than this. There are 203,870 acres of occupied habitat where whitebark pine is known to occur in the project area according to Helena-Lewis and Clark records (see map, Whitebark Pine Biological Assessment, appendix B).

Whitebark pine is present in twelve mountain ranges in the project area on a variety of sites and in various species compositions. On productive sites at moderately high elevations, whitebark pine is a minor component with subalpine fir, Engelmann spruce, or lodgepole pine and exhibits an erect growth form. On high elevation, harsh, exposed sites, whitebark pine may be the only species present.

Modeled whitebark pine habitat using the Region 1 Core Area Nomination Process indicates approximately 17,648 acres (1.4 percent) within the Flathead Range; 189,858 acres (8.8 percent) within the Rocky Mountain Front; 46,570 (3.4 percent) within the Garnet Range; 92,198 acres (6 percent) within the Big Belt Mountains; 358,555 acres (14.8 percent) in the Little Belt Mountains; 2,580 acres (0.4 percent) in the Highwood Mountains; 48,274 acres (4.2 percent) in the Big Snowy Mountains; 54,333 acres (4.9 percent) in the Boulder Batholith; 84,940 acres (10.5 percent) in the Elkhorn Mountains; 56,615 acres (2.8 percent) in the Crazy Mountains; 38,514 acres (15.1 percent) in the Castle Mountains; and 26 acres (0.002 percent) in the Lewis Range. This quantity is similar to the Forest Inventory and Analysis estimate of whitebark pine for the mountain ranges (U.S. Department of Agriculture 2020) (Whitebark Pine Biological Assessment, appendix C).

Fisheries

The Project area encompasses a large, diverse geographic area. Dozens of watersheds subject to potential treatment contain one or more of the three aquatic analysis species (bull trout, westslope cutthroat trout, and western pearlshell mussel). In addition, non-native fish species of recreational importance, such as rainbow trout are widespread throughout the project area. Additional details are provided in the Fisheries Report.

Current conditions and trends indicate:

- A decline in migratory bull trout numbers on the west side of the planning area has occurred during the past several decades due primarily to changes in climate, habitat alterations from past forestry and mining practices, dewatering and unscreened diversions on private lands and invasive species. However, bull trout are present within some headwater streams in the Divide Geographic Area and are part of a functioning population in the Blackfoot Geographic Area.
- Across the planning area, current threats to westslope cutthroat trout include the presence and expansion of nonnative species (rainbow trout, brown trout, and brook trout), habitat alterations and a changing climate. East of the Continental Divide, westslope cutthroat trout are found in isolated populations and occupy roughly 4 percent of their historical range. They remain strong in small, isolated stream reaches though they have a low potential for long-term viability without continued monitoring and habitat restoration. Westslope cutthroat trout are listed as a Forest Service Species of Conservation Concern.

- Western pearlshell mussels are presently found in only a small percentage of historically occupied streams. Habitat threats are similar to those of one of their primary host species, westslope cutthroat trout. Western pearlshell mussel are listed as a Species of Conservation Concern species.
- Stream flow alterations occur throughout the planning area from both private and Federal water diversions and channel modifications. Flow alterations have resulted in habitat degradation leading to dewatering of critical habitats, stream alterations, and low flows during critical times.
- Historic mining has impacted streams throughout the planning area. Water quality has been degraded through delivery of acid mine drainage and sedimentation. Habitat alterations from legacy mine activities remain.
- Multiple inventoried road culverts are partial barriers or total barriers to native trout movement during some parts of the year, disrupting migration patterns of native fish. In some cases, these barriers may be beneficial for retention of genetically pure native fish populations by creating refugia that excludes nonnative fish.

The affected environment (environmental baseline) is described in detail in the Fisheries Report for the three aquatic analysis species. Additional information for bull trout is included in the biological assessment prepared for consultation with the U.S. Fish and Wildlife Service.

Water Resources

There are currently four priority watersheds identified on the Helena-Lewis and Clark National Forest (USDA Forest Service, 2023). These include the Upper Tenmile Creek watershed on the Helena Ranger District, the Headwaters Sheep Creek and Upper Sheep Creek watersheds on the Belt Creek-White Sulphur Springs Ranger District, and the Poorman Creek watershed on the Lincoln Ranger District.

The proposed project overlaps 88 out of the 91 watersheds in the Conservation Watershed Network designated in the Forest Plan, prioritized for long-term conservation and preservation of (1) bull trout, (2) westslope cutthroat trout, and (3) water quality (USDA Forest Service 2021). Of these 88 conservation watersheds, 12 are Priority 1 for bull trout; 71 are Priority 2 for westslope cutthroat trout; and the remaining 5 are Priority 3 for municipal water supply watersheds and watersheds with impaired water quality or total maximum daily load plans.

The project area overlaps 5 municipal supply watersheds and at least 40 drinking water supply source protection areas that provide drinking water for Community, Non-Community, and Non-Transient Non-Community public water systems as defined by the Safe Drinking Water Act. Municipal supply watersheds that intersect the project area include:

- City of Helena (Tenmile Creek and tributaries Beaver, Minnehaha, and Moose Creeks)
- City of East Helena (McClellan Creek)
- City of White Sulphur Springs (Willow Creek)
- Town of Neihart (O’Brien Creek and Shorty Creek)
- City of Lewiston (Big Spring Creek)

Groundwater sources also supply drinking water in and around the Helena-Lewis and Clark National Forest. There are 9 public water systems withdrawing groundwater at 12 locations within the national forest, coming from 9 wells and 3 springs. Additional domestic wells for personal use are also present

throughout the project vicinity. The proposed project is not located within or near any Sole Source Aquifers designated by the U.S. Environmental Protection Agency.

Soil Resources

The Forest has a wide range of soil types from minimally developed nutrient poor soil and rock complexes of steep mountain slopes and ridges to deep, productive soils of the lower valleys. Steep terrain prone to intermittent surface movement combined with recent ablation of glaciers have limited soil development. The soil resource provides ecosystem services through thermoregulation, nutrient cycling, and water purification and storage. It also contributes to provisioning ecosystem services by providing wildlife habitat and plant-growth media.

Past, current, and ongoing management activities and natural events have had negative direct and indirect influences on the current condition of the soil resource. Activities that have shaped soil conditions include vegetation treatments, commercial harvests, rangeland grazing, mineral extraction and ancillary mining-related activities, developed and dispersed recreation activities, road and trail construction and maintenance, archeological activities, and prescribed burning and natural events such as landslides, erosion, and wildfires.

Within the Eastern Rockies subregion, it is projected there will be increased temperatures, seasonal precipitation is projected to be slightly higher in winter and spring and slightly lower in summer than during the historical period of record, and winter maximum temperatures begin to rise above freezing (earlier snowpack runoff, rain rather than snow occurring) (Halofsky et al. 2018). Droughts of increasing frequency and magnitude are expected in the future, promoting an increase in wildfires, insect outbreaks, and nonnative species. These changes would have undesirable impacts to the soil resource such as increased soil temperatures that would affect microbial processes; decreased soil moisture which would affect microbial processes and vegetation growth and health; and increased erosion, debris flows, and sedimentation into waterbodies.

Heritage

The Area of Potential Effect (APE) is considered the ten geographic areas outlined in the Environmental Analysis. Proposed treatment areas encompass approximately 2.3 million acres across the Helena-Lewis and Clark National Forest and 30,000 acres on the Beaverhead-Deerlodge National Forest. The Helena-Lewis and Clark's Heritage National Resource Manager Database (NRM) documents 2,238 surveys amounting to 341,721 acres (14.86 percent of the area of potential effect) of coverage since 1976. Of those surveys 1,137 occurred prior to 2000 and include 167,861 acres that may not meet current standards. The Beaverhead-Deerlodge National Forest internal database documents 23 surveys amounting to 10,867 acres of coverage since 1985.

There are 1,468 previously recorded cultural resource sites deemed historic properties (listed, eligible, or unevaluated to the National Register of Historic Properties (NRHP)) within the area of potential effect. These historic properties have been included in the potentially affected environment for the purposes of this analysis. The remaining 613 cultural resource sites are considered ineligible to the National Register of Historic Properties and were not considered in the analysis.

Historic properties within the area of potential effect include 492 pre-contact sites (33.5 percent), 845 historic sites (57.56 percent), 17 multi-component sites (1.16 percent), one traditional cultural property (0.07 percent), and 113 sites of unknown temporal components (7.7 percent). Pre-contact sites include lithic scatters, rock art, buried occupations, and stone circles or rock alignments. There are 185 eligible

pre-contact sites, and 307 unevaluated pre-contact sites within the area of potential effect. Historic sites include mining sites, habitation sites (cabins), Forest Service administration sites, and trash scatters or dumps. Five historic sites have "listed" status on the National Register of Historic Properties, 212 sites are eligible, and 628 sites are unevaluated for the National Register. There are 17 multi-component sites (sites with historic and pre-contact components) with seven eligible and ten unevaluated for the National Register of Historic Properties. There is one documented traditional cultural property within the area of potential effect, the Badger Two Medicine Traditional Cultural District, which is eligible for the National Register of Historic Properties.

In total, there are 407 sites eligible for listing, five that are currently listed, and 1,056 that are unevaluated, for a total of 1,468 historic properties within the area of potential effect.

Recreation and Roadless

Recreation within the project area is recognized as a critical resource on the national forest due to its contributions to the local economy, its influence in connecting people to the land, its impact on public understanding of natural and cultural resources, and its role as a catalyst for public stewardship. Recreation settings are the social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities and access options. These settings provide the framework where specific recreation opportunities, activities, and expected experiences are integrated to ensure compatibility with the landscape's natural, social, and cultural resource values. By identifying recreation settings, the national forest can ensure a sustainable set of recreation opportunities for future generations, and visitors can select where they recreate based on what they want to do, what equipment they want to bring, and the type of experience they want.

The Forest Service uses the recreation opportunity spectrum to define recreation settings (table 4).

Table 4. Recreation opportunity spectrum within the project area

Desired recreation opportunity spectrum (ROS) settings	Number of acres	Percent of total forest
Summer ROS Settings		
Primitive	1,034,715 acres	36 percent
Semi-primitive nonmotorized	758,488 acres	26 percent
Semi-primitive motorized	368,338 acres	13 percent
Roaded natural	692,704 acres	24 percent
Rural	28,982 acres	1 percent
Urban	0 acres	0 percent
Winter ROS Settings		
Primitive	1,017,244 acres	35 percent
Semi-primitive nonmotorized	856,799 acres	30 percent
Semi-primitive motorized	726,772 acres	25 percent
Roaded natural	253,980 acres	9 percent
Rural	28,432 acres	1 percent
Urban	0 acres	0 percent

Roadless

Recommended wilderness lands were assessed during the analysis of the 2021 Helena-Lewis and Clark Forest Plan. Those identified lands that contain wilderness characteristics and have potential for inclusion

in future wilderness designations were reviewed during this analysis. These lands are generally free from roads and other constructed features and have high potential to provide solitude and primitive, unconfined recreation. Recommended wilderness areas are also important for species diversity, protection of threatened and endangered species, protection of watersheds, scientific research, and various social values. Roadless expanse was analyzed and considered during this project analysis. The treatments that are being proposed in this project would not prevent these landscapes from becoming designated wilderness at a future point in time. Only Congress can designate Federal wildlands as official wilderness.

Various Federal laws, Forest Service handbook and manual directives, as well as Helena-Lewis and Clark National Forest Plan and Regional direction for conducting roadless resource analyses provide the regulatory framework for the Forestwide Prescribed Fire Project.

Silviculture

The project area consists of more than 2 million acres of Forest Service lands that are divided into 10 geographic areas. While these geographic areas are composed of lands dominated of various vegetation types that includes lands that are sparsely vegetation, grasslands, and shrublands, this report will focus upon upland forests and woodlands. The Forest Plan presents tables for desired conditions and forestwide desired conditions (Forest Plan, tables 5-13, pages 35-41), and desired conditions by geographic area (Forest Plan, pages 131-202). These existing and desired conditions are included in the appendix of this report along with the landscape scale vegetation data for the project area. Additionally, the final environmental impact statement for the revised forest plan presents data and provides analysis for the forest vegetation at the forestwide scale. The Forest Plan and associated final environmental impact statement are incorporated by reference throughout the ‘environmental impacts’ section of the Silviculture Report.

The vegetation of the national forest is divided into nine broad potential vegetation types, and three of these are for forested vegetation. These are the warm dry, cool moist, and cold. The warm dry type is generally found on the warmest and driest sites capable of supporting forested vegetation, such as lower elevation areas, southern aspects, and other droughty soils. Ponderosa pine and dry Douglas-fir habitat types are typical. The cool moist type is generally found on the most productive forested sites. The typical habitat types of this broad potential vegetation type include the moist Douglas-fir, lower subalpine fir and spruce types. The cold broad potential vegetation type generally occupies the highest elevation areas capable of supporting forested vegetation. Sites are generally cold, moist subalpine fir, and cold, dry subalpine fir and whitebark pine habitat types. The 2021 Forest Plan presents desired and existing conditions for these potential vegetation types with respect to species dominance and presence, tree size class, density, large tree structure, snag abundance, snag distribution, and coarse woody debris abundance.

Existing conditions and their relation to desired conditions tend to be similar across the project area within the broad potential vegetation types. With exceptions, by geographic area, proportions of areas dominated by small trees tends to be high, area dominated by medium trees is high in warm dry types, and area of large and very large tree dominance is low across the landscape. In terms of density and canopy cover, the amount area with low/medium canopy cover tends to be low across the landscape. Within the appendix of the silviculture report, the comparison of the existing and the desired conditions are presented more quantitatively.

The Forest utilizes the Green et al. (2011) old growth definitions. These definitions are for the various forest types found on the forest and are based upon measurable characteristics, such as: large tree age, large tree density, and basal area. The final environmental impact statement for the Forest Plan provides an assessment of old growth for the forest (see USDA FS 2021 section 3.9 “Old Growth, Snags, and

Coarse Woody Debris"). This assessment utilized "forest inventory analysis" (FIA) plot data to estimate current old growth conditions. Figures 9-12 of the Forest Plan Environmental Impact Statement provides estimates for old growth forestwide, by geographic area, and by cover type. The Forest Plan states that old growth is not spatially static and does move across the landscape over time as conditions change and forests and woodlands move through successional stages. The Forest Plan provides qualitative desired conditions and quantitative desired conditions for old growth. The desired amount of old growth on the national forest are the same or greater levels as the 2018 existing condition.

Environmental Impacts

Effects of No Action (Current Management)

Fire, Fuels, and Air Quality

Fire and Fuels

Forestwide, limited prescribed fire operations would continue through past or future planning efforts. Continuing the current pace of prescribed burning would affect only a very small portion of the forest on an annual basis. For example, between 2014 and 2023 to date, the Helena-Lewis and Clark National Forest burned approximately 27,000 acres, or an average of 2,700 acres per year. Historically, wildfire burned 78,000 acres annually at low or mixed severity on the national forest, and another 20,000 acres burned at high severity (Helena-Lewis and Clark National Forest Plan).

The Helena-Lewis and Clark would continue to average roughly 10,000 acres of fuels reduction and prescribed fire work annually. That is, approximately .004 percent of the 2.3-million-acre project landscape would be managed for fuels work every year (~1/10th of what burned every year historically, significantly increasing the "fire backlog"). Depending on funding and capacity levels, some years would experience more or less acreage treated. This work would continue to focus largely on wildland-urban interface areas though some fuels work in other areas where timber management is planned is possible. Wildland-urban interface maintenance treatments around Helena would also likely occur in key areas where initial management occurred ~15 years prior.

Landscape Pattern

High-intensity and high-severity wildfires pose a significant threat to natural resources in Montana, impacting ecosystems, wildlife habitats, and soil health. Research highlights the increasing frequency and intensity of wildfires due to changing climate conditions including increasing occurrence and severity of droughts, and historical fire suppression practices (Ahlstrom et al. 2008). These factors contribute to longer and more destructive fire seasons, exacerbating the risks to natural resources (Montana INBRE 2021).

Managing forests within the wildland-urban interface alone does not address the larger challenge of tens of thousands of acres of contiguous, dense forestlands. Forest mortality would continue at current, high rates (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026). Forests would continue to be susceptible to high levels of mortality from wildfire, insects, drought, and co-occurrence of these disturbances (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026). Increasing amounts of dead standing trees will increase safety hazards to the public and firefighters. Fallen trees will increase fuel loads and decrease the ability of firefighters to contain and control wildfires. Water deficits are exacerbated under current dense forest conditions and will likely lead to significant and ongoing tree

mortality (Bentz et al. 2010, Kolb et al. 2016, Stephens et al. 2018). Old trees may be more vulnerable under such conditions than young trees (Allen et al. 2010, Kwon et al. 2018, van Mantgem et al. 2009). Where stand management and prescribed fire have occurred, forests would have increased resistance to mortality from disturbances (Hood et al. 2026, Millar et al. 2007). With existing management, these effects would be quite localized and negligible at the scale of a geographic area.

Forest cover will continue to expand, leading to a decrease in small and medium size openings (hundreds to thousands of acres) (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026). The resulting fuel connectivity is likely to result in continued disturbances that create uncharacteristically large patches of mortality across the landscape, reducing age class heterogeneity and regeneration potential (Agee 1999, Stine et al. 2014, Stephens et al. 2014) while increasing synchronization of stand ages. Thus, while small and medium sized openings that dampen fire behavior will continue to be lost, the increase in very large openings from high forest mortality events (tens of thousands of acres) will continue (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026). A pulse of small trees would continue to dominate size-class distributions (Forest Plan FEIS), and the relatively high levels of mortality expected from disturbance under current management would decrease average stand age and old forest presence (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026). Moreover, the impact of wildfires on tree regeneration is a growing concern. Research from the University of Montana indicates that hotter and drier conditions limit the ability of forests to recover after wildfires. The study found that the changing climate reduces the chances of tree seedlings establishing and growing, leading to fewer seeds available for forest regeneration (Davis et al. 2023). This trend is expected to continue, with significant implications for forest ecosystems and biodiversity (Davis et al. 2023).

Although there is broad scientific consensus regarding the need for more fire on the landscape, suppression persists as the dominant fire management strategy (Calkin et al. 2015). Our aggressive wildfire suppression approach contributes to deterioration of ecosystem health and the vulnerability of communities to catastrophic wildfire as well as increases suppression costs and firefighter exposure (for instance, higher risk or firefighter injury or fatality) (Mutch 2013). Reducing the amount of area burned by wildfire is counterproductive in the long term because the longer fire is excluded, the greater the likelihood that fire severity will increase and have large-scale adverse impacts. (North et al. 2012). Fighting large wildfires is also economically inefficient – often costing more than the assets being protected (Stephens et al. 2014). The no action/current management scenario will result in continued fire suppression at existing levels because of the high risk of managing wildfires rather than suppressing them where little fuels reduction work has been completed. In addition, it would also result in no change to stand conditions. In stands with high tree mortality, these stand conditions do not provide safe locations from which firefighters can initiate fire management actions.

Risk of Damage or Loss to Infrastructure Resources from Wildfire

Wildfires can cause extensive damage to homes, businesses, and other structures. The loss of property not only affects homeowners but also leads to significant economic impacts on communities. Power lines, water supply systems, and communication networks are vulnerable to wildfire damage. Fires can cause power outages, disrupt water supply, and damage communication infrastructure, leading to widespread service interruptions. Roads, bridges, and railways can be damaged or destroyed, impeding emergency response efforts and evacuation routes. This can hinder the ability of residents to evacuate safely and emergency services to reach affected areas (Stein et al. 2013).

The primary source of ignition to structures in wildfires is from embers. Embers, also known as firebrands, are burning pieces of wood or vegetation that are carried away by the wind from an active fire.

These embers can travel significant distances, sometimes miles away from the main fire, and can start new fires when they land on combustible materials such as dry grass, leaves, or structures. Ember storms or showers, which involve many embers being lofted into the air and spread over a wide area, can pose a significant increase in damage and loss of infrastructure within the wildland-urban interface (University of Nevada, Reno Extension 2022). Embers can penetrate small openings in buildings, such as vents, eaves, and gaps in roofing, ignite fuels adjacent to or in contact with structures, and ignite fires inside homes or other structures. This can lead to widespread property damage and loss. Ember storms can cause fires to spread rapidly across communities, making it difficult for firefighters to contain and control the blaze. Embers can damage power lines, water supply systems, and communication networks, leading to widespread service interruptions and further complicating emergency response efforts. (Phillips 2024, Peterson et al. 2024).

This video provided by the Insurance Institute for Business and Home Safety shows how homes are ignited by embers.

In addition to infrastructure and ecological impacts, wildfires also pose risks to human health and safety. The smoke and ash produced by wildfires can have adverse health effects on residents, particularly those with respiratory conditions, young children and the elderly. Long-term exposure to wildfire smoke can lead to increased respiratory and cardiovascular issues, highlighting the need for effective wildfire management and mitigation strategies (Ahlstrom et al. 2008, Montana INBRE 2021).

Fortunately, the Helena-Lewis and Clark National Forest has been able to work with partners to make significant investments in managing hazardous fuels in many wildland-urban interface areas in or near the national forest, including the Helena area. While such work cannot eliminate risk to homes and communities, particularly under extremely hot and windy weather conditions, it has reduced risk and created improved management opportunities when wildfires do occur. Under the current management scenario, these existing investments could be maintained into the future.

Adaptability

Effective forest management is essential for reducing wildfire risk and adapting to rapidly changing landscapes. However, the current planning framework is not well-suited to address these challenges in a timely and flexible manner. This report outlines the limitations of the existing approach, the inefficiencies in the planning process, and the necessity for a more adaptive strategy.

Under the current management alternative, there would be multiple negative effects.

- Prolonged planning timelines. With the traditional approach to National Environmental Policy Act (NEPA) analysis requires a minimum of two years to plan fuels treatment in a single project area. With 38 planning areas across the forest (excluding 10 Mile/South Helena, Middleman, and Coyote Divide which already include future fuels maintenance), it would take at least 70 years to plan fuels work across the entire project area. In practice, delays are common due to staff vacancies, newly listed species, and other unforeseen factors that further extend timelines.
- Incomplete coverage of the landscape. Many areas would remain untouched by planning efforts because they lack timber value, even though they may still have critical fuels management needs. Resource limitations and efficiency considerations often drive planners to prioritize areas with both timber value and fuels concerns, leaving other high-risk areas unaddressed.
- Landscape dynamics undermining traditional planning. The static nature of traditional planning does not align with the dynamic reality of forest ecosystems affected by wildfires, insect outbreaks, and other disturbances. By the time a fuels treatment plan is approved and implemented, changing

conditions on the ground may render the original analysis obsolete, requiring additional revisions or new plans altogether.

The need for more flexibility administrative systems to effectively manage dynamic systems is well-studied in the scientific literature, which is full of examples of the failures of rigid management policies in dynamic systems (Holling 1973, Chaffin et al. 2014). Inflexible plans and administrative or operational constraints will likely fail over time (Herrfahrdt-Pahle and Pahl-Wostl 2012, Hessburg et al. 2020). The need for flexibility to adapt to changing conditions is clear (Shafritz et al. 2005, Millar et al. 2007, Wellstead et al. 2013, Angeler and Allen 2016). See Potentially Affected Environment and the Introduction and Proposed Action sections of the environmental assessment for additional detail.

Air Quality

There would be no direct effect to air quality from not implementing this project. However, indirect effects of the no-action alternative include the potential of air quality degradation resulting from wildfires in areas that otherwise could have been treated, resulting in larger and more intense burning due to limited options for successful containment.

Wildlife

Grizzly Bear

The implementation of decisions previously made for projects would be expected to continue from current impacts from transportation, vegetation management, and prescribed fire, resulting in a reduction in hiding cover and an increase in forage in some areas. Current use of roads would continue. Many sections of Forest Service roads receive low to moderate use by motorized vehicles. As such, detrimental effects to habitat security would continue. Where active management does not occur, forested stands would continue to increase in density and would remain at risk of high levels of mortality from insects, disease, and wildfire. In the short term (up to ten to 20 years), this would likely increase cover but would reduce forage availability as understories become shaded out. Present and future fuel conditions may contribute to a higher risk of high-severity fire. When they occur, these more intense wildfires would alter forage availability and would reduce hiding cover that facilitates travel and foraging.

Canada lynx and designated critical habitat

The implementation of decisions previously made for projects would be expected to continue from current impacts from vegetation management and prescribed fire, resulting in a reduction in travel cover and suitable lynx habitat, including foraging and multistory/mature habitat, in some areas. Where active management does not occur, forested stands would continue to increase in density and would remain at risk of high levels of mortality from insects, disease, and wildfire. In the short term (up to ten to 20 years), this would likely increase travel cover for lynx. Present and future fuel conditions may contribute to a higher risk of high-severity fire. When they occur, these more intense wildfires would reduce suitable lynx habitat.

Wolverine

The implementation of decisions previously made for projects would be expected to continue from current impacts from transportation, vegetation management, and prescribed fire, resulting in a reduction in travel cover and an increase in prey availability, in some areas. Current use of roads and trails would continue. Many sections of Forest Service roads receive low to moderate use by authorized and unauthorized vehicles. As such, potential effects to wolverine dispersal and foraging would continue. Where active management does not occur, forested stands would continue to increase in density and

would remain at risk of high levels or mortality from insects, disease, and wildfire. In the short term (up to ten to 20 years), this would likely increase travel cover but may reduce prey availability for wolverine. Present and future fuel conditions may contribute to a higher risk of high-severity fire. When they occur, these more intense wildfires would reduce travel cover and alter prey availability for wolverine.

Terrestrial wildlife, including species of conservation concern and migratory birds

The implementation of decisions previously made for projects would be expected to continue from current impacts from transportation, vegetation management, and prescribed fire, generally resulting in improved habitat conditions for species of conservation concern and migratory birds in the short and long term (ten to 20 years or more), though some unintentional adverse impacts to breeding individuals might occur in localized areas during treatment activities. Current use of roads would continue. Many sections of Forest Service roads receive low to moderate use by motorized vehicles. As such, potential adverse impacts to breeding individuals and habitat security would continue. Where active management does not occur, forested stands would continue to increase in density and would remain at risk to high levels of mortality from insects, disease, and wildfire. In the short term (up to ten to 20 years), this would likely reduce nesting and foraging habitat for species of conservation concern and many migratory birds, though some birds (such as brown creepers) may benefit from improved habitat conditions. Present and future fuel conditions may contribute to a higher risk of high-severity fire. When they occur, these more intense wildfires would reduce nesting and foraging habitat for many species.

Invertebrates – species proposed for listing and species of conservation concern

The implementation of decisions previously made for projects would be expected to continue from current impacts from transportation, vegetation management, livestock grazing, high-severity wildfire, and prescribed fire. Where active management does not occur, forested stands would continue to increase in density and would remain at risk to high levels of mortality from insects, disease, and wildfire. In the short term, this would likely increase risk to some invertebrate species proposed for listing (monarch butterfly and Suckley's cuckoo bumble bee) and species of conservation concern. Present and future fuel conditions may contribute to a higher risk of high-severity fire. When they occur, these more intense wildfires could impact proposed species and species of conservation concern invertebrate populations.

Botany

Plant species of conservation concern

The implementation of decisions previously made for projects would be expected to continue from current impacts from transportation, vegetation management, and prescribed fire. Where active management does not occur, forested stands would continue to increase in density and would remain at risk of high levels of mortality from insects, disease, and wildfire. In the short term, this would likely increase risk to some species of conservation concern plants. Present and future fuel conditions may contribute to a higher risk of high-severity fire. When they occur, these more intense wildfires could negatively impact species of conservation concern plant populations.

Whitebark Pine

The implementation of decisions previously made for projects would be expected to continue from current impacts from transportation, vegetation management, and prescribed fire. Where active management does not occur, forested stands would continue to increase in density and would remain at risk of high levels of mortality from insects, disease, and wildfire. Over time, this would likely increase risk to whitebark pine. Present and future fuel conditions may contribute to a higher risk of high-severity fire. When they occur, these more intense wildfires would negatively impact whitebark pine populations.

Noxious Weeds

Under the current management alternative there would be no direct effects from additional ground disturbance, road improvement, temporary construction, or decommissioning, canopy opening or prescribed burning.

Fisheries

Bull Trout, Westslope Cutthroat Trout and Western Pearlshell Mussel

Under the current management alternative prescribed fire activities would likely occur near current levels, which is substantially less than levels stated in the proposed action. Present and future fuel conditions may contribute to a higher risk of high-severity fire throughout the Helena – Lewis and Clark National Forest, including within riparian areas. A corresponding increased risk of negative effects to aquatic species would be expected, some of which include reduced near-stream canopy with potentially increased water temperature, reduced current and future large woody debris, increased sedimentation, and reduced stream and riparian resiliency to natural disturbance.

Water Resources

The risk of negative impacts to water resources is greatest with this alternative, which does little to address recommended climate adaptation strategies outlined in Halofsky et al. (2018) for conserving water resources and the services they provide. The current pace of prescribed burning on the Helena-Lewis and Clark National Forest affects only a very small portion of the forest each year. If prescribed fire treatments continue to occur at the current annual implementation rate, surface and ladder fuels would continue to accumulate, increasing the risk of higher severity wildfire. This in turn tends to result in more high severity impacts to soil and watershed features and functions when wildfires occur. Past wildfires in the project area, occurring between 2013 and 2023, have resulted in approximately 74,000 acres of high soil burn severity based on Burned Area Emergency Response (BAER) assessments. Post-wildfire watershed responses associated with higher soil burn severity typically include accelerated post-fire runoff, erosion, flooding, and debris flows, which can result in loss of stream channel and wetland stability and habitat, impacts to water quality and municipal supplies, damage to infrastructure, and potential loss of human life.

Soil Resources

If prescribed fires occurred at the current forest rate per year, surface and ladder fuels would continue to accumulate increasing the risk of a high-intensity, high-severity wildfire.

Greater buildup of material increases potential for severe fire that consumes organic material and can have adverse consequences from longer duration burning that penetrates deeper into soils and leaves a greater amount of surface area bare that can erode (Shaw et al. 2022).

The current management scenario would limit forest actions to reduce this fuel and lessen the re-introduction of fire that has beneficial ecological effects to soil organisms and vegetation. (By limit we mean site-specific projects would be brought forward but limited in scale and would be time consuming for specialists). Many of the drier ecosystems have missed several fire cycles, and thus, mineralization from soil microbes that generates nutrients for growth may be low compared to what is expected naturally (MacKenzie et al. 2006). In addition, when fires do burn more severely, the higher consumption can oxidize and volatilize a larger number of compounds resulting in greater losses of potassium and nitrogen – key macronutrients for growth in these ecosystems (Neary 2005).

Heritage

If no actions were proposed, there would be no short term or direct effects to archeological sites. However, over the long-term current management could indirectly subject fire sensitive archaeological sites to potentially larger, more intense wildfires in the future as hazardous fuels are left untreated. Fire-sensitive archaeological sites may contain cultural resources such as wood, flammable artifacts or features, exposed building stone of soft or porous material, rock art, culturally modified trees, or certain traditional cultural properties.

While we don't know when or where wildfire would occur in the future, the known 1,468 National Register of Historic Properties -listed, eligible and unevaluated sites on the Helena-Lewis and Clark and Beaverhead-Deerlodge National Forests would be at higher risk for damage or destruction over time.

Recreation and Roadless

Recreation

For the current management alternative, the existing condition would remain. No treatment actions would be implemented within the Forestwide Prescribed Fire Project area. Ongoing uses, permitted activities, and natural processes would continue. This is the baseline condition and is used for comparison of effects with the proposed action. This alternative would not meet the purpose and need.

If the current management alternative is chosen, the proposed prescribed fire project would not be implemented within the project area. There would be no direct effects from the proposed activities to recreation.

The desired conditions of establishing greater diversity in tree species, age, and size class to promote a more resilient landscape over time to benefit multiple resource values would not be met. The threat of high intensity wildfire within the project area would remain, potentially posing an increased risk to other resources, local communities, and forest users.

In the long term, the lack of prescribed fire treatments may result in indirect effects to recreation resources. No action taken could result in changes to the recreation setting or scenic quality of the project area. The current management alternative may result in forest users and visitors being displaced.

Downed timber and fuel loading have made access and travel more difficult for cross country foot travel by hunters and hikers. As trees continue to fall across the landscape with no action taken, forest users and visitors would no longer be able to access or traverse areas and may need to find other places to hunt and hike.

With no action taken, effects to recreation will continue as vegetation becomes crowded and overgrown. Areas with dense forest conditions and high fuel loads would remain at risk for high-intensity wildfires that could also put recreation resources at risk. Road conditions would continue to deteriorate, making access for dispersed recreation throughout the project area more difficult.

Roadless

If the no-action alternative is chosen, none of the proposed vegetation treatments would be implemented within the inventoried roadless area (figure 18). There would be no direct effects from proposed activities to roadless resources.

If no action is taken, the threat of high intensity wildfire and the associated hazards to the public, fire suppression resources, valued structures, and community infrastructure such as power corridors would likely increase. In the long term, this may result in indirect effects to roadless resources, potentially impacting natural conditions such as high-quality soil, water, air, sources of public drinking water, and opportunities for primitive recreation.

Treatments would not be implemented to maintain the characteristics of ecosystem composition and structure. Suppression actions would continue to take place in the project area, reducing or eliminating the natural role of fire. The landscape would trend from heterogeneity toward homogeneity. Natural qualities in the roadless area would degrade.

No treatment activities would be implemented, so there would be no direct impacts to solitude or primitive and unconfined recreation. Indirect impacts to opportunities for primitive recreation could result from dense forest conditions, fuel loading, and an increase in fallen dead trees that make travel through the area difficult. These conditions could enhance opportunities for solitude for those visitors who are willing and able to negotiate the increasingly inaccessible areas.

The future threat of high intensity wildfire could impact opportunities for primitive recreation by changing the natural setting or scenic quality of the area. In the case of a large wildfire, sight distance and vegetative screening could be changed for decades, impacting opportunities for solitude as sights and sounds of visitors in the area as well as activities on adjacent lands would more easily be seen and heard.

Silviculture

It can reasonably be expected that regular activities within the project area would continue to take place. Over the planning horizon, it can be reasonably expected that vegetation would continue to grow. This would likely result in tree size class distributions moving closer to desired conditions, given that there is a general lack of large and very large tree size class dominated areas. Forest and woodland stands would continue to grow and develop at increased densities as resource competition would increase and individual tree growth and vigor would continue to diminish. This would likely result in landscape level stand densities moving further away from desired conditions, given that existing conditions are, generally, overly abundant high canopy cover.

Areas of previous high severity fire would seed and establish and move through successional stages. Insects and disease would continue to be a part of the landscape and would exist at endemic levels until outbreak populations and conditions are present, if applicable. Wildfire of uncharacteristic size and intensity would continue as would fire suppression activities. Species compositions would continue to shift towards mixes where shade tolerant and fire intolerant species are more prevalent. Stands with old growth conditions would continue to develop, as these stands become more decadent with older and larger trees and snags and coarse wood.

Old growth stands can be anticipated to senesce with disturbance events, such as fire, insects, and drought. Patch size would continue to expand, and diversity would continue to diminish as forests and landscapes become more homogenous and contiguous.

Range

Term permitted grazing use would continue as authorized. No new vegetative treatments are planned except for those projects derived from previously approved environmental analysis. There would be no change in carrying capacity (animal unit months) from the proposed action implementation. Range

structures would be maintained and improved as necessary to continue cattle management at its current scope and intensity, subject to forestwide standards and guidelines.

Meadows and hardwood stands would continue to be subject to conifer encroachment which reduces their individual size and distribution across the landscape. These reductions would continue unless some type of mechanical treatment action or natural disturbance such as wildfire occurred. The forest structure would continue to move away from Forest Plan objectives making it susceptible to future natural disturbances such as insect infestations or large wildfires. These types of natural disturbances could result in an increased number of dead trees. Most of these dead trees eventually break up or fall over within three to five years, often at accelerated rates with high winds. Historically, such tree breakage and wind throw has been shown to impede cattle access to primary and secondary rangelands. Fences and other developments would not be protected and could be damaged by falling trees. This would result in an increased maintenance workload for impacted range improvement structures. Pasture rotations may need to be altered due to damaged range improvement infrastructure and/or downfall blocking access to historic foraging areas. As the tree canopy cover is opened up and sunlight reaches the forest floor, grasses and forbs will begin to reestablish and increase in density. If tree downfall blocks cattle access to these areas, this could result in increased amounts of fine fuel growth in certain areas.

If the No-Action Current Management Alternative was selected, there are no additional anticipated cumulative effects that would impair or unduly influence short-term range management of the allotments within the Project Area other than effects discussed above. Current decision documents would indicate direction to be followed to improve or sustain desired range conditions and capacity. However, there are emerging threats to sustainable cattle grazing. The encroachment of woody vegetation on primary and secondary rangelands reduces available forage and potentially reduces carrying capacity over time. Increased fuel loads in pine stands creates the potential for forest fires that are larger, more intense and less predictable (Canada 2007). Any ignition may disrupt grazing use for some period of time to allow for resource recovery. Experience with large scale wildfires on the forests has demonstrated that remaining dead trees would decay, fall over, and block access to vegetation by cattle and wildlife.

Effects of the Proposed Action

Effects of the Proposed Action are briefly summarized below. However, for additional detail on the full analysis conducted, including more in-depth descriptions of the resource-specific affected environment, no action, and effects of the proposed action, including any cumulative effects (see appendix F), please review the corresponding specialist reports:

Fire, Fuels, and Air Quality Report

Wildlife Species at Risk Report

Wildlife Diversity Report

Elk Report

Birds of Conservation Concern Report

Botany Report

Noxious Weeds Report

Fisheries Report

Biological Assessments for ESA Consultation available in project record (Wildlife, Bull Trout, Whitebark Pine)

Water Resources Report

Soils Report

Heritage Report

Recreation Report

Scenery Report

Roadless Report

Wilderness and Roadless Worksheets

Range Report

Silviculture Report

Fire, Fuels, and Air Quality Resources

Fire and Fuels

Issues identified

To compare effects between no action/current management and the proposed action, we used the following indicators:

- Landscape pattern of forest/non-forest: this indicator was selected because of its critical role in reducing the adverse effects of rapidly spreading high intensity and high severity wildfires (see Potentially Affected Environment, Introduction, and Purpose and Need).
- Risk to the safety and health of the public and firefighters, and damage or loss to infrastructure from wildfire: this indicator was selected mainly to assess the risk to the public, firefighters, homes, and communities from wildfires.
- Adaptability: this indicator assesses the ability of managers to adapt to changing conditions through time (See Introduction and Purpose and Need).

Fuels reduction treatments in the proposed action change the amount, configuration, and spacing of live and dead vegetation with the purpose of creating conditions that result in more manageable fire intensity and reduced severity from wildfires. Prescribed fires are fires intentionally ignited under a range of pre-determined weather and fuel moisture conditions to meet specific resource management objectives. Fuel reduction treatments that include fire have been shown to be more effective at reducing fire intensity than mechanical treatment alone (Stephens et al. 2009, Kalies and Kent 2016). In fact, wildland fuel treatments have been documented and studied for 80-plus years involving thousands of fires (Graham et al. 2012). Moreover, the Forest Service has implemented tens of thousands of fuel reduction and prescribed fire treatments. We have many generations of knowledge based in the literature and in experience and can confidently predict the effects of such activities. Fire behavior and subsequent effects are most dependent on changes in surface fuels (Fule et al. 2012, Graham et al. 2012, Safford et al. 2012, Martinson and Omi 2013). One effective way of reducing surface fuels and fire severity is through prescribed fire. Prescribed fire reduces flammability and quantity of fuels thereby reducing intensity and speed of wildfire (Stephens et al. 2014). In addition to managing surface fuels, reducing ladder fuels (shrubs, small trees) and raising the crown base height of standing trees reduces the probability that a low severity surface fire will become a high severity crown fire (Graham et al. 2012). Mechanical and burning treatments combined are typically the most effective at both changing forest structure and composition and reducing surface fuels (Fule et al. 2012, Martinson and Omi 2013, Hood et al. 2024) and are also the most durable (Graham et al. 2012).

Figure 5 shows an example of a comparison of wildfire effects from no action on untreated forest stands to three types of treatments. The prescribed burn only and thin then prescribed burn examples are most effective at reducing adverse wildfire effects (Davis et al. 2024).

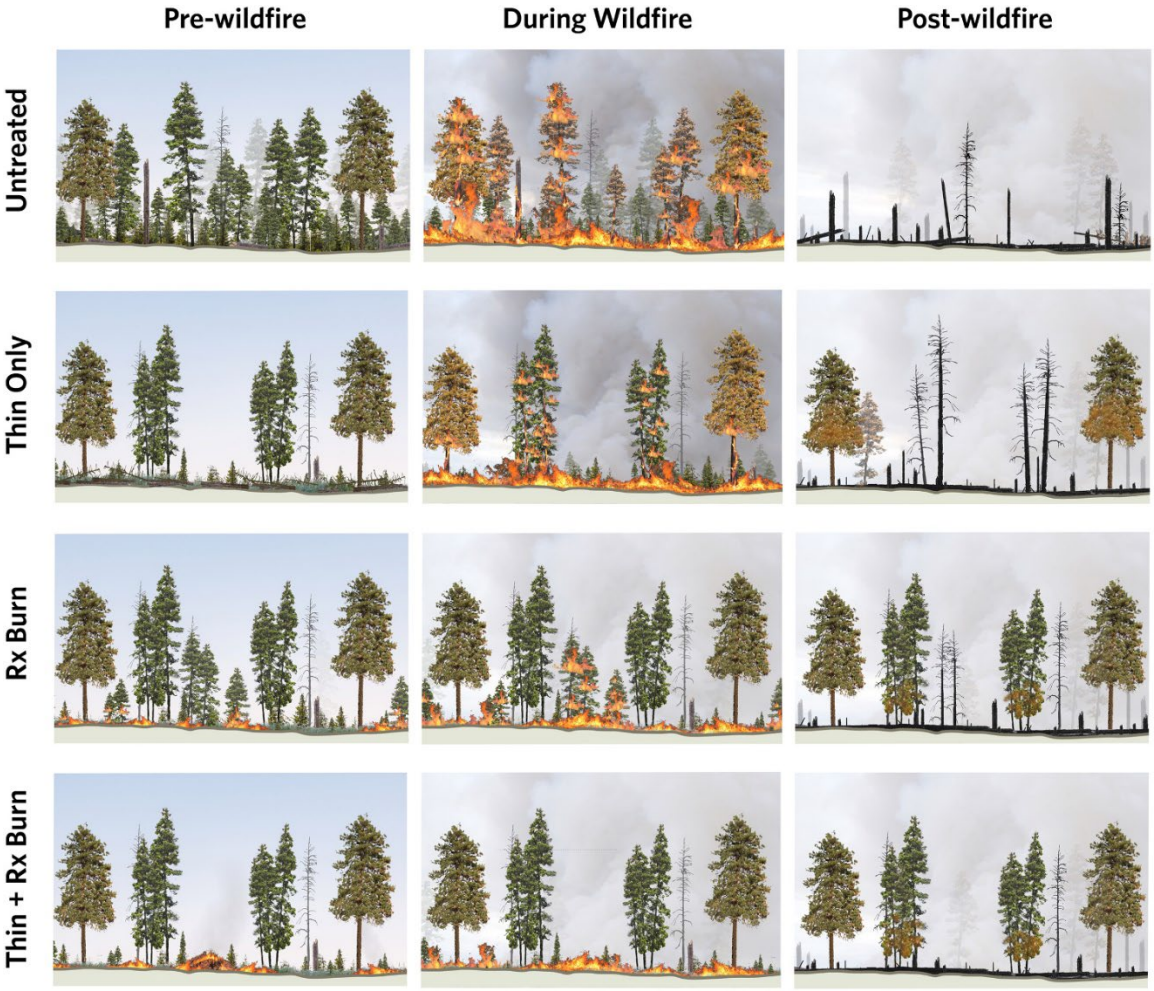

Figure 5. Examples of no treatment and treatment scenario wildfire effects

Although extreme fire behavior including strong winds and column-driven fire spread can overwhelm individual treatments, there is strong scientific evidence that even under extreme weather conditions, fuel reduction treatments are effective at moderating fire intensity and severity across a range of forest types and wildfire events (Prichard et al. 2021).

Landscape Pattern

Up to approximately 40,000 acres a year could be managed for hazardous fuels reduction under the proposed action. While this is only roughly half of the 78,000 acres that historically burned every year at low or mixed severity, it would provide the forest with greatly enhanced flexibility to strategically reduce risk of wildfire and increase the resistance of forests to wildfires and other disturbances (for instance, help forests survive wildfires and droughts, etc.) (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026). Forest mortality rates would be reduced where management under this project occurs (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026). Annually, 1.7 percent of the project area could be managed for fuels reduction compared to .004 percent in the current management alternative. Over the life of the project, that would amount to an estimated 17 percent of the national forest (assuming roughly half of the managed acres are maintenance treatments, which is a common goal on other forests with similar decisions. This estimate assumes we would instantly be managing 40,000 acres a year instead of the average 10,000 we manage now. It would likely take us several years to move

towards the 40,000 acres a year objective so this overestimates to at least some degree the portion of the landscape that would be affected.

Changes in fire behavior would extend beyond wildland-urban interface areas and areas where timber harvest is scheduled to occur. Effects would continue to be localized but are also expected to be detectable at the geographic area scale because of the increased ability to use prescribed fire to reduce fuel levels on thousands of acres rather than small patches of 10 acres, or 40 acres or hundreds of acres as is common under current management.

The ability to maintain and support more small openings and reduce fuels outside of the wildland-urban interface would increase landscape heterogeneity and dampen fire behavior in areas where fuels work has been completed while reducing the risk of large-scale forest mortality. As most of the landscape will remain unmanaged (approximately 83 percent), forest cover will continue to expand at the landscape scale. The resulting fuel continuity and conditions described in the Potentially Affected Environment section will continue to set the stage for large-scale mortality events, creating very large openings of tens of thousands of acres and synchronizing forest age classes in these areas. Fewer of these very large openings are expected to occur compared to current management. Slightly lower mortality rates compared to current management will lead to less of a decrease in average stand age and reduced loss of old forest (Franklin et al., 2000; Keane, 2014; Roberts et al., 2011, 2015; Zielinski et al., 2013).

Additional areas where hazardous fuels have been reduced directly equates to increased safety for firefighters and increased effectiveness of suppression operations where these are essential or desired. Moreover, managers have increased wildfire management opportunities. This project would enable the national forest to place fuel treatments strategically to enable the better use of wildfires under low to moderate weather and fuel moisture conditions to increase the resistance of forests to mortality (for instance, improve forest survival) and protect infrastructure resources. Prescribed fire would be used where it is appropriate and safe to do so and where it does not pose a threat to values at risk. Repeated cost-effective actions such as this would greatly enhance landscape heterogeneity, reduce future wildfire severity, increase fire suppression effectiveness, reduce fire size, and reduce the cost to the taxpayer of managing large wildfires under extreme weather conditions (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026).

Figures 6-9 shows before and after photos of a mechanical rearrangement and mastication treatment unit. Low severity prescribed fire is typically scheduled after these initial treatments are completed (figure 10). Figure 11 and figure 12 depict hand pile treatments.

Figure 6. Forest stand before treatment. A wildfire would burn the surface fuels, dead standing and falling trees, and potentially causing torching or crown fire.

Figure 7. Forest stand before treatment. A wildfire would burn the surface fuels, dead standing trees and potentially cause torching and crown fire.

Figure 8. The same forest stand shown in figure 7 one month after mastication treatment. Due to the increased surface fuel loading a wildfire would burn the surface fuels with increased intensity and the small trees would be susceptible torching. Mastication increases the overall crown base height and reduces stand density and would reduce the potential for medium and large tree torching and crown fire.

Figure 9. One year after mastication treatment. Wildfire effects would appear like figure 8.

Figure 10. Prescribed burning in a thinned unit

Figure 11. Forest stand after small tree thinning and the slash is piled for prescribed burning when the conditions are favorable.

Figure 12. Hand piles being burned during the winter. Reducing or burning piles during the winter is an economical way to dispose of the piles and aids in reducing intensity when the area is underburned during the fire season.

Scientific consensus on the need for more wildland fire is driven by many factors, a key factor being that past fires can limit the spread of subsequent fires for many years (Parks 2015, Prichard et al. 2017, Hood et al. 2021a). The ability of wildland fire to act as a fuel break weakens with increasingly extreme weather conditions. In one example in the northern Rockies, researchers found the ability of fire to act as a fuel break lasts 10 years under extreme conditions compared to 24 years under moderate conditions (Parks et al. 2015). In addition, fire intensity and severity are significantly lower when fires burn within a previously recorded fire perimeter (for instance, it reburned) compared to those areas that had an extended fire-free period (Miller et al. 2012, Parks et al. 2014, Parks et al. 2015).

"Fire policy that focuses on suppression only delays the inevitable, promising more dangerous and destructive future forest fires. In contrast, land management agencies could identify large firesheds (49,500 – 123,500 acres) where, under specified weather conditions, managed wildfire and large prescribed fire are allowed to burn, sometimes after strategic mechanical fuel treatments" (Stephens et al. 2013). For managed fire to be effective, it must be allowed to burn under moderate weather conditions. If fire only occurs under extreme weather conditions, as has happened in many recent wildfires, fire effects may be severe and not achieve desired ecological outcomes (Hessburg et al. 2016). Suppressing a fire presents a lost opportunity to restore self-regulation and resilience, especially during non-extreme weather conditions (Parks et al. 2015). Managed wildfire helps match the scale of challenge with the resources at hand and is often the lowest-cost option (Stephens et al. 2014).

In dry forests, vegetation grows back more slowly than in more productive forests, although decomposition rates are greatest in productive forests (Stephens et al. 2021, Jain et al. 2012). More light resulting from fuel reduction can lead to significant understory re-growth although differences in stand structure remain (Clyatt et al. 2017, Jain et al. 2012). This effect underscores the need for fuel treatment maintenance, which is enabled by the proposed action.

The Forest Plan directs the management of wildfires to be at the lowest risk to fire personnel and the public, considering costs and effects to resources and values at risk. When seasonal conditions are conducive, the opportunity for an individual fire to be assessed and strategies utilized that allow for larger fire size with positive or limited negative impacts to values may be implemented. In addition, the plan's vegetation and fire management objectives include creating (and/or minimize threats to) a resilient, healthy ecosystems, wildland fire management strategies should promote desired vegetation conditions where wildfires result in fire severities that are "self-regulating" and reduce future risk.

Risk of Damage or Loss to Infrastructure Resources from Wildfire

In Montana's Rocky Mountains, including here on the Helena-Lewis and Clark, prescribed fire and vegetation mechanical treatments have been instrumental in reducing the risk of wildfire damage or loss to infrastructure resources. Prescribed fire involves the controlled application of fire to reduce hazardous fuels which can contribute to the intensity and spread of wildfires. By reducing these fuels, prescribed fires help lower the risk of high-intensity wildfires that threaten homes, businesses, and critical infrastructure (Stephens et al. 2009, Hood et al. 2021b).

Vegetation mechanical treatments, such as thinning and mastication, complement prescribed fire by physically removing excess vegetation and reducing fuel loads. These treatments create breaks in the vegetation, slowing the spread and intensity of wildfires and providing safer zones for firefighters to operate around structures. The ability of firefighters to safely protect structures from damage or loss depends on the intensity, rate of spread and the amounts of embers landing near and on structures as wildfire approaches the structures. The combination of prescribed fire and mechanical treatments has been shown to significantly reduce wildfire intensity and protect infrastructure resources (Stephens et al. 2009, Hood et al. 2021b).

Research conducted in the Lick Creek Demonstration-Research Forest in western Montana's Bitterroot National Forest has demonstrated the effectiveness of these treatments. The study found that areas treated with mechanical thinning and prescribed burning experienced lower burn severity compared to untreated areas. This reduction in fire intensity helps protect homes, utilities, and transportation networks from wildfire damage or loss (Hood et al. 2021b). In addition, in 2019 and 2020 multiple Joint Chiefs' treatments were utilized during wildfire management and assisted in successful fire suppression within high-risk wildland-urban interface. In 2019, the Owl Gulch Fire burned into a 2017 Beaver-Soup Unit 17 fuels treatment, and likely due to the completed fuels treatment, fire suppression resources (ground and aerial) were able to safely and successfully contain the fire to public lands, thus, keep it off private lands (Haven's Property and Summer Star Ranch) and away from the Community of Nelson.

Research primarily led by Jack Cohen supports the view that structures, rather than forest vegetation, are the primary issue in the wildland-urban interface. Cohen's research highlights that wildfires primarily spread through embers, which can travel significant distances. Structures are often the first to ignite when embers land on flammable materials, emphasizing the need to focus on protecting buildings rather than solely managing vegetation. Cohen's research advocates for the use of fire-resistant materials and better architectural designs to reduce the ignition potential of structures. This suggests that enhancing building safety is crucial to wildfire mitigation. Cohen points out that many wildfires begin because of human activities near structures. This indicates that the proximity of buildings to fire sources plays a critical role in fire behavior, asserting that the presence of structures complicates the fire risk more than the vegetation itself. Public commenters frequently point out that successful fire adaptation strategies must focus on fortifying structures, creating defensible space around homes, and implementing community planning to reduce wildfire risk rather than solely emphasizing forest management. Other commentors emphasize that by addressing structural vulnerabilities, communities can better protect lives and property in fire-prone

areas without necessitating extensive and often controversial vegetation management practices, which can have ecological consequences (Barret et al. 2024, Calkin et al. 2023, Calkin et al. 2014, Graham et al. 2012, Cohen 2010, Cohen et al. 2008, Barkley et al. 2004, Cohen et al. 2003, Cohen 2003a, Cohen 2003b, Cohen 2000a, Cohen 2000b, Cohen 2000c, Cohen 1999, Cohen et al. 1998, Cohen et al. 1997, Cohen 1991).We agree. However, the Forest Service has no jurisdiction over private property and cannot enforce wildfire safety building codes or defensible space regulations. The proposed action takes reasonable and proactive measures to reduce the intensity of wildfires near infrastructure resources and reduces the potential for structures to be ignited by embers.

There is no appreciable difference between current management and the proposed action for wildland-urban interface areas that have already been managed, such as in and around Helena. However, the proposed action does enable fuel reduction management inside and outside the wildland-urban interface that have not yet been treated, and it could be several years to many decades before some of these areas would be covered under the current management scenario.

Adaptability

When fueled by extreme disturbance or climatic events, apparent landscape stability can shift abruptly, changing the distribution of age classes, species, or structures (Hessburg et al. 2020). These altered landscapes can become resistant to further change, e.g., forestland conversions to shrublands due to poor conditions for tree regeneration. Broad-scale and abrupt landscape changes can be difficult for plants, animals, and human communities to withstand (Liu et al. 2007, Spies et al. 2014). Managers need to plan for this uncertainty and be ready to adapt as natural systems change by developing practical and flexible management approaches (Folke et al. 1996, Shafritz et al. 2005, Millar et al. 2007, Wellstead et al. 2013, Angeler and Allen 2016, Hessburg et al. 2020). The proposed action specifically incorporates flexibility that enables managers to do essential work to maintain live forests over time and reduce risk to communities even as the frequent-disturbance landscape we manage continues to change, while also protecting communities and firefighters. The proposed action alternative increases the adaptability of management policy to changing conditions in the dynamic landscapes within the analysis area compared to current management through the following effects.

- The proposed action would save 68 years of planning time and resources (70 years of planning required with traditional planning process compared to 2 years for this planning process).
- Coverage of the landscape including areas that don’t have timber value but are important to change how wildfires burn across our landscapes and affect communities, ensuring a more comprehensive risk-reduction strategy.
- Ability to incorporate real-time data and post-disturbance flexibility to allow for rapid response following wildfires or insect outbreaks, rather than relying on outdated analyses.

Figure 13 and figure 14 show a low-intensity prescribed fire burning in an open pine stand. Figure 15 shows a post prescribed burn that resulted in low tree scorch and mortality. Figure 16 shows higher intensity results in a prescribed burn unit with heavy surface fuels.

Figure 13. Low-intensity prescribed fire

Figure 14. Prescribed burn reducing small trees

Figure 15. Low tree scorch and mortality

Figure 16. Higher intensity prescribed burn in heavy surface fuels

Air Quality Resources

Issues identified

- Contribution to exceedances of national ambient air quality standards.

The Clean Air Act is the comprehensive Federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants (42 U.S.C. 7401 et seq.).

One of the goals of the Clean Air Act was to set and achieve NAAQS in every state by 1975 to address the public health and welfare risks posed by certain widespread air pollutants. The setting of these pollutant standards was coupled with directing the states to develop state implementation plans (SIPs), applicable to appropriate industrial sources in the state, to achieve these standards.

General Conformity ensures that the actions taken by Federal agencies do not interfere with a State or Tribe's ability to attain and maintain the NAAQS for air quality, as required under Clean Air Act section 176(c), and to prevent Federal actions from causing or contributing to new air quality violations, worsening existing violations, or hindering the attainment of air quality standards. Federal agencies must analyze the potential air quality impacts of their proposed actions and demonstrate that they conform to the applicable state implementation plan.

Prescribed burning that is regulated by the States having approved smoke management programs complies with the Clean Air Act. In Montana, the State’s smoke management program is called Title 17, and the program is managed by the Montana Department of Environmental Quality. Under General Conformity prescribed burning conducted by the Federal land management agencies is required to comply with the State’s smoke management program and therefore, prescribed fire projects in nonattainment or maintenance areas are presumed to comply with, or “conform,” to the Federal Clean Air Act’s conformity rule.

Threatened, Endangered, and Candidate Species

Grizzly Bear

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, transportation, and prescribed burning could disturb individuals and reduce the quality or quantity of forested habitat, including secure and core habitat.

Prescribed fire and fuel reduction activities would increase forage availability within a year of treatment, and forage would remain high for up to 30 years. In many areas, production of shrubs such as huckleberry and buffaloberry and other food items for grizzly bears would increase both in the short and long term. While total acres of forested cover would not change, tree density that provides hiding cover for grizzly bears would be reduced in treatment units for up to 10 to 20 years. By following project design features to retain hardwood shrubs throughout the project area and cover adjacent to openings and riparian areas, detrimental impacts to grizzly bear habitats would be minimized. It is expected that burning will maintain cover for concealment, while increasing the diversity and distribution of grizzly bear foraging habitat across the project area.

Project activities have the potential to result in adverse effects to individual grizzly bears through displacement or disturbance associated with roads used to access and implement projects. Specifically, project use of closed roads for implementation and associated brushing or mastication would temporarily increase open motorized route density and would thus temporarily reduce secure and core habitats in grizzly bear analysis units and bear management subunits. However, there are no additional access management changes associated with this project, and secure habitat would remain widely available for grizzly bears over the life of the project. By following project design features that limit administrative use of closed roads in the recovery zone and require gates or other impediments to discourage public access throughout the project area, detrimental impacts to habitat security would be minimized.

Project activities, including helicopter use, would temporarily disturb individuals and disrupt grizzly bear movements during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable, and implementation would cease if grizzly bears are discovered within or adjacent to the treatment area. Project activities would also be restricted within important grizzly bear habitats during spring.

Disruptions to grizzly bears movement across the landscape would likely be minimal, as areas of untreated forest would remain interspersed with treated stands year-round, providing a variety of alternate local travel routes. Proposed treatments may make travel through much of the project area easier for grizzly bears by reducing concentrations of downed trees that currently impede movement and limit forage availability. At the landscape scale, connectivity would be facilitated by the distribution of wilderness and inventoried roadless areas in the project area. Project activities may result in short-term displacement of any individuals present in the activity areas, but grizzly bears would continue to use treated areas for foraging, travel, and as potential denning habitat post treatment.

The effects from past, ongoing, and future (cumulative) activities including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreation are not expected to contribute to loss of hiding cover, secure habitat, or core habitat at the scale of the grizzly bear analysis unit or bear management subunit. Nor are they likely to combine with the effects described above to reduce hiding cover, secure habitat, or core habitat at the scale of the grizzly bear analysis unit or bear management subunit.

In summary, the project would improve foraging habitat at least until understory forbs and shrubs are shaded out (up to 30 years), result in short-term reductions in cover (up to ten to 20 years), and potentially increase the risk of bear-human interaction during project implementation, should grizzly bears be present. Closed roads used for project activities would temporarily reduce secure habitat. Aerial ignition for some of the prescribed fire treatments could also displace grizzly bears. As a result of these impacts to grizzly bears, implementation of the project “may affect and is likely to adversely affect” grizzly bears. The duration of the project is long (up to 20 years), and grizzly bear use including the potential for females is likely to occur within the action area at some point during project implementation. See the Wildlife Species At Risk Report for additional information.

Canada lynx and designated critical habitat

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, and prescribed burning could disturb individuals and reduce the quality or quantity of lynx habitat, including linkage habitat and designated critical habitat.

Prescribed fire and fuel reduction activities would remove or alter sapling-sized conifer trees and understory shrubs that provide suitable foraging habitat and travel cover for lynx for up to 10 years until the site understory regenerates. These activities would also likely reduce some downed wood that contributes to lynx denning habitat. Vegetation mortality within treatment units would be uneven, leaving some variation in remaining lynx foraging habitats post treatment. Treatments may generate enough habitat for lynx prey immediately post-fire that lynx are able to maintain occupancy of burned areas while waiting for other areas to become suitable. Treated stands would retain their forested character, and snowshoe hare habitat conditions would improve following treatments as understory trees and brush regenerate.

Prescribed fire activities can also improve lynx habitat by creating openings within existing forest canopies that promote development of multiple canopy layers. Maintaining a habitat mosaic of different successional stages within forest types likely to be used by lynx is a key strategy for maintaining a range of suitable lynx habitats over time. Although the effects of management actions may be negative in the short term, they promote future lynx habitat in the long term.

By following project design features to retain foraging and multistory habitat and coarse woody debris, loss of suitable habitat and effects to linkage habitat would be minimized. Implementation of the project would ensure that prescribed fire outcomes lead to no more than 30 percent unsuitable foraging habitat in each lynx analysis unit (design feature WL-Lynx –1). The individual project activities are expected to result in relatively small-scale changes in relation to the large lynx home range size.

Projects activities in designated critical habitat for Canada lynx would be consistent with the impacts to lynx habitat described above. The project would not create permanent travel routes that facilitate snow compaction.

Project activities would temporarily disturb individuals and disrupt lynx movement patterns during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable, and implementation would cease if lynx are discovered within or adjacent to the treatment area. Project treatments would not likely preclude lynx travel through these sites, as areas of untreated forest would remain interspersed with treated stands, providing a variety of alternate local travel routes for lynx within their home range. At the landscape scale, connectivity would be facilitated by the distribution of wilderness and inventoried roadless areas in the project area.

The effects from past, ongoing, and future (cumulative) activities including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreation are not expected to contribute to loss of lynx suitable habitat, linkage habitat, or designated critical habitat and its primary constituent element, at the scale of the lynx analysis unit. Nor are they likely to combine with the effects described above to reduce lynx suitable habitat, linkage habitat, or designated critical habitat and its primary constituent element, at the scale of the lynx analysis unit.

In summary, implementation of the project would result in changes to lynx habitat in the action area; in particular, this would result in a temporary (5 to 10 years) reduction of multistory and stand initiation habitats. However, design features would minimize these effects and any multistory habitat that is treated would be covered under allowable exemptions in the Forest Plan. Due to the magnitude of potential habitat changes over the life of the project (20 years), including the potential reduction in suitable foraging habitat for lynx for up to 10 years in some treatment areas, implementation of the project “may affect and is likely to adversely affect” Canada lynx and its designated critical habitat. Adverse effects to lynx and its habitat would occur primarily through temporary impacts to the dense horizontal structure of natural forest succession phases or from altering the mosaic of the forested landscape in localized areas.

Adverse effects to lynx are not anticipated as a result of the vegetation and fire management in stem exclusion stands that do not provide snowshoe hare habitat or in denning habitat. See the Wildlife Species At Risk Report for additional information.

Wolverine

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, transportation, and prescribed burning could disturb individuals and alter prey availability and use of habitats.

Prescribed fire and fuel reduction activities would alter the distribution of wolverine prey such as big game for up to 10 to 12 years following treatment. Big game are likely to avoid areas where implementation is actively occurring, temporarily reducing potential foraging opportunities for wolverine in primary and maternal habitats. However, because wolverine operate at a large scale, they would be able to adjust to short term changes in big game distribution following treatments. It is unlikely that prey resources would change appreciably at the scale of the geographic area, and project activities would improve foraging conditions for big game populations within a few years of treatment. In the long term (10 to 20 years), project activities may improve the health of big game herds, which would contribute to a sustainable prey base for wolverine.

Project activities, including the use of mechanical equipment and associated noise, would temporarily disturb individuals and potentially disrupt wolverine dispersal and foraging during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable, and implementation would cease if wolverine are discovered within or adjacent to the treatment area. Project activities would also be restricted within wolverine maternal and denning habitat in late winter and spring.

Treatments areas occur at a small scale when compared to the home range size of wolverines and other areas they may traverse. At the landscape scale, connectivity would be facilitated by the distribution of wilderness and inventoried roadless areas in the project area. Project activities, including prescribed fire and fuels treatments, were determined to not be a threat to the species (USDI Fish and Wildlife Service 2023). Project activities may temporarily modify wolverine habitat, although not at a spatial or temporal scale that is relevant to a wolverine. This generalist species appears to be affected little by changes to the vegetative characteristics of its habitat.

The effects from past, ongoing, and future (cumulative) activities including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreation are not expected to contribute to loss of prey availability or changes to wolverine habitat at the scale of the geographic area. Nor are they likely to combine with the effects described above to reduce prey availability or degrade wolverine habitat at the scale of the geographic area.

The implementation of the project “may affect but is not likely to adversely affect” wolverine because:

- Project activities will not contribute to the identified primary threat to the wolverine distinct population segment (ongoing and increasing impacts of a changing climate and associated habitat degradation and fragmentation).
- None of the proposed activities are considered a threat to the distinct population segment (USDI Fish and Wildlife Service 2023).

- The individual project activities and cumulative actions will result in relatively small-scale disturbances in relation to the large wolverine home range size, and wolverine are able to adjust to and co-exist with low or moderate levels of disturbance.
- The projects and cumulative effects will not result in barriers to dispersing individuals.
- The risk of mortality from collisions with vehicles would remain very low.

See the Wildlife Species At Risk Report for additional information.

Whitebark Pine

Issues identified

- Thinning of trees, fuel rearrangement, fireline construction, transportation, and prescribed burning could damage and destroy individual whitebark pine.

Direct effects would include activities that result in removal, damage, or mortality to whitebark pine individuals or at any stage of their life history, including tree parts (such as cones or seeds). This includes soil disturbance, crushing, bumping, and scraping whitebark pine, root damage, mycorrhizal damage, nicks, opening wounds on whitebark pine bark, and pruning of whitebark pine tree limbs. These effects may occur from proposed actions within the project area such as thinning of trees, prescribed burning, fuel rearrangement, fireline construction, and transportation. The effects of all proposed treatments would be modified by project design features that would apply wherever pre-implementation surveys detect whitebark pine trees.

Indirect effects include effects that are removed in time or space from the proposed action. These include 1) the indirect effects of fuels reduction treatments on resistance and resilience to high intensity fire; 2) the indirect effects of hand thinning on the reduction of competing shade-tolerant trees; 3) the indirect effects of fire damage to insect damage susceptibility; and 4) the indirect effects of prescribed fire to whitebark pine reproduction. Cumulative effects, including those considering non-Federal lands when combined with the temporary disturbance of the project, are anticipated to be insignificant.

It is determined that implementing the Forestwide Prescribed Burn Project **“**may affect and is likely to adversely affect” whitebark pine. This determination is based upon the following rationale:

- Design features and the associated implementation plan would reduce intentional effects from prescribed fire activities and associated pre- and post-treatment activities in occupied and potential habitats but would not eliminate the possibility of harm to individuals. Direct effects may occur during these activities and constitute a non-negligible risk of injury or mortality to individuals.
- While the loss of some individuals during project activities is likely, these effects are not anticipated to occur at a frequency or scale that would result in the loss of entire whitebark pine stands.
- Prescribed fire and associated activities would not alter or modify habitats in a way that would negatively affect whitebark pine’s ability to persist and successfully reproduce.
- Proposed vegetation management activities are aligned with the 4(d)-rule suggesting that the incidental loss of whitebark pine to low-intensity fire or vegetation management activities would primarily affect individuals at the stand scale and is unlikely to affect the broader species distribution.
- Proposed treatments could occur across up to 80 percent of whitebark pine habitat within the project area, which represents roughly 1 percent of the 80,596,935 acres estimated by as the entire range occupied by whitebark pine in western North America (USDI FWS 2021).

- Proposed vegetation management activities are aligned with the 4(d)-rule suggesting that the incidental loss of whitebark pine to low-intensity fire or vegetation management activities would primarily affect individuals at the stand scale and is unlikely to affect the broader species distribution.

The Final 4(d) Rule included exceptions that are intended to allow Federal land management agencies to continue some management of the forest ecosystems where WBP occurs and to continue conducting restoration and research activities that benefit the species. The exception covers silviculture practices and forest management activities that reduce high severity wildfire, insect and disease impacts, vegetation management in existing utility rights-of-ways, wildlife habitat management, and improve overall forest health. These actions include but are not limited to cone collections, planting seedlings or sowing seeds, mechanical cuttings as a restoration tool in stands experiencing advancing succession, full or partial suppression of wildfire in WBP communities, allowing wildfires to burn, and survey and monitoring of tree health status.

Bull Trout, Westslope Cutthroat Trout and Western Pearlshell Mussel

Issues identified

- Water and aquatic habitat quality

Temporary (for example, a few hours to days) disturbance to individuals may occur due to near-stream activities such as hand-thinning, hand-line construction, and prescribed fire.

Short-term (less than 5 years) effects to water quality and aquatic habitat could occur in a minority of treatment areas. The primary effect of concern is increased sedimentation/turbidity from ground disturbance and vegetation removal from both pre-treatment activities (such as hand-line construction) and prescribed fire activities within the riparian management zones of streams.

Long-term (more than 5 years) benefits are expected as riparian conditions move toward desirable conditions. The risk of high-intensity fire is expected to be reduced, which should result in a corresponding reduction in the magnitude of future effects, such as substantial sedimentation events.

Bull Trout

Some project activities that remove near-stream vegetation (such as fire and hand thinning within inner riparian zone) and disturb soil (for example, hand line) could produce minor sediment mobilization. Individual bull trout could be affected through small (sub-lethal) and short-term (an hour or less) potential increases in turbidity during and shortly after precipitation events, though any effects would likely be sub-lethal and spatially isolated.

Some project activities that remove near-stream vegetation (such as fire and hand thinning) and disturb soil (such as hand line) could cause potential impacts from fire management on the physical or biological factors of bull trout. They are stream temperature, sediment, chemical contaminants/nutrients, large woody debris, streambank stability, and riparian management zones (related physical or biological factors 3, 4, 5, 6, 7 and 8). The other physical or biological factors are unlikely to be meaningfully affected by the project. These potential impacts could affect the quality of critical habitat at site-specific scales (such as a short segment of individual stream). In most areas, impacts are considered insignificant, and would not be meaningfully detected, measured, or evaluated, the effects to critical habitat would be discountable and insignificant. Any measurable sediment effects would likely only occur at a small site scale (such as short reach of stream of less than 100 feet) and would likely be of short duration (such as a few hours during and after a large precipitation event). Though the baseline of some relevant bull trout sub-watersheds is currently estimated to be in undesirable condition (such as Functioning at Unacceptable Risk), the

magnitude of project-related effects is estimated to be of a magnitude insufficient to produce meaningful impacts, with retention of functional category in the temporary and short-term timeframes. Measurable improvement of most PBFs could occur in the long-term due to expected improvement of overall riparian zone function.

The determination of effect for the species and designated critical habitat are "likely to adversely affect." This is a standard term that is used during Endangered Species Act consultation. However, using the term "adverse" in a determination under the Endangered Species Act does not necessarily rise to the level of significance under the National Environmental Policy Act. For the term adverse to be considered significant under the Endangered Species Act, those effects would need to be at the level of "jeopardy" to the continued existence of the species or "adverse ***modification***" of designated critical habitat. An example of adverse modification to critical habitat would be building a dam with no fish passage and inundating miles of spawning habitat with a reservoir and changing it into adult rearing habitat. That would be an adverse modification of designated critical habitat.

Adverse effects on individuals of a species or constituent elements or segments of critical habitat generally do not result in jeopardy or adverse modification determinations unless that loss, when added to the environmental baseline, is likely to result in significant adverse effects throughout the species' range, or appreciably diminish the capability of the critical habitat to satisfy essential requirements of the species (NMFS and USFWS 1998). As described above, the magnitude of project-related effects is estimated to be of a magnitude insufficient to produce meaningful impacts, with retention of functional category in the temporary (hours) and short-term (days) timeframes. That is, the impacts are not expected to be significant.

Westslope Cutthroat Trout

Due to substantial spatial overlap, and similarities of habitat requirements, the analysis above for bull trout is considered applicable to westslope cutthroat trout. Bull trout serve as a reasonable proxy for conditions favorable to westslope cutthroat trout. Therefore, the following analysis summarizes the findings from the preceding federally listed fish species analyses.

Direct impacts to individual westslope cutthroat trout are unlikely to occur along most occupied stream reaches since little project activity is proposed in those areas. General foot traffic and tool use proximate to occupied waters may startle a small number of individuals, slightly disrupting normal behavior for a short period of time (such as a few hours). Injury to individuals is highly unlikely to occur from any proposed project activities.

Water drafting could potentially occur within waters occupied by westslope cutthroat trout though this would be avoided whenever feasible. USFWS requirements regarding screening and acceptable flow reduction would apply, limiting the chance for direct harm to individuals.

In summary, though disturbance to individuals could occur, this area represents a small fraction of occupied waters, likely no more than a few percent. Pre-planning and implementation of project design features are expected to eliminate or substantially reduce the risk of any mortality.

Habitat Impacts

As for the federally listed species, only minimal effects (such as temporary sediment) to habitat are anticipated. Most project activities would occur outside of riparian zones, and a sufficient distance from occupied waters to avoid effects. Those activities proposed near-stream are nearly all low-impact, such as hand thinning and lower-intensity fire. Isolated sites with potentially higher impact activities, such as

mastication along roads in proximity to stream channels and at stream crossings, are expected to be effectively mitigated by project design features. Due to substantial range overlap, requirements developed for bull trout and their designated critical habitat are expected to similarly benefit westslope cutthroat trout in all, or nearly all, areas of the forest. See preceding analysis for additional details regarding specific habitat effects.

In further support of habitat analysis conclusions, past prescribed fires of similar type to those proposed by the project have shown that effects have been minimal. For example, on one stream Arkle and Pilliod (2010) found for 3 years after low-intensity prescribed fire (as compared to unburned reference streams) no detectable changes to multiple biotic and abiotic metrics, including: periphyton, macroinvertebrates, amphibians, fish, and riparian and stream habitats. Habitat-protecting measures incorporated into this project are estimated to be as protective, or more protective, than those for the projects reviewed in the past. In addition, any terms and conditions developed for bull trout during the consultation process with USFWS are likely to benefit westslope cutthroat trout due to range overlap (Blackfoot River and Upper Clark Fork River core areas) and similar habitat requirements. Outside of the overlapping areas, project design features are expected to minimize impacts in the temporary and short-term timeframes and improve habitat conditions in the long-term (such as greater than 5 years).

Based on the estimated low risk and magnitude of effects to westslope cutthroat trout occupied habitat, the following determination applies: May impact individuals or habitat but will not likely result in a trend toward Federal listing or reduced viability for the population or species.

Western Pearlshell Mussel

Due to substantial spatial overlap, and similarities of habitat requirements, the analysis above for bull trout is considered applicable to western pearlshell mussel habitat. Bull trout habitat serves as a reasonable proxy for conditions favorable to western pearlshell mussel. In addition, both bull trout and westslope cutthroat trout serve as a host for western pearlshell mussel. Therefore, the following analysis summarizes the findings from the preceding federally listed fish species analyses.

Direct impacts to individual western pearlshell mussel are unlikely to occur along most occupied stream reaches since little project activity is proposed in those areas. General foot traffic and tool use proximate to occupied waters are unlikely to produce detectable disruption of normal behavior. Injury to individuals is highly unlikely to occur from any proposed project activities since the vast majority would occur outside of streams.

Water drafting could potentially occur within streams occupied by western pearlshell mussel, though this would be avoided whenever feasible, and is not expected to occur in the immediate vicinity of individuals.

Populations effects to host fish species (such as westslope cutthroat trout) of western pearlshell mussel are not expected to occur. Host fish species (such as westslope cutthroat trout) populations are not expected to be measurably reduced by project activities.

In summary, brief disturbance to individuals could occur in a small percentage (likely less than 10 percent) of occupied waters during a given year. Pre-planning and implementation of project design features are expected to reduce the risk of mortality. In the long-term, project activities are expected to improve riparian conditions, which may benefit host species.

Habitat Impacts

As for the federally listed species, only minimal effects (such as temporary sediment) to habitat are anticipated. Most project activities would occur outside of riparian zones, and a sufficient distance from occupied waters to avoid effects. Those activities proposed near-stream are nearly all low-impact, such as hand thinning and lower-intensity fire. Isolated sites with potentially higher impact activities, such as mastication at stream crossings, are expected to be effectively mitigated by project design features. Due to substantial range overlap, requirements developed for bull trout and their designated critical habitat are expected to similarly benefit westslope cutthroat trout in all, or nearly all, areas of the forest. See preceding analysis for additional details regarding specific habitat effects.

In further support of habitat analysis conclusions, past prescribed fires of similar type to those proposed by the project have shown that effects have been minimal (Arkle and Pilliod 2010). Habitat-protecting measures incorporated into this project are estimated to be as protective, or more protective, than those for the projects reviewed in the past. In addition, any terms and conditions developed for bull trout during the consultation process with USFWS are likely to benefit western pearlshell mussel due to range overlap (Blackfoot River and Upper Clark Fork River core areas) and similar habitat requirements. Outside of the overlapping areas, project design features are expected to minimize impacts in the temporary and short-term timeframes and improve habitat conditions in the long-term (such as greater than 5 years). Based on the estimated low risk and magnitude of effects to western pearlshell mussel occupied habitat, the following determination applies: May impact individuals or habitat but will not likely result in a trend toward Federal listing or reduced viability for the population or species.

Species of Conservation Concern Determinations

Table 5. Effects determinations for species of conservation concern

Species	Effects of the Proposed Action
Adoxa moschatellina Musk-root *Amerorchis rotundifolia* Round-leaved Orchis *Aquilegia brevistyla* Short-styled columbine *Astragalus convallarius* Lesser rushy milkvetch *Botrychium crenulatum* Wavy-leaved moonwort *Botrychium paradoxum* Peculiar moonwort *Elymus innovates* Northern wildrye *Epipactis gigantea* Giant helleborine *Gentianopsis macounii* Macoun's gentian *Goodyera repens* Northern Rattlesnake-plantain *Lycopodium dendroideum* Tree-like clubmoss *Potamogeton obtusifolius* Blunt-leaved pondweed *Ranunculus pedatifidus* Northern buttercup *Schoenoplectus subterminalis* Water bulrush *Scorpidium scorpiodies* Scorpidium moss *Sphagnum fimbriatum* Fringed bogmoss *Stipa lettermanii* Letterman's Needlegrass	Potential impacts to these species if known populations or habitat are present in treatment units. Thinning, fuels arrangement, and prescribed fire could directly damage plants and indirectly modify habitat conditions. There are also potential impacts from noxious weed expansion and treatments. Minimal effects are expected due to the developed design features, which include considerations of unique plant communities like seeps for Round-leaved Orchis, Giant helleborine, Macoun's gentian, Blunt-leaved pondweed, Water bulrush, Scorpidium moss, and Fringed bogmoss.
Psiloscops flammeolus Flammulated Owl	Potential for project activities to improve habitat for this species by enhancing open stand structure. Known, active nests would be protected by a 30-acre buffer during treatment activities. Beneficial effects to habitat and minimal effects to individuals due to project design features.
Melanerpes lewis Lewis's Woodpecker	Potential for project activities to improve habitat for this species by enhancing open stand structure. Known, active nests would be protected during treatment activities. Beneficial effects to habitat and minimal effects to individuals due to project design features.

Species	Effects of the Proposed Action
Astragalus lackschewitzii Lackschewitz's milkvetch *Braya humilis* Low northern rockcress *Castilleja kerryana* Kerry's paintbrush *Cypripedium parviflorum* Small Yellow Lady's Slipper *Cypripedium passerinum* Sparrow's-egg lady's-slipper *Delphinium bicolor ssp. Calcicole* Limestone Larkspur *Draba densifolia* Denseleaf draba *Drosera anglica* English sundew *Drosera linearis* Slenderleaf sundew *Eleocharis rostellata* Beaked spikerush *Erigeron flabellifolius* Fan-leaved fleabane *Grindelia howellii* Howell's gumweed *Phlox kelseyi var missoulensis* Missoula phlox *Polygonum austiniae* Austin's knotweed	It's unlikely that these species would be present in areas proposed for thinning, fuels rearrangements, or prescribed fire given its habitat associations. However, there may be some incidental overlap with individual plants and treatment units. Known plants/populations would be avoided during thinning operations; potential impacts from prescribed fire would be minimal, as would potential impacts from noxious weeds and their treatment. Minimal effects are anticipated due to project design features.

Wildlife Resources

Terrestrial wildlife, including species of conservation concern (table 5) and migratory birds

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, transportation, and prescribed burning could disturb breeding individuals and reduce the quality or quantity of nesting and foraging habitat.

Prescribed fire and fuel reduction activities would adversely impact habitat for species of conservation concern, flammulated owl and Lewis' woodpecker, in the short term but would benefit habitat for these species in the long term. Specifically, project activities would reduce understory vegetation for about 3 years following treatment but would promote open forest stands with large trees and snags used for nesting and foraging for 10 to 20 years or more following treatment.

Although some snags and downed wood may be lost in treatment areas, any reduction of snags or coarse woody debris would occur on a relatively small percentage of the project area. Retention guidelines for snags and coarse woody debris would also minimize the loss of these habitat features in the project area.

Project activities would reduce vegetation cover, which may result in less hiding cover, forage, or nesting substrate in localized areas in the short term (up to 3 to 10 years). However, project activities would increase understory vigor and richness within a few years of treatment and would help to re-establish the

forest structure and composition that historically defined these habitats, thus benefitting many species of migratory birds and bird species of concern in the short and long term (10 to 20 years or more).

Project activities, including the use of mechanical equipment and associated noise, would temporarily disturb individuals and potentially disrupt breeding or foraging activities during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable and project activities will minimize impacts to nesting birds and nest trees such as by consulting with a wildlife biologist if an active nest is found and avoiding active nests encountered during implementation with a 100-foot buffer until the young have fledged. Flammulated owl nests will be protected by a 30-acre no treatment buffer and treatments will avoid fledgling/roosting habitat. Prescribed fire treatments will retain unburned pockets within burn areas and will coordinate with the wildlife biologist prior to implementation to ensure that treatments will not overlap with areas recently burned in order to protect nesting birds during the breeding season and to ensure nesting habitat is available between treatments.

The effects from past, ongoing, and future (cumulative) activities including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreation are not expected to contribute to loss of nesting or foraging habitat or result in adverse impacts to migratory bird populations at the scale of the project area. Nor are they likely to combine with the effects described above to reduce nesting or foraging habitat or result in adverse impacts to migratory bird populations at the scale of the project area. See the Wildlife Species At Risk Report in the project record for additional information.

Invertebrates – species proposed for listing and species of conservation concern

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, transportation, and prescribed burning could damage and destroy individual invertebrates proposed for listing (monarch butterfly and Suckley's cuckoo bumble bee) and species of conservation concern invertebrates.

Potential impacts include affecting habitat conditions by removing nesting and feeding habitat and the risk of individuals being crushed by equipment through thinning of trees less than 10 inches in diameter, prescribed fire, and fuels rearrangement. The impacts to invertebrate proposed species and species of conservation concern would be mitigated by design features in the project area. Therefore, the proposed project "is not likely to jeopardize the continued existence" of monarch butterfly or Suckley's cuckoo bumble bee throughout their range or on the Helena-Lewis and Clark National Forest. See the Wildlife Species At Risk Report for additional information on monarch butterfly and Suckley's cuckoo bumble bee.

Botany

Plant species of conservation concern

Issues identified

- Thinning of trees, fuel rearrangement, fireline construction, transportation, and prescribed burning could damage and destroy individual species of conservation concern plants.

Direct impacts include the potential to crush, trample, uproot, or damage existing or undiscovered species of conservation concern as a result of equipment use, fireline construction or broadcast burning. The impacts to species of conservation concern plants would be mitigated by project design features in the

project area. These design features include plant buffers, re-vegetation after disturbance, and surveys for plant species of conservation concern prior to implementation. Table 4 of the Botany Report lists the seven design features that would be used to mitigate impacts of the project on plant species of conservation concern.

Indirect impacts would include alteration or degradation of occupied or unoccupied species of conservation concern plant habitat. Changing light conditions from thinning of trees and broadcast burning and rearrangement of fuels could impact habitat by making is less suitable for some species or more suitable for other species. In addition, project actions could alter the hydrologic regime which could impact species of conservation concern plants. Project design features are in place to mitigate negative impacts.

Noxious Weeds

Issues identified

- Ground disturbance associated with fireline construction and thinning create conditions for invasive plants; opening of the overstory tree canopy, and nutrient releases after fire will alter habitat conditions in some areas; and equipment and vehicles entering the area could bring weed seeds and new invaders into the project area.

Increase in bare soil conditions from ground and fire disturbance promotes expansion of existing invasive populations and provides conditions for new invasive species to invade. Invasive species introductions from equipment and gear used in project implementation could occur. Invasive species populations are likely to be greater than present populations due to ground disturbance, bare soil, and nutrient releases.

Fisheries

The effects of prescribed burning activities are expected to be like that of past prescribed burns on the forest. In most cases, effects to chemical (such as, nitrogen cycle), physical (large woody debris, sediment), and biological characteristics (*such as* macroinvertebrates, amphibians) are insignificant (Arkle and Pilliod 2010; Beche et. al., 2005) under similar conditions. To reduce the potential magnitude of effects, sub-watersheds with known bull trout occupancy or designated critical habitat would not be treated with prescribed fire covering more than 20 percent of a sub-watershed in a single year, with a 3-year recovery period between burns (Project Design Feature WTR-2). Indirect effects to bull trout such as large woody debris, sediment, and stream temperatures are expected to be reduced to levels considered negligible (at the sub-watershed scale) by mitigation measures (project design features) and any necessary rehabilitation actions.

Water Resources

Water Quality and Quantity

Issues identified

- Prescribed burning and associated activities could cause increased runoff, erosion, and sediment delivery to water features, affecting water quality.

Direct and Indirect Effects

Water resource concerns related to prescribed burning activities include potential increases in runoff, erosion, and sediment; and associated effects that may result in changes to riparian, wetland, and aquatic ecosystems and overall water quality. The Forest Service Watershed Erosion Prediction Project

(FSWEPP[2]) model results indicate that there is no significant increase in potential for upland runoff, erosion, and sediment delivery to downslope and downstream water features above existing un-burned conditions, for any of the modeled prescribed fire scenarios. None of the model scenarios resulted in significant runoff, erosion, or sediment delivery above natural, background levels from typical precipitation events. This also correlates with observations of past prescribed burn projects on the forest. Erosion rates from prescribed burning are anticipated to mimic natural processes and impacts to water quantity and quality will not approach a threshold of significance. Refer to the water resources report and FSWEPP supplemental modeling report for more details.

The effects to water quantity and quality due to increased runoff, erosion, and sediment delivery would be limited by use of project design features and Forest Service best management practices. Prescribed burning would be accomplished when conditions are favorable, and risk of fire escape is low. High soil burn severity as defined in Parsons et al. (2010) would be avoided. Maintaining effective ground cover post-burn is expected to minimize potential impacts to water quality and prevent increases in post-fire runoff and erosion that are typically associated with wildland fires. This would lead to negligible amounts of erosion and downstream sedimentation.

Prescribed burning is not expected to cause adverse impacts to water quality, or total water yield increases or peak flows because project design features and Forest Plan standards and guidelines would be used during and following implementation of burns. Project design features have been included to reduce the risks of negative impacts to riparian, wetland, and aquatic resources, and water quality (see appendix B for project design features for watershed (WTR); riparian management zones (RMZ); soils (SOIL); and fisheries and aquatic habitats (FAH). Water quality parameters are expected to be maintained in accordance with Clean Water Act requirements and state water quality thresholds.

It is unlikely that project activities will adversely affect water temperature and by association dissolved oxygen, pH, and sediment. Increases in stream water temperatures resulting from proposed management activities are not anticipated. Project design features (appendix B), forest plan standards and guidelines, and Forest Service best management practices (USDA Forest Service 2012) are required as part of project implementation and minimize management activities within and surrounding riparian and wetland features. Riparian and wetland vegetation within the riparian management zones would be protected during project implementation and would continue to provide shading to water features (project design feature RMZ-1, RMZ-4, RMZ-6, and RMZ-7).

Implementation of measures to maintain favorable water temperatures will also serve to maintain dissolved oxygen levels, which change as water temperature changes. Incidental delivery of ash to water features is not expected to affect pH based on erosion modeling results and the inclusion of project design features, forest plan standards and guidelines, and Forest Service best management practices that are designed to minimize project-generated runoff, erosion, and delivery of sediment and ash to water features.

In general, any direct or indirect effects resulting from project burn activities will typically diminish within 3 to 5 years post-burn, when recovery of ground cover vegetation has occurred (Debano et al. 1998; Neary et al. 2005; Robichaud et al. 2010). This can occur as quickly as the next growing season with adequate precipitation. Generally, the post-project mosaic pattern of low and moderate burn severity

[2]The Watershed Erosion Prediction Project modeling tool, developed by the Forest Service and U.S. Department of Agriculture, is a physically-based soil erosion prediction technology, and has a number of customized interfaces developed for common applications such as roads, managed forests, forests following wildfire, and rangelands.

would be a net positive to water resources and watershed processes by reducing the potential for severe wildfire and the associated effects described in the current management alternative. Immediately post-burn there may be a small, short-term localized increase in sediment to streams and wetlands, particularly if high-intensity, short-duration thunderstorms occur shortly after prescribed burns. This is typically localized and minimal, mimicking the natural episodic pulse of sediment and nutrient delivery that historically occurred. This is expected to be insufficient to cause measurable impact to water quality and aquatic life down slope or downstream of burned units. Appropriate localized post-treatment actions using weed free materials (weed free seeding, silt fences, contour felling, mulching, localized sediment basins, contour waddles, etcetera) would be implemented where needed upon assessment of post implementation monitoring (project design feature WTR-4).

Cumulative effects of the proposed action on water quality and quantity are expected to be negligible and short-term in nature. Water quality, quantity, and overall watershed functions will be maintained. Restoring and maintaining vegetation characteristics across the landscape also ensures that key components of watershed function are intact and resilient to assimilate both natural and human disturbances in the future. Project design features, Forest Service best management practices, and Region 1 Soil and Water Conservation Practices apply to all activities authorized on public land managed by the Forest Service. The project is not expected to have a substantial effect on water quality or quantity in combination with other activities because required conservation measures are included to prevent or minimize any potential short- or long-term adverse effects to water resources. Refer also to the Clean Water Act and Safe Drinking Water Act regulatory compliance section.

Riparian and Wetland Ecosystems

Issues Identified:

- Prescribed burning and associated activities could cause adverse impacts to riparian and wetland ecosystems, including groundwater dependent ecosystems and peat-forming wetlands (fens and bogs).

Direct and Indirect Effects

No long-term adverse effects to riparian and wetland ecosystems are anticipated to result from proposed project activities. The net result is expected to be an overall improvement in or maintenance of wetland and riparian conditions. Project design features (appendix B) have been included to protect riparian and wetland areas during management activities. Riparian management zones are required around all water features as part of Forest Plan requirements and Forest Service best management practices. Project design features RMZ-1 through RMZ-6 provide project-specific protection measures for riparian and wetland ecosystems.

These measures specify the types of management activities that can occur within riparian management zones surrounding each water feature. Riparian management zones are not “no management zones” because treatment may be necessary to achieve desired conditions. Riparian areas and wetlands can benefit from some types of proposed treatments that would lessen the risk of long-term damage from high severity wildfires, such as removing encroaching upland species from wetland edges to improve water tables.

Any additional wetlands and riparian areas discovered during the project design phase would also be protected as part of the interdisciplinary implementation process outlined in appendix C. Thus, no adverse effects to riparian areas and wetlands are anticipated as these features would be mapped and provided to project planning and implementation personnel.

Implementation of prescribed burning within riparian management zones is expected to result in short-term (less than 3 years) and minor, if any, negative effects to isolated riparian and wetland ecosystems. Project design feature SOIL-9 is included to ensure that low intensity fire occurs within riparian management zones to achieve a mosaic of low and unburned soil burn severity and maintain the vegetative buffers surrounding riparian and wetland ecosystems. Pre-treatment activities prior to burning would further minimize potential effects to riparian and wetland features.

The net result is expected to be an overall improvement in riparian and wetland conditions once encroaching upland vegetation is thinned or removed as part of pre-treatment activities; and surrounding upland areas are treated with prescribed fire, reducing the potential negative impacts to these ecosystems described for the current management alternative. Prescribed burning is expected to result in short-term (less than 3 years) and minor, if any, negative effects. Prescribed fire may enter riparian and wetland ecosystems, but low intensity fire is anticipated due to the naturally moist conditions of these areas. This is expected to result in a mosaic of unburned and low soil burn severity.

Mechanical treatments would not be conducted within the inner riparian management zone (project design feature RMZ-1), and construction of mechanized fireline would generally be avoided except to cross streams (project design feature RMZ-2). Aerial or direct ignition of prescribed fire is not allowed within the inner riparian management zones unless site-specifically determined by watershed personnel to maintain the riparian or wetland ecosystem integrity and functions. Prescribed fires would be allowed to occur within riparian management zones (except for surrounding peat-forming wetlands) to achieve site-specific maintenance or improvement of riparian management zone ecosystems in alignment with Forest Plan desired conditions (refer to project design features RMZ-1 through RMZ-7 in appendix B). Variances would be obtained where prescribed burning is proposed within Streamside Management Zones (SMZ) to comply with Montana Streamside Management Zone Law and Rules found in Administrative Code 77-5-3 and Administrative Rules 36.11.3 (Montana Legislature 2015; Montana Administrative Rules 1995; Montana Department of Natural Resources and Conservation 2006).

No loss of peat-forming wetlands or their organic soils (peat) are expected to result from the implementation of the proposed action. Project design features are expected to maintain vegetation; protect the highly combustible peat from burning during project implementation; and maintain their associated groundwater sources.

Forest watershed personnel would review each prescribed burn project for the presence of peat-forming wetlands, conduct field verification surveys as necessary, and provide peatland locations to prescribed burn planners as part of the interdisciplinary project implementation checklist process outlined in appendix C. Peatlands would be specifically protected through project design feature RMZ-6 (appendix B), which prevents the use of prescribed fire (back-burning) within peatlands due to the presence of organic soils (peat) that are highly combustible, even when water is present at the surface.

Cumulative effects of the proposed action on riparian and wetland ecosystems are expected to be negligible and short-term in nature. Proposed treatments create the conditions for riparian and wetland areas to maintain adequate physical, biological, and chemical properties to promote vegetative growth and remain resilient during droughts and a changing climate. Project design features, Forest Service best management practices, and Region 1 Soil and Water Conservation Practices apply to all activities authorized on public land managed by the Forest Service. The project is not expected to have a substantial effect on the condition and function of riparian and wetland ecosystems in combination with other activities since required conservation measures are included to prevent or minimize any potential short- or long-term adverse effects to water resources. Refer also to the Executive Order 11990 regulatory compliance section.

Correcting existing problems at riparian areas, wetlands, springs, and peatlands, particularly those associated with roads or livestock grazing, are beyond the scope and authority of this project. These areas are expected to remain in their current condition until adjustments in grazing management or road improvements are implemented as part of authorized road maintenance activities, grazing management plans, or authorized under separate environmental planning projects.

Soil Resources

Issues identified

- Prescribed burning and the associated activities could cause loss of soil physical, biological, and chemical functions.
- Prescribed burning and associated ground disturbing activities cause compaction, erosion, mixing of surface horizons, and removal of organic matter, and soil heating.

The main concerns for the soil resource are 1) conducting both mechanical fuels reduction and prescribed burning on sensitive soils, 2) burning in areas with legacy effects from past timber harvest and wildfire, and 3) maintaining treatments with multiple entries where there may be issues with maintaining organic matter and therefore soil productivity.

Prescribed burning objectives typically are planned to result in a mosaic of low-to-moderate fire intensity which can result in a low to moderate soil burn severity. These objectives can be met because prescribed fires are implemented during favorable climate conditions such as seasons with higher humidity levels, lower temperatures, and moist vegetation and soil conditions. Low severity fire typically has minimal impact on the soil surface and can leave forest floor and live vegetation intact ensuring soil functions and soil quality is maintained.

While most prescribed burning is expected to result in low-to-moderate soil burn severity, there would be areas of high soil burn severity, such as, large slash piles that are burned and where organic matter on the forest floor smolders. In addition, fuels' objectives may need higher severity fire to meet desired conditions or that are more in line with historical fire. These scenarios have the potential to create severely burned soils due to the length of time heat occurs in a concentrated area, causing small, localized area of loss to soil physical, biological, and chemical functions and a decrease in organic matter needed for future soil nutrient stores. To minimize effects to the soil resource design features have been developed. SOIL-1 states pile burning would occur when soils are moist, frozen, or snow covered which would minimize heat transfer into the soil. SOIL-10 states avoid or minimize complete removal of organic layer which limits erosion and maintains future nutrient stores.

The temporary removal of vegetation and forest floor ground cover increases erosion potential where soil is bare, especially if it is already at a high risk for movement. Soils derived from certain parent materials are more vulnerable to erosion when ground cover is removed. These parent materials include volcanic ash and loess, granitic rocks, shale, and coarse grained sedimentary/metasedimentary rocks such as quartzite and sandstone. Ash deposits are common in the Upper Blackfoot geographic area. Widespread areas of granitic soils exist within the Divide, Upper Blackfoot, and Big Belt geographic areas. Rocky outcrops and soils developed from certain shales are common along the Rocky Mountain Range, Upper Blackfoot, Big Belts, Little Belts, and the Crazies. Quartzite and sandstone are prevalent in the Little Belts. Soil particle size and often a lack of organic matter in the soil surface horizons make these soils highly erosive if the soil surface is exposed even on gentler slopes. Refer to SOIL-2, SOIL-4, SOIL-6, and SOIL-8 for direction on minimizing impacts to the soil resources. Prescribed fire has direct and indirect impacts on soil microbes. SOIL-10 minimizes effects to soil microbes. Prescribed fire along with

the associated activities may introduce or increase invasive plant communities which can alter soil functions. SOIL-2 helps to minimize invasive plant introduction or increases. PLANT-4-7 also provides direction to minimize invasive plant's introduction or increase.

Ground disturbing activities associated with prescribed fire treatments such as mechanical thinning, mastication, fireline construction, and cross-country travel have the potential to create areas of increased soil disturbance (compaction and rutting), soil displacement (erosion and topsoil mixing), and surface organic matter removal. This occurs where equipment pivots, with equipment use on wet soils, with multiple passes over the same location, and where vegetation is removed down to mineral soil. SOIL-2 and SOIL-4 minimizes effects due to ground-disturbing equipment. The forest plan soil guideline FW-SOIL-GDL-01 also limits the slope equipment may operate on. An implementation plan developed for this project includes a requirement for soil review and identification of treatment units that will need field reviews prior to implementation of proposed treatment activities. This will enable the application of appropriate design features and best management practices to be applied to site specific areas.

Heritage Resources

Issues identified

- Heritage resources are not associated with any identified project issues.

The archaeological sites within the area of potential effect will benefit in the long-term from the proposed action to return the forest to a natural fire regime by reducing the overgrowth of fuels within and surrounding the site boundaries. By controlling the removal of the excess hazardous fuels, the sites will be less susceptible to catastrophic, or uncharacteristically severe wildfires.

To avoid any adverse effects or effects to archaeological sites by the proposed activities, Section 106 compliance will be completed prior to initiation of work as outlined in the Heritage Implementation Plan signed December 5, 2024. If an archaeological site is known to be or suspected to be in the area of proposed activities, then the site would be evaluated for protection guidelines or avoidance, or both. If artifacts or archaeological features are discovered during the application of mechanical or cultural methods, work would stop in that location and a Forest Service archaeologist would be notified. Guidelines to protect archaeological sites from adverse effects are available in the project design features (appendix B). Because the design features listed will be followed, no adverse effects are anticipated from the proposed activities.

Recreation and Roadless

Recreation

The direct impacts to recreation from the prescribed fire activities during project implementation would be the sights and sounds of people and equipment, including chainsaws, vehicles, and smoke in the air. Smoke in the air during the prescribed burns may have a direct affect to the quality of the recreation experience within the project area and to adjacent dispersed camping areas by temporarily reducing air quality and visibility. Following the Montana Airshed Group guidelines to ensure compliance with Federal, State and local requirements would minimize this impact. Indirect effects to recreation would result from changes to the scenery following the prescribed burning activities.

The proposed prescribed fire activity would include construction of firelines. The firelines may open access for off highway vehicles where vegetation previously prevented access. Design criteria are in place to minimize the appearance of firelines where they intersect with existing trails to reduce the likelihood of unauthorized use. The proposed action would have short-term direct effects to recreation resources during

project implementation, such as limited access to specific areas and increased presence of people and noise within the project area resulting in displacement of users throughout the term of implementation. Other cumulative considerations include visual long-term effects which would be seen until vegetation growth obscures the prescribed fire activities and visible stumps from the cutting small diameter trees approximately 3 to 8 years. Some users may not return to the area until vegetative recovery and tree regrowth has become established which more resembled what they were accustomed to from previous visits to the area.

Recreational activities such as hunting, camping, hiking, off-highway vehicle travel on roads, snowmobiling and cross-country skiing may continue within the project area; however, it is expected that short term loss of recreational opportunities would occur if prescribed fire implementation activities occurred during a specific recreational time period. Other ongoing and reasonably foreseeable activities that could be occurring within the analysis area include, continued use of grazing allotments, ongoing uses and maintenance activities associated with special use permits such as irrigation ditches, water lines, and road use; fuels reduction projects, road and trail maintenance, and firewood cutting. All of these activities, when added to the activities proposed in the Forestwide Prescribed Project area, have the potential to cumulatively affect the recreation experience within the project area. The primary impacts would be due to the increased presence of people, equipment, vehicles, and the associated noise which would directly affect the ability of recreational visitors to enjoy their desired experience and may lead to short-term displacement of visitors who choose to avoid the area during implementation of the prescribed fire activities.

Recreation character and recreational opportunity spectrum could potentially be impacted in the short term from prescribed fire activities by the change in the landscape character. However, in the long term these recreational settings and ROS would remain stable to improving once treatments are completed. The long-term benefits of the proposed action, including a more diverse, resilient, and sustainable forest ecosystem and reduction in the risk of negative impacts from severe wildfire, have the potential to indirectly benefit recreation by helping to maintain the settings and opportunities currently valued by the public for recreation within the project area.

Forest Plan desired conditions and guidelines would be considered and evaluated by resources before and during prescribed fire implementation for designated areas identified in the 2021 Helena- Lewis and Clark Forest Plan. Plan guidance and desired conditions would be met during implementation for the Lewis and Clark National Historic Trail and Continental Divide National Scenic Trail. These concerns will be considered to mitigate any potential impacts to desired conditions to these areas.

The proposed action would: improve firefighter and public safety by reducing wildfire fuels, improve the health and resiliency of the forest ecosystem through prescribed fire forest management activities, improve livestock and wildlife grazing by improving rangeland habitat conditions, maintain and improve water quality and aquatic habitat through watershed restoration activities, The proposed action would have direct effects during implementation, causing potential user displacement when project activities are occurring. Impacts would be most substantive during high-use recreational seasons such as hunting.

Recreational activities such as hunting, camping, hiking, off-highway vehicles riding, pleasure driving, would continue within the project area; however, it is expected that short-term disruptions in access to hunting and dispersed camping sites, displacement of users, and loss of hunting opportunities would occur if implementation coincided with those recreational seasons.

Long term (3-8 years following implementation), the proposed action would have a positive impact on recreation opportunities by improving the recreation setting. Providing for ecosystem resiliency, diversity

and restoration of grasslands and high mortality stands would have a positive effect on the accessibility of off-trail recreation opportunities. The proposed action would improve the recreation opportunities within the project area.

Roadless

The proposed action includes activities that are not prohibited under the 2001 Inventoried Roadless Rule such as prescribed fire or activities falling under one or more exceptions allowing the cutting, sale, or removal of "generally small diameter tree cutting." Under the 2001 Rule, timber may not be cut, sold, or removed from inventoried roadless areas except under specified circumstances. "Generally small diameter timber" may be cut, sold, or removed if doing so will restore ecosystem structure and function, such as reducing the likelihood of uncharacteristic wildfire. The primary need for the Proposed Action is to restore ecosystem structure and function and "small diameter trees" are defined as less than 10 inches diameter-at-breast height in the Forest Plan. No temporary roads are being proposed in inventoried roadless areas.

The inventoried roadless area treatments would be designed to guide the landscape into the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period, along with prescribed fire, a non-prohibited activity under the Roadless Area Conservation Rule, as published 66 Fed. Reg. 3243 (January 12, 2001). The 2001 Roadless Rule exceptions CFR 294.13 (b)(1)(ii) and CFR 294.13 (b)(2) (described above) would be utilized to fulfill all the project objectives. Prescribed fire is a non-prohibited activity in roadless areas. Prescribed fire treatments in Douglas-fir and lodgepole pine stands would restore ecosystem composition and structure by reducing existing fuel loading, stimulating vegetation that is adapted to periodic burning, and creating patches of natural regeneration. Treatments would re-establish fire to mimic natural disturbance on the landscape and maintain/enhance ecological communities that have been in decline.

The treatment units are designed to create a mosaic of vegetation and fuel structure that would be more resilient to future disturbances from fire and potential effects from changes in climate conditions. The treatments within the project boundary will be designed to buffer surrounding wildland-urban interface and to maintain ecosystem function within the roadless area. The units within the roadless areas would reflect a disturbance function of a resilient landscape. Proposed treatments within the project boundary would include but not limited to prescribed fire activities and the rearrangement of fuels by hand and mechanized equipment. Refer to the forest vegetation report in the project record. In both the Vegetation Report and Fuels Report, the total acres within the inventoried roadless areas and roadless expanses are used to place into context the vegetation conditions and magnitude of proposed treatments.

Silviculture Resource

Issues identified

- Prescribed burning and associated activities can be anticipated in promoting and maintaining desired vegetation conditions.
- Prescribed burning and associated activities may have an impact on old growth.

It can be anticipated that the application of prescribed fire reduces resource-based competition among residual trees, and would kill seedlings, saplings, and potentially small trees with less resistance to fire, and would effectively lift the canopy height of the treated area. The implementation of pretreatment activities, such as thinning up to 10 inches at breast height, can be anticipated to have similar effects while also reducing risk of any potential torching from prescribed fire by eliminating ladder fuels.

While a low severity, nonlethal fire can be effective at reducing surface fuel loads and ladder fuels, it generally lacks effectiveness at reducing canopy fuels as a stand-alone treatment and may need to be implemented in conjunction with a thinning treatment in order to modify canopy cover and density. The restoration of natural fire regimes in the warm dry and cool moist broad potential vegetation types can be anticipated to support the desired conditions in the forest plan. In terms of structure, this would facilitate patch size that is more characteristic of the natural range of variability, that is smaller patches. Additionally, species compositions and dominant cover types can be expected to shift to a more fire tolerant mix typical of more fire adapted systems as natural fire is reestablished as a natural component of the ecosystem.

The implementation of the proposed action would not, reasonably, be anticipated to adversely affect old growth within the warm dry and cool moist broad potential vegetation type. Application of prescribed fire within warm dry and cool moist old growth conditions can be anticipated to promote fire tolerant species mix, reducing fuel ladders, reducing stocking, and reducing tree-based competition for resources. While the application of low severity fire, generally, can be anticipated to remove seedlings, saplings, and small trees, these tree sizes do not play a role in the Helena-Lewis and Clark National Forest's determination of old growth (large tree ages, basal area, and trees per acre of a minimum size class), but may be considered a component of the qualitative attributes (smaller trees and canopy layers) of old growth (see FW-VEGF-GDL-04).

With respect to forest insects and disease, it can reasonably be anticipated that interactions may occur between the proposed action activities and disturbance agents, such as bark beetle, dwarf mistletoes, and defoliators. In general, treatments which reduce resource competition and density, and improve vigor are also anticipated to reduce the risk of mortality from bark beetles such as mountain pine beetle, western pine beetle, and Douglas-fir beetle (Gibson et al. 2009, Furniss and Kegley 2014, Randall 2010). However, damage from fire related injuries, such as crown scorching and basal damages, can cause tree stress, remove trees that are less susceptible to beetle attack (small trees), and can increase the risk of beetle attack and mortality (Gibson et al. 2009, Hood et al. 2003, Kegley 2011, Randall 2010). Defoliation from western spruce budworm may reduce risk from crown scorch and crown fire on affected trees (Gavin et al. 2017), however, cumulative stress from repeated defoliation combined with stress from fire damage may promote mortality. Surface fire within stands with dwarf mistletoe infections can be beneficial as this fire can scorch prune infected branches and reduce dwarf mistletoe infections of affected trees and stands (Conklin and Geils 2007).

There is a risk of the application of mixed severity fire killing larger trees, given that mixed severity fire is anticipated to create gaps and openings. During the pre-implementation phase of any potential treatment, old growth areas would be identified and, if appropriate, measures would be employed to reduce the risk of torching, crowning, and indirect mortality due to long fire residence time in surface and ground fuels.

Range Resource

Issues identified

- Prescribed fire management activities and implementation could lead to a temporary loss of grazing opportunities.

Proposed Action Alternative

Direct/Indirect Effects

Under the Proposed action, temporary short-term displacement of livestock during treatment may occur and potential closure of some areas to grazing until treatment objectives are met. This is typically two growing seasons or as determined by ecologist, range specialists, and approved by the district ranger. The majority of the Proposed Action Alternative treatments would increase herbaceous and shrub production over the Current Management Alternative since these activities create canopy openings with less needle cast. As the canopy cover is removed, these treatments would allow more sunlight to reach the ground and increase production of grasses and browse for cattle and wildlife use. The initial quantity of this vegetation usually increases distribution of cattle throughout the project area (Ursek and Severson 1988), into primary and secondary rangelands.

There would likely be no change in permanent carrying capacity (Animal Unit Months) as currently allocated since vegetative openings from treatments would only temporarily increase available forage for livestock. Any changes would be site specific to the allotment and situation and would be made in communication with the permittee. In the majority of the treatment area we would expect grazing patterns to change during this increase in forage (Ursek and Severson 1988). Range structures would be maintained and improved as necessary to continue cattle management at its current scope and intensity, subject to forestwide standards and guidelines. Fences would still need to be cleared of trees and brush and remain open and accessible for repairs and maintenance. Fencing and water developments that exist throughout the Project Area would need to be identified through the implementation checklist process. Large areas would be opened up to sunlight, and a variety of plants would generally appear, including forbs, grasses, trees, shrubs and invasive species. Aspen suckering may occur with the opening of the canopy and may need protection for a time to establish. Down trees can afford this protection if they are thick enough. If protection is critical and/or conifers are not sufficient to provide adequate cover, temporary fencing could be used. Exclosure fences and downed trees can impede cattle access and movement. These activities should be coordinated with the district range program manager to ensure that cattle distribution is not negatively impacted.

The cumulative effects analysis area for range resources is the area of all grazing allotments that are at least partially within the project area. This area is selected because activities in one part of an allotment may affect management of the entire allotment. The timespan for cumulative effects analysis is 10 years after the probable completion of proposed activities. By this time, it is estimated that the project's effects on increased forage in treated areas would begin to diminish.

There are no anticipated cumulative effects that would impair or unduly influence short-term range management of the allotments within the Project Area if the Proposed Action Alternative were selected. Increased forage production would promote wider distribution of livestock and may lessen utilization levels in historically preferred grazing areas. Eventually temporary increases in forage production would subside as pine regeneration grows and shades out understory vegetation. The decision documents associated with the respective allotments would indicate direction to be followed to improve or sustain range condition and capacity. However, there are still threats to cattle grazing such as the risk of large-scale wildfire. Any large acreage ignition may disrupt grazing use and damage or destroy range improvements. A large-scale wildfire can also cause dead trees, which would decay, to fall over and restrict access to vegetation by cattle and wildlife.

Geology, Energy, and Minerals Resource

Adherence to the suggested Geology, Energy and Mineral design features and implementation plan steps would result in no significant direct or indirect effects to minerals resources and activities from implementation of the proposed action.

Other Laws, Regulation, and Policy

National Forest Management Act of 1976

This project complies with the Forest Plan. See the Forest Plan Consistency document for a comprehensive assessment of proposed action compliance.

Clean Air Act (as amended in 1970, 1977, and 1990)

This act requires Federal agencies to ensure that actions they undertake in nonattainment and maintenance areas are consistent with federally enforceable air quality management plans for those areas. It provides for the protection and improvement of the nation's air resources and applies to the effects of prescribed fire and can help inform wildfire response. The act is a legal mandate designed to protect public health and welfare from air pollution. Although this policy creates the foundation for air quality regulation, states and counties are often responsible for implementation of the air quality standards.

The task of identifying National Ambient Air Quality Standards is assigned by the Clean Air Act to the Environmental Protection Agency. The Environmental Protection Agency evaluates and updates these standards every 5 years. Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants. The National Ambient Air Quality Standards must be met by state and Federal agencies, including the Forest Service.

Implementation of this project would be in compliance with Forest Plan goals and objectives to comply with air quality standards by using Best Available Control Technology techniques as defined in the Administrative Rules of Montana for Open Burning (ARM 17.8.601), and by not causing or contributing to any exceedances or violations of Federal or State ambient air quality standards.

The prescribed fire burn plan developed for each prescribed fire under this project would identify what permits, if any, are needed. It would also identify potential smoke receptors, non-attainment areas, Class I areas, and restricted areas that may be impacted. It would include modeling outputs and mitigation strategies and techniques to reduce the impacts of smoke production.

Clean Water Act, Safe Drinking Water Act, and State Water Quality Regulations

The proposed action is consistent with the requirements of the Clean Water Act (1972 as amended), the Safe Drinking Water Act (1974, as amended), and State of Montana water quality regulations because measures are included to protect surface and groundwater features, public drinking water supplies, and contributing source water areas through implementation of project specific design features, Forest Service best management practices, Region 1 Soil and Water Conservation Practices, and forest plan standards and guidelines. These measures also ensure that the project is consistent with the State of Montana non-point source pollution control plan (Montana Department of Environmental Quality 2017) to protect the Waters of the State and maintain water quality associated with assigned beneficial uses. The Forest Service would implement these measures as required by agreement between the Forest Service and State

of Montana Department of Environmental Quality (USDA Forest Service 2016) and Department of Natural Resources and Conservation (USDA Forest Service 2020) and meets the intent of the Montana Non-Point Source Management Plan to protect the Waters of the State and maintain water quality associated with assigned beneficial uses.

As project burn plans are developed following the implementation process in appendix C, watershed personnel would ensure that applicable requirements from Drinking Water Source Protection Plans and Total Maximum Daily Load (TMDL) plans are included in project planning and implementation.

The proposed action is consistent with Section 404 of the Clean Water Act because no discharge of dredged or fill material will occur in wetlands or other Waters of the United States. The proposed action is also consistent with U.S. Army Corps of Engineers and EPA regulatory authority under Section 404 to avoid and preserve rare, peat-forming wetlands (fens and bogs) (U.S. Army Corps of Engineers and EPA 2008) because no loss of peat-forming wetlands or their organic soils (peat) are expected to result from the implementation of the proposed action.

Executive Order 11988, Floodplain Management

Executive Order 11988, Floodplain Management requires that activities generally avoid occupancy and modification of floodplains that would alter flood passage, stage, or velocities in 100-year floodplains and floodways. The proposed project complies with Executive Order 11988 because project activities do not involve occupation or development of the 100-year floodplain and thus will not affect conveyance of flood flows.

Effects of prescribed fire and associated activities to floodplain vegetation would not impede flood passage or alter flood stage or velocities. Forest Service best management practices (USDA Forest Service 2012), and project design features are included so that no equipment or supplies would be stored within riparian management zones surrounding water features which generally corresponds to the floodplain for smaller mountain streams. These same restrictions also apply to the regulatory 100-year floodplains thus allowing any flood waters to flow as they would naturally, in the unlikely event that extreme flooding was to occur in the area. Implementation of project design features, Forest Service best management practices, Region 1 Soil and Water Conservation Practices, and forest plan standards and guidelines are fully expected to protect any floodplain areas that may be adjacent or downstream of the proposed project activities.

Executive Order 11990, Protection of Wetlands

This Executive Order requires that activities generally avoid modification or destruction of wetlands. The proposed project is consistent with Executive Order 11990 because proposed activities are not anticipated to result in a loss or conversion of wetlands, including rare groundwater dependent ecosystems such as springs and peat-forming wetlands (fens and bogs).

The project does not propose ground-disturbing activities within wetlands. Measures are included to either avoid wetland features entirely or protect them. Forest Service best management practices, forest plan standards and guidelines, and project design features restrict activities within riparian management zones associated with all water features, including wetlands. Application of design features and consultation with forest hydrologists and soil scientists prior to implementation is expected to protect the integrity of wetland ecosystems and functions.

No loss of peat-forming wetlands or their organic soils (peat) are expected to result from the implementation of the proposed action. Forest watershed and botany personnel would review each

prescribed burn project for the presence of peat-forming wetlands, conduct field verification surveys as necessary, and provide peatland locations to prescribed burn planners as part of the interdisciplinary project implementation checklist process outlined in appendix C. Peatlands would be specifically protected through project design element RMZ-7 found in appendix B which prevents the use of prescribed fire (ignitions or back-burning) within peatlands. This, in combination with other soil and water project design elements and Forest Service best management practices, would maintain vegetation and soils within riparian management zones and protect the highly combustible peat from burning during project implementation. Refer also to the Clean Water Act compliance section for a discussion on wetland protection related to Section 404 of the Clean Water Act.

Montana Air Quality

The Montana Ambient Air Quality Standards: The Administrative Rules of the State of Montana, Chapter 17.8, Subchapter 2, Ambient Air Quality, state air quality requirements. Montana's standards are as stringent as, or more stringent than, the national ambient air quality standards.

Montana State Implementation Plan: The collection of Environmental Protection Agency-approved programs, policies, and rules that the State of Montana uses to attain and maintain the primary and secondary National Ambient Air Quality Standards.

Other documents that guide specific actions in the planning area:

- Montana/Idaho Airshed Group Operations Guide (Montana/Idaho Airshed Group 2010)

All prescribed fire activities would be in accordance with Federal, State, and local requirements.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (Act) of 1918 implements various conventions between the United States and four neighboring countries and establishes an international framework for the protection and conservation of certain migratory birds and resident birds in danger of extinction. The list of protected birds now includes 1,106 species (USDI Fish and Wildlife Service 2022). The Act makes it illegal to among other things, "pursue, hunt, take, or capture any bird, nest or egg" of protected species, without a permit from the U.S. Fish and Wildlife Service (16 United States Code 703).

Executive Order 13186 directs Federal agencies to consider effects of Federal actions on landbird species of concern, integrate bird conservation principles, measures, and practices into their activities, and to the extent practicable, avoid or minimize adverse impacts to migratory birds and bird habitats.

The proposed treatment area contains habitat for numerous species of migratory birds (see the Birds of Conservation Report in the project record). Birds exhibit variable responses to fire depending on the severity of the burn and life history strategy of the bird. Migratory birds are agile species and are generally able to move away from disturbances and find adjacent habitat areas when displaced. The exception to this is during breeding, when nesting birds would be more susceptible to disturbance impacts. Prescribed burns or mechanical thinning implemented in the spring could negatively impact breeding individuals and disrupt nesting activities, which could result in the loss of the nest and any immobile young that were present. Several project design features were developed, however, that would avoid or reduce the potential impacts of proposed activities on migratory birds (see appendix B, Project Design Features).

The action complies with Executive Order 13186 because high priority migratory bird species and breeding habitats are analyzed. The action does not include purposeful or intentional take of migratory

birds. This project would not adversely affect migratory bird populations but may result in an unintentional take of individuals during proposed activities.

Executive Order 13112, Invasive Species

This Executive Order is one of the founding directives of the noxious or invasive plant control on National Forest System lands. Executive Order 13112, as amended, calls upon executive departments to put into place proactive and appropriate management to prevent the introduction, establishment and spread of invasive species. Agencies are encouraged to support efforts of eradication and control of invasive species in collaboration with other Federal, State, local, Tribal and private entities. On December 5, 2016, this executive order was amended to direct action to continue coordinated Federal prevention and control efforts related to invasive species and to consider additional emerging stressors, such as a changing climate, in managing invasive species. Please refer to the Noxious Weed Report, which demonstrates project compliance with this Executive Order.

National Historic Preservation Act of 1966

The National Historic Preservation Act of 1966, 16 U.S.C. 470 (NHPA) (amended in 1976, 1980, and 1992) created a comprehensive process for the preservation of historic properties through the establishment of the Section 106 process (36 CFR 800) and multiple institutions such as the Advisory Council on Historic Properties, State Historic Preservation Office, and the National Register of Historic Places (NRHP). Historic properties, including buildings, structures, districts, objects, traditional cultural properties and archaeological sites, within affected areas of Federal project or projects funded with Federal money are required to be documented under Secretary of Interior standards.

Under National Historic Preservation Act of 1966, Section 106, Federal agencies such as the Forest Service are required to identify, evaluate, and protect heritage resources on their lands. The Federal Code of Regulations at 36 CFR 800 (Protection of Historic Properties), 36 CFR 63 (Determination of Eligibility to the National Register) and 36 CFR 296 (Protection of Archaeological Resources), and their Land and Resource Management Plan (Forest Plan) guide the national forest in evaluating the effects of proposed management actions on historic properties.

The National Programmatic Agreement for Phasing Section 106 for Large-Scale Multi-Year Projects between the Forest Service, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers was initiated for this project on March 1, 2023. The phasing national programmatic agreement requires the development of a heritage implementation plan through rigorous consultation with invited stakeholders including the Advisory Council on Historic Properties, Montana State Historic Preservation Office, and Tribal Historic Preservation Office. Tribal consultation was also initiated on March 1, 2023 with formal invitations sent to 12 Tribes to be a heritage implementation plan consulting party.

The Heritage Implementation Plan for the Helena-Lewis and Clark National Forest Forestwide Prescribed Fire Project was signed on December 5, 2024. The Heritage Implementation Plan outlines the process to complete reasonable and good faith effort to identify historic properties in the APE and consultation before beginning Project activities in an area where historic properties may be affected to comply with Section 106 of NHPA. Additionally, it outlines the reporting requirements for assessment of effects throughout Project implementation.

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act of 1990, 16 U.S.C. 470dd; 25 U.S.C. 3001 et seq. (NAGPRA) creates a process for Federal agencies and museums that receive Federal funding to return Native American human remains, funerary objects, sacred objects and cultural patrimony objects from their collections to descendants, Indian Tribes, Native Alaska Corporations and Native Hawaiians. Additionally, new discoveries, whether planned or accidental, excavated on Federal or Tribal lands have a process outlined in the Native American Graves Protection and Repatriation Act.

If ground disturbing activities cause a new discovery, then the activities will be immediately halted and the Forest Service archaeologist will be contacted. If there is a human burial or burials present, then the burial or the larger archaeological site will be flagged by the Forest Service archaeologist to be avoided for all project activities.

There are gravesites, graves and cemeteries on the national forest. These will be avoided during the proposed activities. Design elements ensure the proposed action would be implemented in compliance with the Native American Graves Protection and Repatriation Act.

Executive Order 13007 Indian Sacred Sites

The Executive Order 13007, May 24, 1996, is intended to protect and preserve Indian religious practices and the locations of these practices. Sacred sites on Federal lands are to be accessible to Indian religious practitioners and the physical condition of the sites should not be adversely affected.

There is one officially designated Traditional Cultural Property within the area of potential effect.

During the archeological review, described in the Heritage Implementation Plan, the forest archaeologist will determine if the area of concern is subject to specific protection measures. In addition, Tribal consultation would be ongoing during implementation of the project.

Agencies or Persons Consulted

We consulted the following individuals and Federal, State, Tribal, and local agencies during the development of this environmental assessment:

Center for Biological Diversity

Alliance for the Wild Rockies

Native Ecosystems Council

Council on Wildlife and Fish

U.S. Environmental Protection Agency Region 8

U.S. Fish and Wildlife Service

Montana Department of Environmental Quality

Montana Department of Fish, Wildlife, and Parks

Montana Department of Natural Resources and Conservation

Montana Snowmobile Association

Glacier-Two Medicine Alliance

Yellowstone to Uinta's Connection

Big Elk Divide Restoration Committee

River Gates Nephrology

Jefferson County Disaster and Emergency Services

Montana State Historic Preservation Officer

Advisory Council on Historic Preservation

Blackfeet

Chippewa Cree

Crow

Eastern Shoshone

Fort Belknap

Fort Hall

Fort Peck

Little Shell

Nez Perce

Northern Arapaho

Northern Cheyenne

Confederated Salish and Kootenai

Individuals on the forestwide mailing list

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Appendix A – Maps

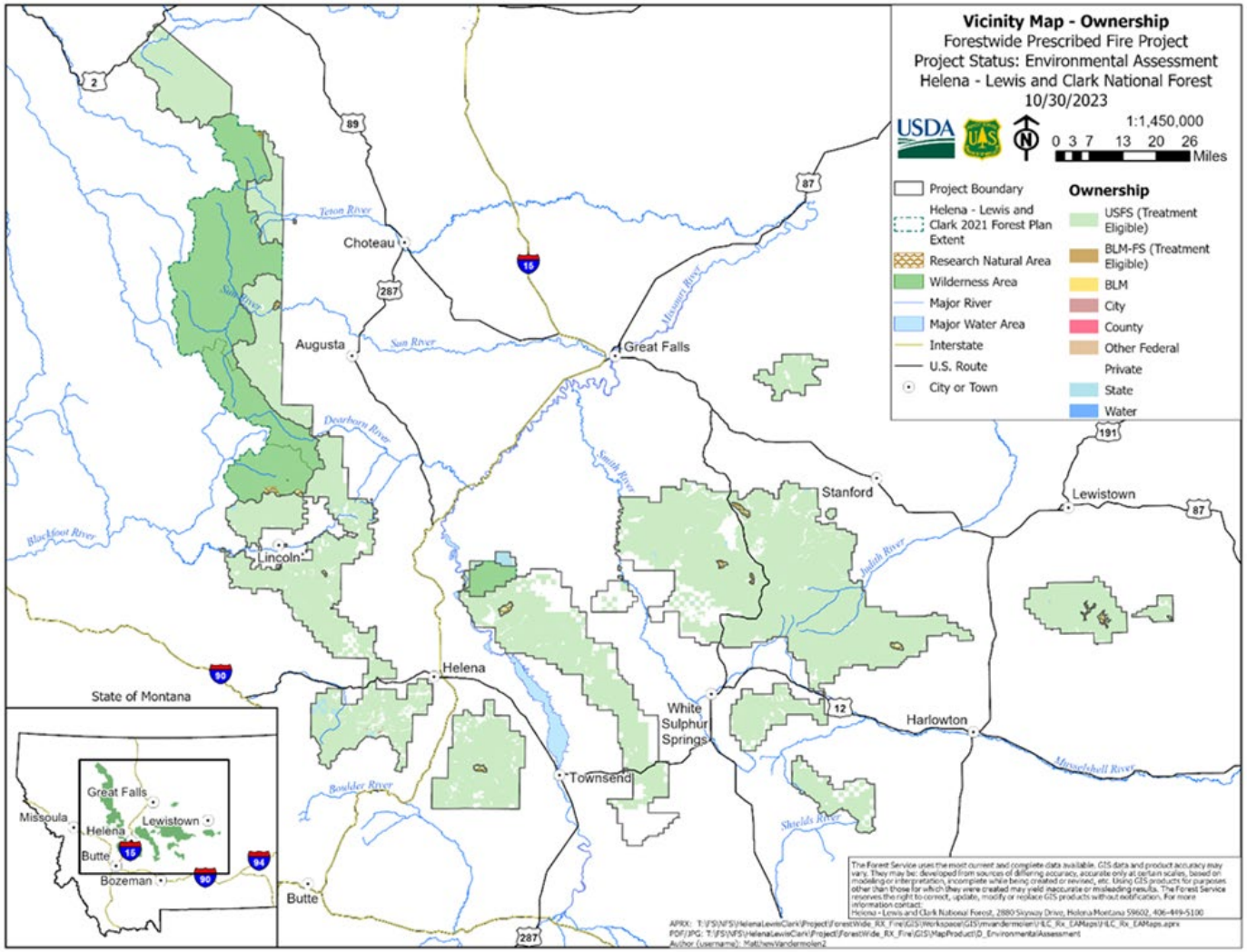

Figure 17. Vicinity map of the project area

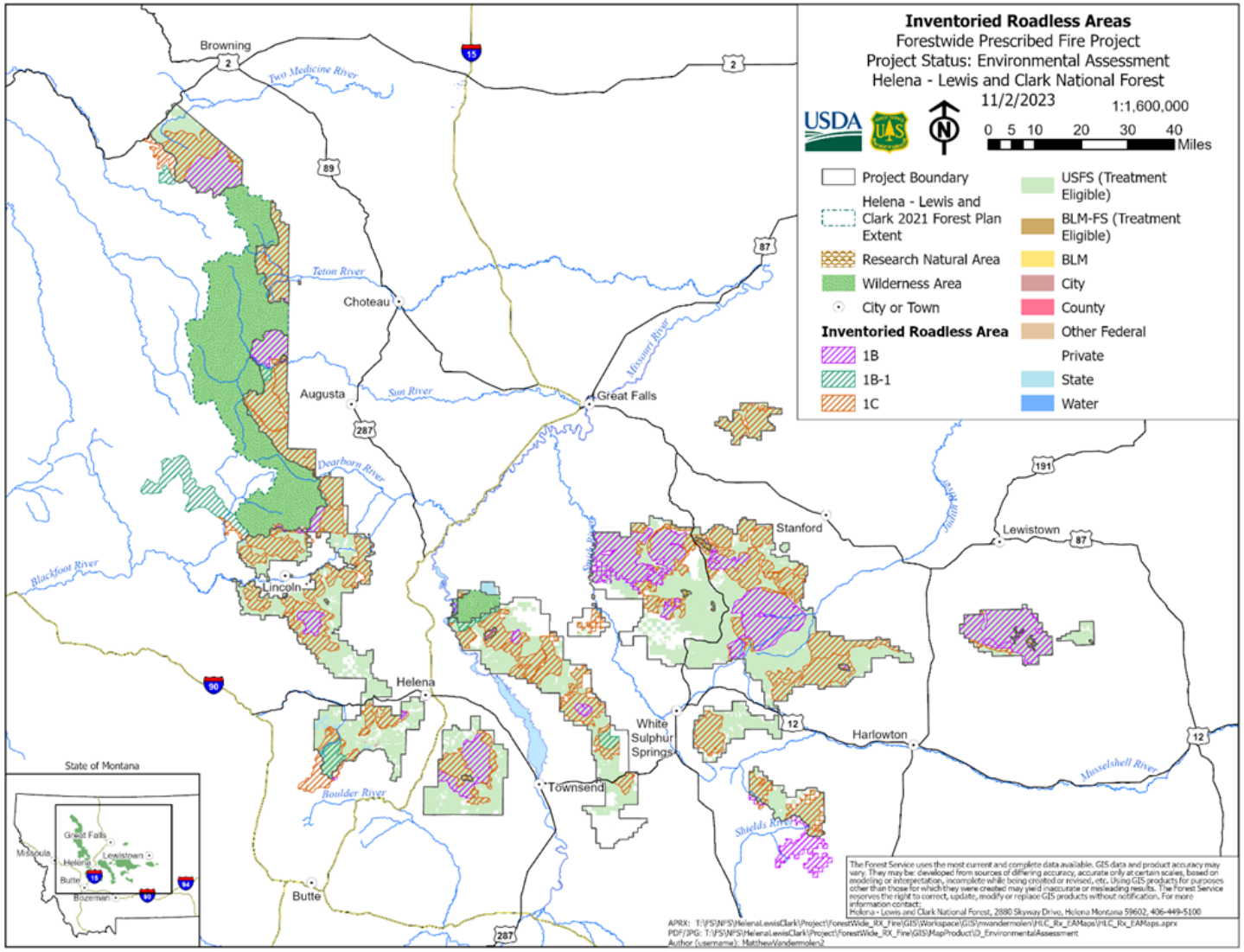

Figure 18. Inventoried roadless areas within the project area

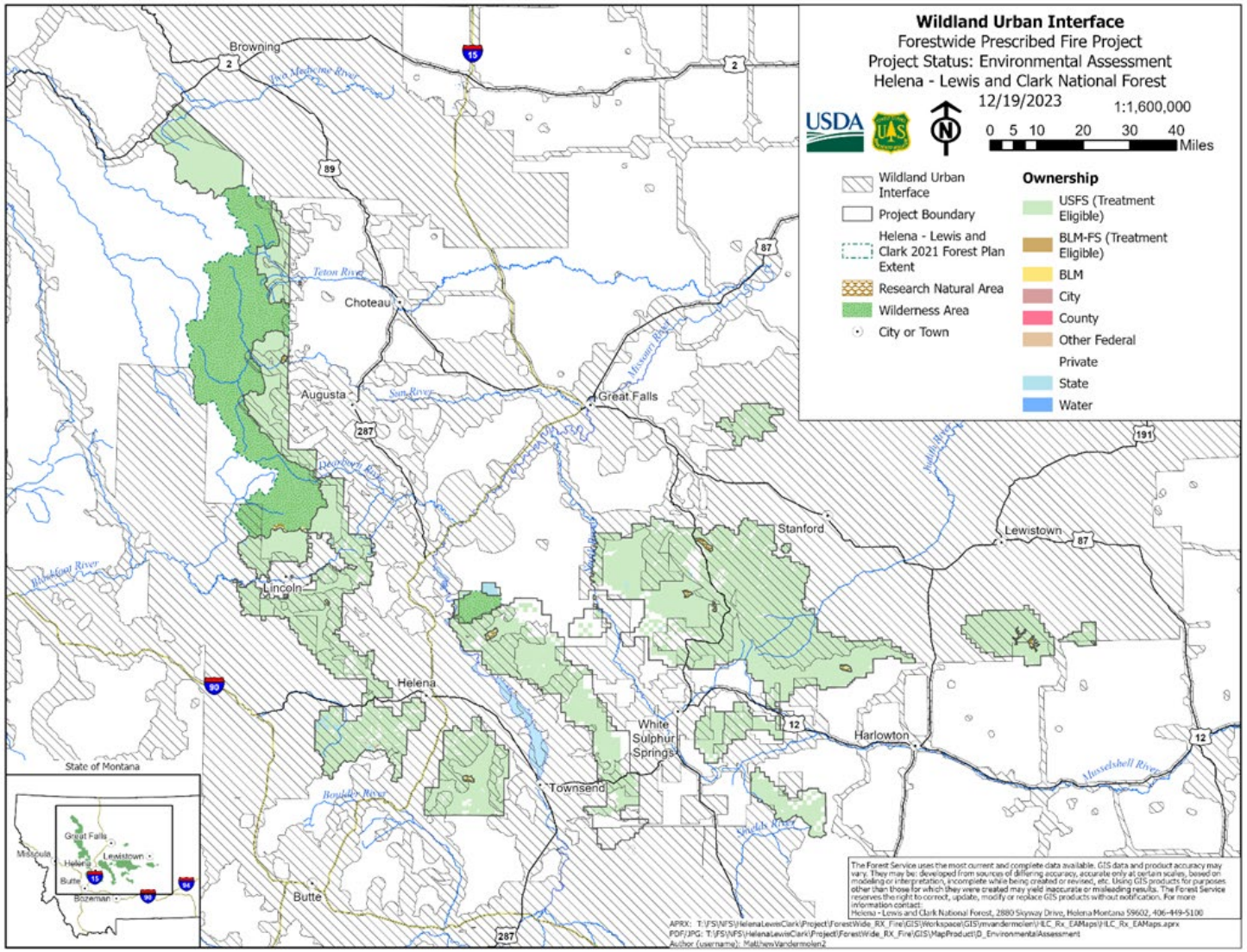

Figure 19. Wildland-urban interface areas located within the project area.

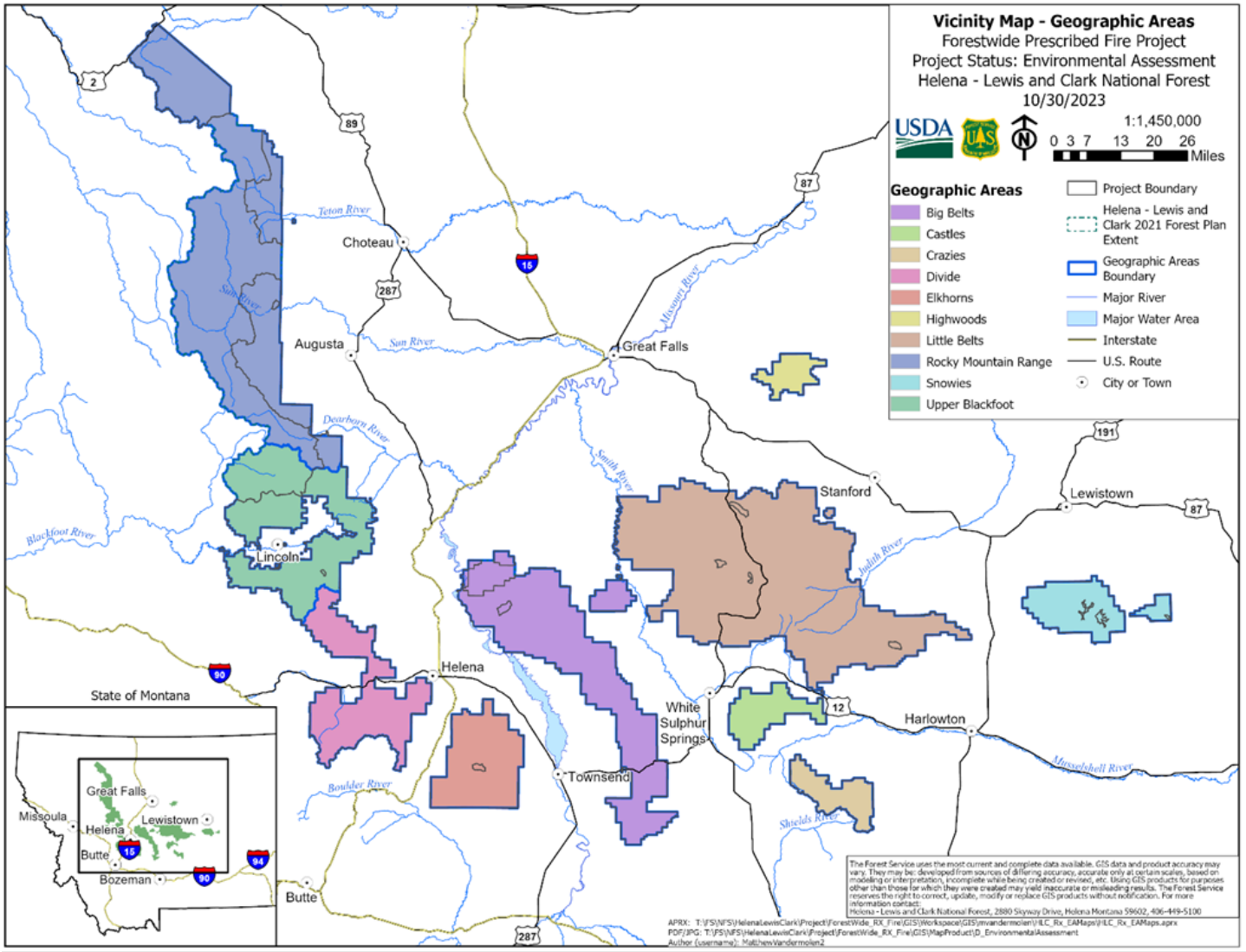

Figure 20. Map showing location of all geographic areas in the project area.

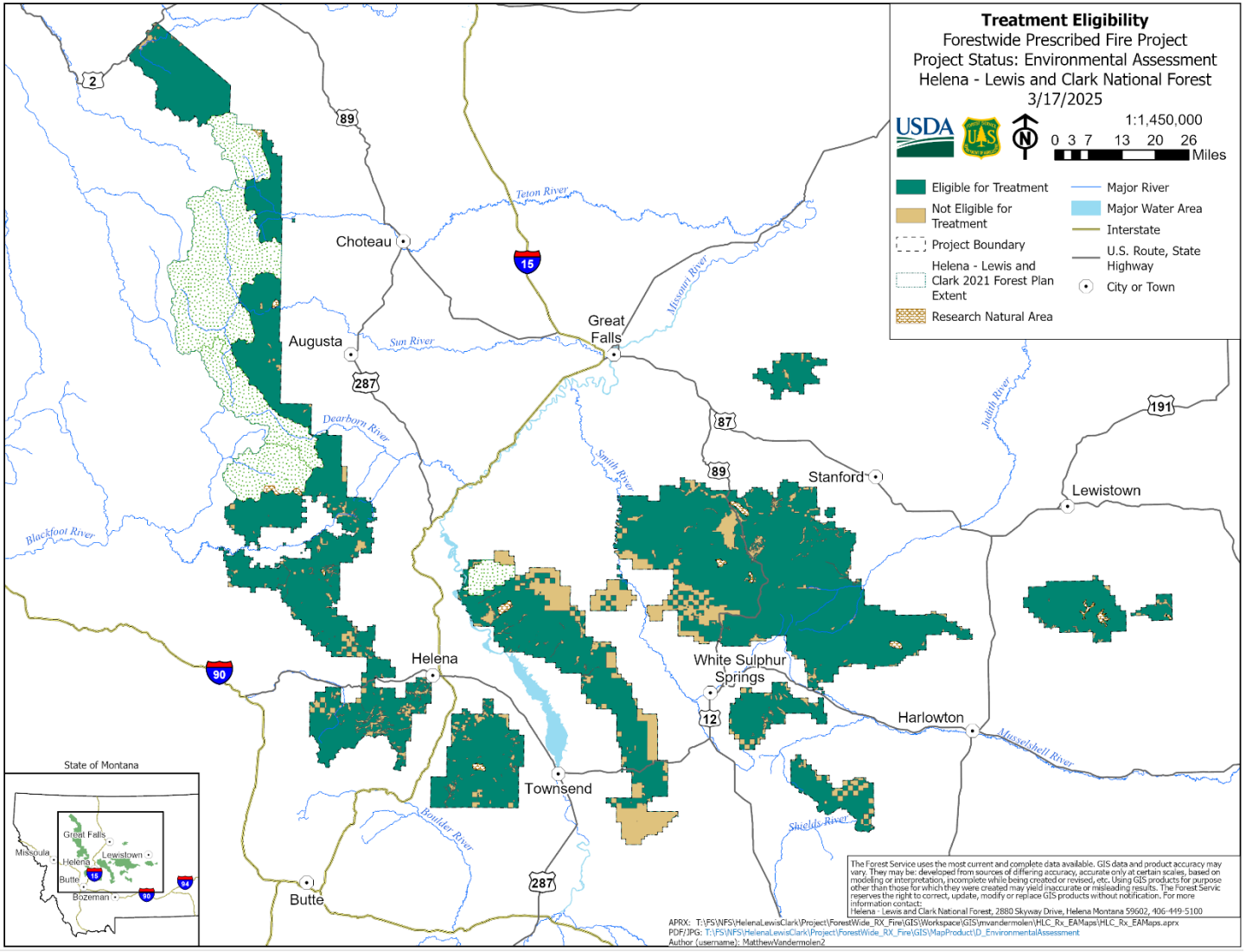

Figure 21. Map showing areas of treatment eligibility in the project area.

Appendix B – Project Design Features

This appendix contains a list of applicable project design features. These project design features were developed to assure project conformation with the Forest Plan and mitigate potential impacts to resources caused by implementing the proposed action. The identifier relates to the Forest Plan alpha-numeric identifiers by resource abbreviations. Project design features identified for the project are informed by pre- implementation surveys and consultation. The interdisciplinary team helped develop the proposed project design features and were reviewed by the national forest resource specialists to ensure that project design features for one resource did not create unintentional impacts to another resource, and to ensure the proposed project design features were feasible.

Label	Description of the Design Feature
	Watershed
WTR-1	Limit the extent of burned area within each 6th-level sub-watershed (HUC12) to an appropriate percentage, not to exceed 50 percent of the total subwatershed annually. The percentage of each sub-watershed that would be burned will be site-specifically determined during the implementation process (appendix C) based on individual sub-watershed characteristics (slope, geology, soil types, precipitation type and timing, vegetation characteristics, wildfire and other disturbances in the watershed, municipal water supplies, water quality designations, etc.). Prescribed burns that would burn 20 to 50 percent of an individual sub-watershed in a year, would have a minimum of a 5-year recovery period before re-entry into the same sub-watershed. If an exception to the 5-year recovery period is deemed necessary, it would require review and concurrence by forest watershed, soil, and fisheries staff.
WTR-2	Project implementation would prioritize watershed conditions for bull trout by conducting prescribed burning within relevant (occupied and/or containing designated critical habitat) sub-watersheds (HUC 12) in a phased, multiple-entry approach. No more than 20 percent of the total sub-watershed would be burned during a single year, with a minimum of a 5-year recovery period before re-entry into the same sub-watershed. If an exception is deemed necessary, it would require review and concurrence from forest soil and fisheries staff and approval by the Level 1 team. This design criteria would also extend to sub-watersheds (HUC 12) that are occupied by at-risk, genetically unaltered westslope cutthroat trout conservation populations designated by Montana Fish, Wildlife, and Parks (MTFWP) (Region 3 and Region 4 Westslope Cutthroat Trout Conservation Strategy for the Missouri River Headwaters SW MT and North Central MT, 2022). If an exception is deemed necessary, it would require review and concurrence by forest soil and fisheries staff.
WTR-3	To maintain water quality and prevent disturbance of contaminants in EPA Superfund Sites, project implementation would: • Avoid equipment and vehicle operations or stream crossings in the riparian management zone unless on existing Forest System roads and trails, or site-specifically authorized by the line officer. • Require line officer approval for treatments in the riparian management zone within Superfund sites. Where prescribed fire is authorized in the riparian management zone within Superfund Sites, prescribed burning would be conducted to achieve a low soil burn severity to minimize the amount of exposed soil and maintain riparian vegetative filter strips.
WTR-4	Appropriate localized post-treatment actions using weed free materials (such as weed free seeding, silt fences, contour felling, localized sediment basins, contour waddles, mulch, etc.) would be implemented upon assessment of post implementation monitoring where needed.

Label	Description of the Design Feature
WTR-5	Cross-country travel of ground disturbing equipment (including fire vehicles) would be restricted to slopes less than 40 percent and periods when the soil is dry or frozen. Other limiting considerations may include vegetative conditions and soil erodibility and instability. After treatment completion, any signs of cross-country travel would be obliterated. (Refer also to Forest Plan soil guideline 1 for more detail.)
WTR-6	Locate, construct, and maintain fire control lines to minimize runoff and erosion, and prevent sediment delivery from directly entering waterbodies considering. • Use existing barriers (e.g., roads, trails, rock outcrops, wet line in riparian management zones, etc.) whenever possible to reduce the need for constructed fire control lines and minimize disturbance. • Locate and construct fire control lines along hill slope contours to the extent possible. Maintain suitable water and erosion control measures throughout the life of the fireline until stabilized by vegetation or rehabilitated following implementation. Construct water bars at an appropriate distance apart based on slope (refer to Furniss 2001 or at least one water bar for every 10 feet of vertical rise). • Fire control lines will generally be in place for 1 to 2 seasons and obliterated afterwards. • Fireline would be rehabilitated to prevent erosion and unauthorized use by pulling displaced soil, litter, duff, and vegetation and any berms back to restore natural contours, placing woody debris on them, constructing water bars, and seeding.
WTR-7	Conduct Forest Service best management practices implementation and effectiveness monitoring on a minimum of 10-percent of project activities completed annually following established Forest Service best management practice monitoring protocols.
WTR-8	Stream crossing structures would be placed during low flow periods and during the instream work window in streams occupied by Bull Trout July 1- September 1. Applicable state permits would be enforced
	Riparian Management Zones
RMZ-1	Project implementation will follow Forest Plan direction for activities occurring in riparian management zones. Refer to FW-WTR-STD-01 for distances associated with inner and outer riparian management zone based on type of water feature. • Vegetation management treatments within the inner riparian management zone will only be done to restore or enhance aquatic and riparian-associated resources. Only non-mechanical treatments shall be authorized in the inner riparian management zone (FW-RMZ-STD-02). • Vegetation management treatments within the outer riparian management zone may occur to meet desired riparian management zone conditions, so long as project activities within riparian management zones do not prevent attainment of desired conditions for wildlife and the inner riparian management zone (FW-RMZ-STD-03). • Use of heavy equipment within riparian management zones should be minimized (FW-RMZ-GDL-06). Favor use of tracked equipment over wheeled where practicable and follow design features SOIL-2 and SOIL-4 to protect riparian management zone functions.
RMZ-2	Construction of machine fireline in riparian management zones should be avoided, except where needed to cross streams (FW-RMZ-GDL-05). Stream crossings would be kept to the minimum number necessary to accomplish project implementation. All stream crossing locations would be designated with the assistance of watershed personnel and located on straight, stable stream sections. Obtain State of Montana Stream Protection Act 124 Permits and Short-Term Water Quality Standard for Turbidity 318 Authorizations where applicable.
RMZ-3	Forest Service personnel would designate equipment refueling and storage sites and approve spill containment plans. Equipment servicing and refueling areas would be at least 300 feet from any flowing or standing water, outside of any hydric vegetation, and outside of riparian management zones. Fuel spills would be cleaned up and fuel spills in excess of 24 gallons would be reported to the Montana Department of Environmental Quality spill hotline. Staging areas would be restored/stabilized after use.

Label	Description of the Design Feature
RMZ-4	Within the inner riparian management zones, hazard trees will be felled and left onsite or as directed by fisheries and water resources personnel (FW-RMZ-GDL-01). Live deciduous or hydric trees and shrubs (for example, river birch, cottonwood, willow) would not be removed from inner riparian management zones to maintain bank stability and shading for control of water temperatures.
RMZ-5	Large woody debris, including beaver dams and complexes, would not be cut, or removed from stream channels unless it threatens the integrity of fire control breaks (FW-RMZ-GDL-02). If this is the case, fisheries and hydrology personnel will be consulted before the work is conducted.
RMZ-6	Within a minimum of 100 feet of peatlands (fens and bogs) and other groundwater dependent ecosystems: • Avoid the use of wheeled or tracked equipment to prevent disturbance, soil compaction, or damage to vegetation (FW-RMZ-GDL-03). • Coordinate vegetation treatments with watershed and botany personnel for line officer approval to ensure desirable vegetation is retained to maintain peatland characteristics. All project-generated woody material will be removed from the peatland manually, causing as little disturbance to organic soil and vegetation as possible. Existing downed woody material should be left in place unless requested for removal by watershed and botany personal to improve peatland conditions and functions. • Do not locate or burn machine or hand piles within 100 feet of peat-forming wetlands. • To prevent irreversible damage and loss of organic soils and peatland ecosystems, do not ignite fire, allow fire to burn through, or use peatlands as natural fire containment lines.
RMZ-7	To protect riparian ecosystems and water quality, aerial ignition would be avoided in the inner riparian management zones, hand ignition would be allowed to obtain vegetation and management objectives. Aerial ignition in the outer riparian management zone would be approved by watershed/aquatic staff before implementation. • Prescribed burning would be timed and use burning techniques to achieve low-to-moderate fire intensity during burning, low soil burn severity conditions post-burn, and maintain riparian and wetland vegetation. • Coordinate with the State of Montana Department of Natural Resources and Conservation, Division of Forestry to obtain Streamside Management Zone Law variances for prescribed burning within Streamside Management Zones (SMZ).
	Grazing and Range Management (The following are Forest Plan standards and guidelines incorporated here for implementation reference).
FW-GRAZ-GDL-02	To ensure grazing is sustainable and contributes to other resource desired conditions, forage use by livestock should maintain or enhance the desired structure and composition of plant communities on grasslands, shrub lands, and forests and should maintain or restore healthy riparian conditions as defined in the allotment management plan.
FW-GRAZ-GDL-04	Allotment management plans should incorporate adaptive management to move towards desired conditions for vegetation and riparian resources, considering both the needs and impacts of domestic livestock and wildlife.
FW-VEGT-GDL-02	Livestock grazing practices should be modified as necessary to ensure that revegetation and/or reforestation is successful after management activities or natural disturbances, as defined in site-specific prescriptions.
	Fisheries and Aquatic Habitats

Label	Description of the Design Feature
FAH-1	Water from municipal supply - Fire -fighting equipment that uses water from municipal sources are unlikely to encounter aquatic invasive species, so no project design features apply. When possible top fill engines from a municipal water source, water tender or pump assigned to single drafting source. This negates the need to decontaminate engine drafting equipment. Water from non-municipal supply and drafting water from multiple water sources–apply project design features FAH–2. Apply FAH-3 regardless of water supply source.
FAH-2	Prior to beginning water use/drafting, obtain local unit information on known aquatic invasive species locations from this link or from an updated, current source of information for aquatic invasive species: https://www.arcgis.com/apps/dashboards/4c3ce4d6273e4afd845c165aa111884f
FAH-3	Water handling: • Avoid transferring water between drainages or between unconnected waters within the same drainage. Water acquired from either side of the continental divide will only be used and transported on the side the continental divide from which it was acquired. • Do not dump or spray water directly from one water body to another.
FAH-4	Within bull trout occupied subwatersheds: • Limit mechanical fireline construction to no more than 20 miles annually. • Limit road reconstruction to 5 miles or less annually and no more than 2 miles of road reconstruction within riparian management zones annually. • No more than 2 stream crossing structures will be installed annually, including temporary culverts and permanent culvert replacements. • Limit haul to 100 truckloads by project annually and no more than 5 truckloads daily.
FAH-5	Stream crossing structures would be placed during low flow periods and during the instream work window in streams occupied by Bull Trout and Westslope Cutthroat Trout July 1- September 1. Applicable state permits would be enforced.
	Soils
SOIL-1	To the extent feasible, pile burning would occur when soils are moist, frozen, or snow cover is present to reduce the impacts of burning on soils.
SOIL-2	Activities would be planned to minimize the amount of area receiving machine traffic needed to meet objectives. Travel on existing disturbed areas when available, minimize the number of passes, designate travel routes, and designate sensitive areas to avoid. Operate machinery on slash and/or masticated material as much as possible to protect soils. • The number of passes over any one area should be limited to no more than 3. • Avoid abrupt sharp angled turns and instead use gentle arching turns. • Operate over the top of a slash mat or masticated fuels when possible.
SOIL-3	Pile burn planning and implementation would be completed in coordination with the soil scientist and/or hydrologist to minimize impacts on soil, water quality, and riparian resources. Planning will consider pile size, fuel sizes, spacing of piles, and potential rehabilitation needs. Pile size will generally be limited to .25 acres to protect soils.

Label	Description of the Design Feature
SOIL-4	Ground-based equipment would be limited to periods when soils are dry or frozen to limit compaction and displacement and to maintain long-term soil productivity. • Ground-based heavy equipment will be allowed when soil moisture is sufficiently low, or when adequate winter operating conditions exist with a sufficient depth of packed snow and/or frozen ground. The Forest Service will determine when and where appropriate operating conditions exist. The intent is to minimize detrimental soil rutting, displacement, and compaction. • Adequate winter operating conditions should include a sufficient depth of frozen ground and/or packed, dense snow to support machine traffic and prevent detrimental soil disturbance. Typically, these conditions are as follows: - Minimum 4” depth of frozen soil and no snow; - Minimum 2” depth of frozen soil and 6 inches machine packed snow; or - 0” depth of frozen soil and minimum 10 inches machine packed snow.
SOIL-5	Only above ground vegetation and slash would be masticated, not soil. The optimal depth of masticated material left on the soil surface will not inhibit regeneration of the herbaceous layer. Depths of masticated material will vary depending on vegetation type but would not exceed 3-6 inches over most of the area being masticated. Shallower depths of masticated material will reduce the potential for high soil burn severity where prescribed fire follows mastication and will allow for the regeneration of understory vegetation. Masticated material will not be spread in meadows.
SOIL-6	Rehabilitation will be completed after ground-disturbing activities to meet forest plan soil desired conditions and standards and guidelines. Rehabilitation will focus on establishing cover, erosion control, proper hydrologic function, and blocking unauthorized motorized use on firelines, burn piles, landings, any other areas of high ground disturbance.
SOIL-7	Locate burn piles in areas where the potential for effects to the soil resource is minimized. Locations to avoid could include moderate or steep slopes, riparian areas, or sensitive soils as outlined in the forest plan. Burn piles should not interfere with natural drainage patterns. Avoidance areas or mitigation measures would be outlined during the implementation process.
SOIL-8	Conduct prescribed fire to minimize residence time on the soil while meeting burn objectives. Avoid or minimize complete removal of the organic layer when burning to maintain soil productivity, infiltration capacity, and nutrient retention. Prescribed fires will be implemented when conditions would result in overall low soil burn severity, with minor discontinuous (mosaic) amounts of moderate soil severity and negligible amounts of high soil severity.
	Threatened, Endangered, Proposed and Candidate Plant Species; Plant Species of Conservation Concern; and Invasives
PLANT-1	If plant species of conservation concern are discovered in the project area, a buffer will be established around each plant population to protect each population from ground disturbance, prescribed fire activities, mechanical and hand piles, and herbicide treatments, based on the specific species and location. If avoidance isn’t possible, then the botanist will be consulted.
PLANT-2	Avoid prescribed fire and other fuels treatments within suitable habitat for plant species of conservation concern, where treatments neither sustain long-term plant persistence nor maintain and/or enhance plant habitat’s ecological integrity and resilience.
PLANT-3	Maps of treatment areas, fireline construction, and equipment staging areas will be provided. Contact Forest botanist and review maps prior to implementation to provide adequate time to survey for plant species of conservation concern.

Label	Description of the Design Feature
PLANT-4	The Forest botanist will be contacted prior to treatments of invasive plant species to ensure that species of conservation concern are not impacted. In areas where there is a risk of introducing, establishing, or spreading invasive weed species an invasive species risk assessment will be completed in conjunction with the national forest botanist.
PLANT-5	Revegetation would use weed free native seeds mixed to specifications approved by the national forest botanist. The most genetically appropriate seed available for this area would be used. Seed would be applied promptly during the appropriate temporal window to promote successful germination. Techniques which promote establishment of native species will be incorporated into revegetation planning as possible.
PLANT-6	Plant communities that are susceptible to or are impacted by invasive plants that have been burned with prescribed fire or other fuels treatments will be monitored to determine rehabilitation actions that may include herbicide treatments and/or reseeding.
PLANT-7	Equipment, vehicles, and gear needed for project implementation will be clean of soil and vegetation debris and pass inspection by the authorized officer prior to project implementation.
PLANT-8	Travel routes will be pre-treated for invasive plants treated annually during implementation, as the need is identified. Infestations along access routes (30 feet either side or route), within treatment units, within a half-mile of perimeter of treatment units will be treated during implementation, as needed. If new, high risk weed infestations or areas of disturbance are detected, they will be prioritized and treated.
	Whitebark Pine
WBP-1	Whitebark pine of all age classes may be found outside modeled potential habitat. Therefore, personnel surveying, designing, and implementing treatment activities on National Forest System land would be trained to identify whitebark pine seedlings, saplings, and mature trees to limit effects.
WBP-2	Damaging or killing a plus tree, elite tree, or phenotypically resistant whitebark pine would only occur in situations where human health and safety are at risk. The location of plus trees and elite trees would be updated annually and provided to project personnel. Forest personnel would be instructed on how to identify plus trees and elite trees in the field by their tree tags and paint.
WBP-3	Broadcast burning would not be conducted in stands with plus or elite trees or in genetically diverse areas (Petty Creek, Sheep Shed Mountain, Our lake, Mount Edith, Ant Park and Higgins Park). Coordinate with silviculturist staff for locations of these high value, genetic resources.
WBP-4	Prescribed fire and mechanical treatment activities authorized under this decision would not occur in high value, genetic installations, unless specified as needed by the Regional Geneticist. Installations include the Adams Creek Central Montana Seed Zone Seed Orchard (with associated irrigation system), Mount Edith and Spur Park whitebark pine test plantations, Han Solo Douglas-fir test plantation, and Long Gulch, Cellar-Ogilvie, and Wet Park lodgepole pine provenance and progeny test plantations.
WBP-5	Dispersed camping of implementation personnel could occur within modeled or occupied suitable whitebark pine habitat following coordination with botanist and/or silviculturist.
WBP-6	Treatments would implement the appropriate design features to minimize or avoid damage or mortality to whitebark pine of all sizes, to the extent possible.

Label	Description of the Design Feature
WBP-7	Use recommended seed/seedling mixes when it is determined that native vegetation would not sufficiently recover naturally (fireline, burn piles, site stabilization, pollinator habitat, invasive species infestations, whitebark pine, etc.). Seed/seedling mix would be native and locally sourced to the extent possible or practicable and developed in coordination with botanist and activity lead to meet the intended revegetation goals for specific locations and treatments. All seed used on National Forest System lands would be certified to be free of seeds from noxious weeds on the current All States Noxious Weeds list. Seeding treatments would be identified by the range staff, hydrologist, soils specialist, and botanist or approved contractor.

WBP-8 (Implementation Plan)	All Activities Pre-implementation surveys for whitebark pine would be required where activities overlap with modeled potential habitat. Surveys would not be needed if the botanist or silviculturist has on-the-ground knowledge that whitebark pine would not occur there (documentation of rationale is required). Survey efforts would be determined annually based on treatment locations and complexity. During field surveys, whitebark pine of all size/age classes would be marked (flagged, painted, GPS, etc.) and documented on a map. Marking would be completed in a manner that does not cause damage to the tree or introduce disease. Additionally, concentrated pockets of whitebark pine seedlings (at least 10 percent of all seedlings in the project area) should be identified for protection during implementation. Mechanical equipment use, mechanical and hand piles, and prescribed burning would not occur within designated seedling concentrations. Vegetation Management (Mechanical and Hand) Felling of non-whitebark pine conifer species would be done in a manner to avoid damage to all live whitebark pine individuals. Directionally fell away from mature whitebark pine when possible. Avoid ground disturbance within 33 feet of the drip line for mature whitebark pine trees and 15 feet for whitebark pine saplings to protect roots and soil. Scatter, hand pile, or machine pile slash at least 15 feet from the drip line for sapling and mature whitebark pine trees . Avoid creation of slash windrows. Heavy equipment would be used sparingly in whitebark pine stands and would be cleaned before entering sites to prevent the spread of invasive species. Botanist or silviculturist would be consulted on the placement of skid trails and landings or the use of off-road motorized travel in occupied whitebark pine habitat to avoid live, mature whitebark pine trees and minimize impacts to seedlings and saplings. Pile and Jackpot Burning Pile and jackpot burning is preferred in stands containing at least 10 live, cone-bearing, whitebark pine per acre to minimize mortality and the loss of genetic diversity. Fuel piles would be arranged to avoid scorching whitebark pine in the vicinity. Piles would be placed on seedlings and saplings of competing tree species, such as lodgepole pine, subalpine fir, and Engelmann spruce, where practical. Piles within whitebark pine stands would be burned under conditions that minimize residence time and the likelihood of creep. Broadcast Burning Control line placement should be designed to avoid live, mature whitebark pine trees and minimize impacts to seedlings and saplings. Implement pre-burn treatments around mature whitebark pine to minimize fire effects. This could include raking or pulling back surface and ladder fuels from under individual mature whitebark pine. When raking, minimize disturbance to the mineral soil layer and complete as far before ignition as practical to minimize damage to near surface roots. Coordination between the botanist and/or silviculturist and prescribed fire specialist is necessary. Within 15 feet of the dripline of mature whitebark pine, remove all non-whitebark pine conifers less than 10-inches diameter at breast height, dead woody material, and surface fuels capable of scorching the crown and/or charring the bole prior to ignition. Reduce competition/ladder fuels near whitebark pine saplings (Hood 2025).

Label	Description of the Design Feature
	Minimize effects to whitebark pine during implementation, prune lower branches to acceptable heights to maintain cone bearing branches and allow for continued seed production. Trees should maintain at least 30 percent crown. When using aerial ignition techniques in locations where mature whitebark pine trees are present, use the most accurate tools (e.g., plastic sphere dispensers) practically available. Broadcast burn under conditions that reduce fire residence time to reduce effects to whitebark pine boles and fine roots. Invasive Species Treatment Invasive species treatment within or adjacent to occupied whitebark pine habitat would be in accordance with the applicable Forest NEPA (e.g., Helena National Forest Noxious Weed Environmental Impact Statement (2006); Lewis and Clark National Forest Noxious Weed Control Environmental Impact Statement (1994)). Because whitebark pine was not a listed species at the time of the noxious weed decisions, it is recommended that herbicide treatments would maintain a minimum distance of 10 feet from the bole of mature whitebark pine.
	Northern Rockies Lynx Management Direction
WL-Lynx –1	Concentrations of healthy green subalpine fir, Engelmann spruce, and lodgepole pine trees, sapling to mature trees, will be retained within treatment units whenever possible to preserve forage for snowshoe hare and to maintain habitat connectivity for both hare and Canada lynx.
WL-Lynx –2	Unless a broad scale assessment has been completed that substantiates different historic levels of stand initiation structural stages limit disturbance in each LAU as follows: If more than 30 percent of the lynx habitat in an LAU is currently in a stand initiation structural stage that does not yet provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects. Fuel treatment projects within the wildland-urban interface that do not meet standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than six percent (cumulatively) of lynx habitat on each administrative unit (a unit is a national forest). In addition, fuel treatment projects may not result in more than three adjacent LAUs exceeding the standard.
WL-Lynx –3	Precommercial thinning projects that reduce snowshoe hare habitat may occur from the stand initiation structural stage until the stands no longer provide winter snowshoe hare habitat only: Within 200 feet of administrative sites, dwellings, or outbuildings; or For research studies or genetic tree tests evaluating genetically improved reforestation stock; or Based on new information that is peer reviewed and accepted by the regional level of the Forest Service, and state level of Fish and Wildlife Service, where a written determination states: that a project is not likely to adversely affect lynx; or that a project is likely to have short term adverse effects on lynx or its habitat, but would result in long-term benefits to lynx and its habitat; or For conifer removal in aspen, or daylight thinning around individual aspen trees, where aspen is in decline; or For daylight thinning of planted rust-resistant white pine where 80 of the winter snowshoe hare habitat is retained; or To restore whitebark pine. Fuel treatment projects within the wildland-urban interface that do not meet standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than six percent (cumulatively) of lynx habitat on each administrative unit (a unit is a national forest). Exceptions 2 through 6 shall only be utilized in LAUs where Standard VEG S1 is met.

Label	Description of the Design Feature
WL-Lynx –4	Vegetation management projects that reduce snowshoe hare habitat in multi-story mature or late successional forests may occur only: Within 200 feet of administrative sites, dwellings, outbuildings, recreation sites, and special use permit improvements, including infrastructure within permitted ski area boundaries; or For research studies or genetic tree tests evaluating genetically improved reforestation stock; or For incidental removal during salvage harvest (for example, removal due to location of skid trails). Fuel treatment projects within the wildland-urban interface that do not meet standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than six percent (cumulatively) of lynx habitat on each administrative unit (a unit is a national forest). Exceptions 2 and 3 shall only be utilized in LAUs where Standard VEG S1 is met. (Note: Timber harvest is allowed in areas that have potential to improve winter snowshoe hare habitat but presently have poorly developed understories that lack dense horizontal cover [for example, uneven age management systems could be used to create openings where there is little understory so that new forage can grow]).
WL-Lynx –5	Vegetation management projects should be planned to recruit a high density of conifers, hardwoods, and shrubs where such habitat is scarce or not available. Priority for treatment should be given to stem-exclusion, closed-canopy structural stage stands to enhance habitat conditions for lynx or their prey (for example, mesic, monotypic lodgepole stands). Winter snowshoe hare habitat should be near denning habitat.
WL-Lynx –6	Prescribed fire activities will not create permanent travel routes that facilitate snow compaction. Constructing permanent firebreaks on ridges or saddles will be avoided.
WL-Lynx –7	Fuel treatment projects within the wildland-urban interface as defined by the Healthy Forest Restoration Act should be designed considering standards VEG S1, S2, S5, and S6 to promote lynx conservation.
WL-Lynx –8	Denning habitat should be distributed in each LAU in the form of pockets of large amounts of large woody debris, either down logs or root wads, or large piles of small wind thrown trees (“jack-strawed” piles). If denning habitat appears to be lacking in the LAU, then projects should be designed to retain some coarse woody debris, piles, or residual trees to provide denning habitat in the future.
WL-Lynx –9	Maintenance treatments in occupied lynx habitat outside of the wildland-urban interface will consider the following Northern Rockies Lynx Management Direction objectives: Manage vegetation to mimic or approximate natural succession and disturbance processes while maintaining habitat components necessary for the conservation of lynx. Provide a mosaic of habitat conditions through time that support dense horizontal cover, and high densities of snowshoe hare. Provide winter snowshoe hare habitat in both the stand initiation structural stage and in mature, multi-story conifer vegetation. Conduct fire use activities to restore ecological processes and maintain or improve lynx habitat. Focus vegetation management in areas that have potential to improve winter snowshoe hare habitat but presently have poorly developed understories that lack dense horizontal cover.
	Canada Lynx Tier 1 and Tier 2 Areas
WL-Lynx-T1-T2 –1	Where mature habitat is less than 50 percent of an LAU, there will be no further reduction of mature habitat outside the wildland-urban interface unless it's confirmed stem exclusion in which case there are no limitations. Note that this applies to the entire LAU. Treatments within the wildland-urban interface are subject to Northern Rockies Lynx Management Direction standards.

Label	Description of the Design Feature
WL-Lynx-T1-T2 –2	Where mature habitat is greater than 50 percent of an LAU, mature habitat outside of the wildland-urban interface may be reduced to 50 percent of the LAU unless it's confirmed stem exclusion in which case there are no limitations. Note that this applies to the entire LAU. The only limitations within the wildland-urban interface are the Northern Rockies Lynx Management Direction standards. However, if wildland-urban interface treatments result in mature habitat dropping below 50 percent of the LAU then no additional mature habitat will be treated outside of the wildland-urban interface.
WL-Lynx-T1-T2 –3	Where stand initiation habitat is less than 20 percent of an LAU, there will be no further reduction of stand initiation habitat outside the wildland-urban interface. Note that this applies to the entire LAU. Treatments within the wildland-urban interface are subject to Northern Rockies Lynx Management Direction standards.
WL-Lynx-T1-T2 –4	Where stand initiation habitat is greater than 20 percent of an LAU, stand initiation habitat outside of the wildland-urban interface may be reduced to 20 percent of the LAU. Note that this applies to the entire LAU. The only limitations within the wildland-urban interface are the Northern Rockies Lynx Management Direction standards. However, if wildland-urban interface treatments result in stand initiation habitat dropping below 20 percent of the LAU then no additional stand initiation habitat will be treated outside of the wildland-urban interface.
	Wildlife
WL-1	Prior to implementation, minimize impacts to migratory birds and other wildlife species by designing treatments and implementing prescriptions and practices that promote a mosaic burn pattern across the landscape and retention of small, unburned pockets within large burn areas.
WL-2	Any trees that have evidence of being used as a nest tree (such as presence of constructed, natural or excavated nesting cavities, fecal whitewash, feathers, bolus pellets, skeletal bones, or fur of prey species present at or around the base of a tree) will not be cut unless it poses a safety hazard.
WL-3	Retain deformed trees for use by goshawks and other birds as nest trees.
WL-4	Due to the importance of understory hardwood shrubs for wildlife, and when consistent with fuel management objectives, strive to retain 30 to 50 percent of the existing hardwood shrubs. To the extent possible, shrubs would be maintained in a patchy mosaic across the site; or prescribed fire prescription and burn plan implementation will favor the production and health of shrubs and shrub habitat.
WL-5	Subject to other design criteria, implementation of all vegetation treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable while achieving the purpose and need of the project.
WL-6	All new nesting and denning sites for threatened, endangered, or terrestrial species of conservation concern observed prior to or during implementation will be reported immediately to the wildlife biologist and appropriate protection measures will be implemented.
WL-7	Project treatments occurring during the peak breeding and nesting season from April 1 to July 1 will be implemented in a manner that avoids or minimizes impacts on other nesting birds protected under the Migratory Bird Treaty Act. If it is not practical to avoid implementing the treatments during the peak breeding season, then minimize impacts to the extent practicable for nesting birds of conservation concern and Montana priority bird species by: Consulting with a wildlife biologist if an active nest is found; and Avoiding any active migratory nests encountered during implementation with a 100-foot buffer until the young have fledged. If necessary, flagging tape will be placed at the limits of the buffer zone, not at the nest site as that could increase predation.
WL-8	Cease project activities if a listed or proposed species is discovered within or adjacent to the project area until it is recommended how best to proceed by the appropriate wildlife biologist.

Label	Description of the Design Feature
WL-9	Project activities would minimize effects to big game during critical time periods by concentrating human activities in time or space through coordination with the relevant wildlife biologist.
WL-10	If raptor nests (other than flammulated owls) are located prior to or during implementation, a wildlife biologist will be consulted. If an active nest is located in the project vicinity, a work restriction period will be imposed, the timing of which will be species-specific but could occur between April through August. A no treatment buffer surrounding the nest stand may also be applied depending on the nest site and surrounding area. Buffer size, timing restrictions, mitigation measures and treatment restrictions will be made on a case-by-case basis taking into consideration site-specific raptor needs.
WL-11	If a flammulated owl nest site is found prior to or during implementation, a 30-acre buffer around the nest site will be established. No treatment can occur within this buffer at any time. However, known nest sites will be monitored prior to implementation. If the nest site is no longer active or does not exist, treatment can proceed.
WL-12	Treatments will avoid flammulated owl fledgling and roosting habitat to the extent practicable. These will be identified prior to treatment.
WL-13	Avoid tree removal through mechanical means or prescribed fire within 0.25 mile of known bat winter hibernacula at any time of year, except when removal will improve existing habitat condition for bats, or hazard tree removal is needed to protect human life or property.
WL-14	Avoid cutting or destroying known, occupied bat roost trees during the pup season (June 1 – July 31) and any trees within 150 feet of a known, occupied roost tree.
WL-15	Retain pockets of tree cover in grass and shrublands in the form of forested inclusions (clumps or islands of dense conifer trees, typically less than one acre in size) to provide cover for wildlife adjacent to grass and shrublands, to the extent practicable within treatment objectives. These areas will be identified prior to treatments.
WL-16	Aspen communities will be favored where present. Conifers suppressing aspen clones will be thinned from within and around suppressed aspen, followed by prescribed fire where applicable (stagnating, decadent clones, etcetera).
WL-17	Unique plant communities located within the project area will be buffered from treatments or treatments will be designed to enhance the respective plant community. These will be identified prior to treatments.
WL-18	Prescribed fire activities will not target sagebrush or bitterbrush stands and efforts will be taken to limit sagebrush and bitterbrush mortality (such as fuel breaks between adjacent treatments). Sagebrush and bitterbrush stands will be identified prior to implementation.
WL-19	At sites where sagebrush/browse species may be treated, ensure that effectively large sized patches of mature plants remain to promote natural sagebrush/browse reseeding and persistence.
WL-20	Patches of mountain mahogany will be identified and mapped prior to implementation. Crews will avoid prescribed fire in distinctly identifiable patches of mountain mahogany and avoid ignition and placement of fuel piles in mahogany stands. Where mahogany stands are small inclusions in a larger vegetation type, emphasize mosaic burn patterns and minimize high intensity fire near mountain mahogany.
WL-21	Coarse woody debris will be left in place in and around aspen stands where practicable to make it difficult for ungulates to browse on and suppress young aspen.
WL-22	As new science becomes available, additional implementation considerations may need to be applied and reinitiation of consultation may be required to address effects to listed species not previously considered.

Label	Description of the Design Feature
WL-23	Aerial activity (such as helicopters and drones) will be restricted to May 16 through January 14 in wolverine maternal and denning habitat.
WL-24	Only motorized routes that are designated as open to the public or available for administrative use will be used in wolverine maternal and denning habitat from January 15 through May 15 for project activities. No cross-country mechanized use would occur during that time frame.
WL-25	Retain vegetation buffers between wolverine maternal and denning habitat and treatment units so that an increase in winter recreation in wolverine maternal and denning habitat does not occur. These will be identified on a site-specific basis in coordination with the wildlife biologist.
WL-26	When implementing projects in wolverine dispersal or primary habitat leave travel corridors (undeveloped areas) within the project area to facilitate movement and connectivity. These will be identified on a site-specific basis in coordination with the wildlife biologist.
WL-27	Revegetation and seeding would require a blue-tag certified, native seed mix approved by the forest botanist or other qualified specialist. Seed would be applied promptly after management activities which disturb or expose soil and done under environmental conditions favorable for germination. The most genetically appropriate and localized seed would be used when available. Where applicable, establish native seed mixes containing a diversity of native wildflowers, including locally appropriate milkweed.
WL-28	Known milkweed populations would be surveyed for the presence of monarch butterfly eggs, larvae, and chrysalises prior to prescribed burns or ground disturbing activities. If detected, these plants would be buffered from treatment until a time of year when monarchs are no longer present on the plants in these forms which is generally between September 1 and June 1. If burning during the monarch breeding season is necessary for management objectives, flag and avoid milkweed if possible. Include unburned refugia in the burn plan, especially areas that contain milkweed.
WL-29	Time herbicide applications to avoid monarch exposure. Minimize herbicide application when monarchs (adult and immature) are present, which is generally June 1 through September 1.
WL-30	Vegetation management projects should retain at least the minimum amount of coarse woody debris (greater than or equal to three inches in diameter) displayed below, averaged for each treatment unit on forested sites, to provide for well-distributed coarse woody debris that contributes to nutrient cycling, structural diversity, and habitat. The requirement should be met immediately following completion of all project activities. Warm dry Region 1 broad potential vegetation type: five tons per acre Cool moist and cold Region 1 broad potential vegetation types: ten tons per acre The guideline applies to any vegetation treatment in forested communities, including timber harvest and prescribed fire. This guideline does not apply in non-forested vegetation communities or in open forest savannas that may occur in the warm dry potential vegetation type. The guideline applies as an average across each vegetation treatment unit; the downed wood may be irregularly distributed. Downed wood should consist of intact pieces of a variety of species, sizes and stages of decay, depending on site conditions. Prescriptions should emphasize retaining larger debris (pieces ten inches in diameter and ten feet in length or greater) where possible, which are higher value to wildlife. Exceptions to the guideline may occur where there is elevated concern with fire risk (recreation sites, areas adjacent to infrastructure or private ownerships, wildland-urban interface areas, utility lines, etcetera), as supported by site-specific analysis.
WL-31	Closed motorized routes used for implementation will be closed with a gate to discourage public access. To improve closure efficacy, particularly in flat and open terrain, additional impediments to travel (such as leave trees, boulders, logs) will be added to either side of closure barriers. If earthen barriers are removed from closed motorized routes, they will be replaced at the end of implementation.

Label	Description of the Design Feature
WL-32	Construct fireline away from public access points to prevent unauthorized motorized use. Where a fireline must be constructed near public access points, make the fireline inaccessible to wheeled motorized vehicles. Fireline does not and will not function as a road or trail and will be reclaimed after the fire.
WL-33	Skid trails and other evidence of mechanized equipment use within treatment units will be treated in a manner that discourages off road use by the public (for example, scattered slash and down woody material, adding rocks or other barriers).
WL-34	Prior to project implementation, the pre-project form will be filled out and submitted to the U. S. Fish and Wildlife Service. See appendix C – Implementation Plan and Checklist.
	Northern Continental Divide Ecosystem Grizzly Bear Habitat Management Direction (NCDE)
	Grizzly Bear Primary Conservation Area (PCA)
WL-NCDE PCA – 1	No more than three percent of core habitat will be treated annually (aerial and mechanical). Treatments will be limited to two adjacent subunits annually. No more than 20 percent of core habitat in each subunit will be treated (aerial and mechanical) over the life of the project. Upon project completion implement a 2-year rest period in the between projects in the same subunits. This is applicable only to projects covered in this analysis. Treatment areas will be identified prior to implementation to ensure consistency with design feature.
WL-NCDE PCA – 2	Within the Northern Continental Divide Ecosystem primary conservation area, retain cover (where available) adjacent to grass/forb/shrub openings, riparian areas, or wetlands.
WL-NCDE PCA – 3	Within the Northern Continental Divide Ecosystem primary conservation area, vegetation management projects (including timber sales and other noncommercial vegetation management contracts) should include a provision for modification, cancellation, suspension, or temporary cessation of activities, if needed, to resolve a grizzly bear-human conflict situation.
WL-NCDE PCA – 4	In each bear management subunit within the NCDE primary conservation area, temporary changes in the open motorized route density, total motorized route density, and secure core shall be calculated for roads used for projects (as defined by “project (in grizzly bear habitat in the NCDE)”) during the non-denning season. Calculations will include estimated changes for each year of the anticipated duration of the project and shall be incorporated into the 10-year running average required by standard.
WL-NCDE PCA – 5	Within the NCDE primary conservation area, motorized use of roads with public restrictions shall be permitted for administrative use as long as doing so does not exceed either six trips (three round trips) per week or one 30-day unlimited use period during the non-denning season. The exception to this standard is emergency situations as defined by 36 Code of Federal Regulations (CFR) 218.21. Note: Administrative use is not included in baseline calculations and is not included in calculations of net increases or decreases. If the level of administrative use exceeds this standard, the use is counted as a project. To implement this standard, motorized use of roads in the PCA with public restrictions shall be minimized to the extent practicable by concentrating activities into the shortest timeframe possible.

Label	Description of the Design Feature
WL-NCDE PCA – 6	In each bear management subunit within the NCDE primary conservation area, temporary changes in open motorized route density, total motorized route density, and secure core shall be allowed for projects (as defined by "project (in grizzly bear habitat in the NCDE)" in the forest plan glossary). The 10-year running average for open motorized route density, total motorized route density, and secure core shall not exceed the following limits during the non-denning season: • 5 percent temporary increase in open motorized route density in each bear management subunit (open motorized route density baseline plus 5 percent); • 3 percent temporary increase in total motorized route density in each bear management subunit (total motorized route density baseline plus 3 percent); and • 2 percent temporary decrease in secure core in each bear management subunit (secure core baseline minus 2 percent).
WL-NCDE PCA – 7	In each bear management subunit within the NCDE primary conservation area, each project (as defined by "project (in grizzly bear habitat in the NCDE)" in the forest plan glossary) should be designed so that on-the-ground implementation does not exceed 5 years to reduce the potential for grizzly bear disturbance or displacement. Exceptions may be made where necessary, for example, to accommodate actions where existing rights preclude or constrain agency discretion (for example, certain contracts, permits, leases); prescribed burning (including slash disposal), best management practices to protect water quality, or required reforestation activities; or emergency situations as defined by 36 CFR 218.21. If an extension to the 5-year time limitation is required (for example, to meet contractual obligations or to complete on-the-ground treatments), the reasons should be documented in writing prior to authorization of the extension.
WL-NCDE PCA – 8	Within the NCDE primary conservation area, secure core, open motorized route density, and total motorized route density should be restored to pre-project levels (as defined by "project (in grizzly bear habitat in the NCDE)" in the glossary) within one year after completion of the project to reduce the potential duration of grizzly bear disturbance due to project-related activities. Exceptions may be made where necessary, for example to accommodate actions where existing rights preclude or constrain agency discretion (for example, certain contracts, permits, leases); prescribed burning (including slash disposal), best management practices to protect water quality, or required reforestation activities; or emergency situations as defined by 36 CFR 218.21. If an extension to the 1-year time limitation is made (for example, to meet contractual obligations or to complete on-the-ground treatments), the reasons should be documented in writing prior to authorization of the extension.
WL-NCDE PCA – 9	Within the NCDE primary conservation area, measures to reduce the risk of disturbance to the grizzly bear population should be incorporated into vegetation and fuels project design criteria, which vary on a site-specific basis (for example, some activities should be restricted in spring habitat during the spring; areas with low levels of human activity should be provided adjacent to areas with high levels of disturbance). Note: Management activities such as pre-commercial thinning, burning, weed spraying, and implementation of road best management practices may need to be completed during the spring in order to meet resource objectives (especially if needed to prevent resource damage), in which case other measures should be used to reduce the risk of disturbance (such as limiting the duration of the activity or limiting the use of closed roads).
WL-NCDE PCA – 10	Firewood gathering: Within the NCDE primary conservation area, a restricted road may be temporarily opened for public motorized use to allow authorized uses (such as firewood gathering), provided the period of use does not exceed 30 consecutive days during one non-denning season and occurs outside of spring and fall bear hunting seasons. However, temporary public use of a restricted road shall not be authorized in secure core.
	Grizzly Bear Primary Conservation Area and Zone 1
WL-NCDE-PCA-Z1 – 1	Within the NCDE primary conservation area and zone 1, clover should not be used in seed mixes on National Forest System lands. Native seed mixes or those that are less palatable to grizzly bears should be used so that seeded areas do not become an attractant.

Label	Description of the Design Feature
WL-NCDE-PCA-Z1 – 2	In the PCA and zone 1, culvert replacement needed on closed roads used for project activities will not occur between April 1 – June 30 (west side) and April 15-June 30 (east side) in riparian areas.
	Grizzly Bear Primary Conservation Area and Zones 1, 2
WL-NCDE-PCA-Z1-Z2 – 1	Within the NCDE primary conservation area, zone 1, and zone 2, contractors, permittees, lessees, operators, and their employees should be informed of food and wildlife attractant storage special order(s) and procedures for safely working and recreating in grizzly bear country, prior to turnout of livestock or beginning work and annually thereafter, in order to reduce the risk of grizzly bear-human conflicts.
WL-NCDE-PCA-Z1-Z2 – 2	Within the NCDE primary conservation area, zone 1, and zone 2, if a contractor, permittee, lessee, or operator or their employees elect to camp on National Forest System lands other than in a developed recreation site, the site should be evaluated and written authorization (a campsite agreement that includes the food and wildlife attractant storage special order) should be provided before the campsite is established. The purpose is to reduce the risk of grizzly bear-human conflicts.
	Grizzly Bear Primary Conservation Area and Zones 1, 2, 3
WL-NCDE-PCA-Z1-Z2-Z3 – 1	To prevent disturbance or displacement of any grizzly bears that may use the project area during the spring foraging period, project activities in or adjacent to riparian areas that are at least 500 meters (1,640 feet) away from open motorized routes will be restricted during the spring season April 1-June 30 (west side) and April 15 – June 30 (east side) as follows: In the PCA and zone 1, activities will be completed within 5 days. In zones 2 and 3, activities will be completed within 5 days if there is evidence of grizzly bear use.
WL-NCDE-PCA-Z1-Z2-Z3 – 2	Proper food storage would be required of all personnel working in the project area including for any camping facilities associated with project activities.
	Grizzly Bear Zone 1
WL-NCDE Z1 – 1	In grizzly bear zone 1, any restricted roads that will be open to the public for firewood gathering will be evaluated on a site-specific basis to minimize effects to grizzly bears.
WL-NCDE Z1 – 2	In grizzly bear zone 1, no more than 10 percent of secure habitat will be treated (aerial and mechanic) annually in no more than three adjacent HUC 12 watersheds at a time. No more than 25 percent of secure habitat in each subunit will be treated (aerial and mechanical) over the life of the project. Upon project completion implement a 1-year rest period in the between projects in the same subunits. This is applicable only to projects covered in this analysis. Treatment areas will be identified prior to implementation to ensure consistency with design feature.
	Grizzly Bear Zone 2
WL-NCDE Z2 – 1	In grizzly bear zone 2, no more than 10 percent of secure habitat will be treated (aerial and mechanic) annually in no more than three adjacent HUC 12 watersheds at a time. No more than 30 percent of secure habitat in each subunit will be treated (aerial and mechanical) over the life of the project. Upon project completion implement a 1-year rest period in the between projects in the same subunits. This is applicable only to projects covered in this analysis. Treatment areas will be identified prior to implementation to ensure consistency with design feature.
	Grizzly Bear Zone 3 and Snowies
WL-NCDE-Z3 – 1	No more than 10 percent of secure habitat will be treated (aerial and mechanic) annually in no more than three adjacent HUC 12 watersheds at a time. No more than 40 percent of secure habitat in each subunit will be treated (aerial and mechanical) over the life of the project. This is applicable only to projects covered in this analysis. Treatment areas will be identified prior to implementation to ensure consistency with design feature.

Label	Description of the Design Feature
	Rocky Mountain Range and Upper Blackfoot Geographic Areas
WL-RM/UB-1	In order to minimize potential disturbance to harlequin duck broods, prescribed fire activities that have the potential to separate or displace harlequin pairs or broods will be avoided on or immediately adjacent to known harlequin duck breeding streams during the brood-rearing period.
	Designated Areas
	Continental Divide National Scenic Trail
CDNST-1	To protect or enhance the scenic qualities of the Continental Divide National Scenic Trail, prescribed fire activities will be consistent with maintaining scenic integrity objectives of high or very high within the foreground of the trail (up to 0.5 mile either side). In planning activities outside the foreground, managers will consider the mid ground and background and the effects on scenic integrity and trail experience given the seen area from the trail segments.
CSNST-2	To reduce or eliminate short-term impacts to the scenic integrity of the trail, mitigation measures will be included, such as screening, feathering, and other scenery management techniques to minimize visual impacts within and adjacent to the trail corridor (within visible foreground of the Continental Divide National Scenic Trail at a minimum).
	Cultural, Historic, and Tribal Resources
CR-1	All historic properties or unevaluated sites needing avoidance or special treatment will be flagged or their boundaries will be clearly indicated under the direction of a forest heritage program staff member prior to project implementation or contract award in a specific project treatment unit or road Area of Potential Effects (APE). A standard 100-meter site avoidance buffer may be used to avoid historic properties and unevaluated sites in the project Area of Potential Effects.
CR-2	Any ground disturbing project activities occurring inside of the site avoidance buffer, but outside of the actual site boundary will require monitoring at the time of implementation to ensure that (1) those activities do not cross over into the actual site boundary, and (2) check for inadvertent discoveries. Monitoring will be conducted by the forest heritage program staff.
CR-3	If previously unidentified archeological sites or human remains are discovered during project implementation, project work will cease in that location, and the forest archaeologist, Montana State Historic Preservation Office, Tribes (if applicable), and other identified consulting parties will be notified within 24 hours and the Northern Region Unanticipated Discovery Plan and Discovery of Human Remains Protocols will be followed.
	Infrastructure: Roads and Trails, Bridges, and Facilities
RT-1	Following project implementation, roads closed to the public and used for access will be blocked. Treatments may include activities such as light scarification, seeding, mulching, water bars, scattering woody debris and reestablishment of natural drainage.
RT-2	When trails are impacted by fuel reduction activities, they will be restored to their original condition or improved.
RT-3	In areas otherwise closed to motorized vehicles, contractors will not be permitted to hunt, transport hunters, discharge firearms or transport big game with vehicles within the closed areas.
RT-4	On National Forest System roads with seasonal closures, gates will not be left open during seasonal closure periods.

Label	Description of the Design Feature
RT-5	When fuel breaks and firelines are constructed, they will be located away from public access points, when possible, to prevent their use as travel routes and the subsequent disturbance to wildlife. When fuel breaks are constructed near open public motorized access, they will be treated to minimize the potential for use by unauthorized motorized vehicles by adding impediments to motorized traffic (such as slash, logs, boulders, or other barriers).
RT-6	Road reconstruction of existing system road segments within or adjacent to riparian management zones, fill material shall not be side-cast.
RT-7	When placing physical barriers such as berms on travel routes such as roads, skid trails, temporary roads, and trails, drainage features should be sufficient to avoid future risks to aquatic resources (for example, remove culverts from stream crossings).
RT-8	To reduce the risk to aquatic resources when decommissioning roads, making roads impassable or putting roads into intermittent storage service, roads should be left in a hydrologically stable condition e.g., drainage off roads should route away from water resources and landslide prone areas and towards stable areas of the forest floor to provide filtration and infiltration.
RT-9	For maintenance activities such as road blading and snow plowing on existing roads, sidecasting should be minimized, particularly into or adjacent to waterbodies. Care should be taken when plowing roads so not to include road soil. Breaks should be designed in the snow berms to direct water off the road.
RT-10	When reconstructing or maintaining roads, sediment delivery to streams should be minimized. Road drainage should be routed away from potentially unstable channels, fills, and hillslopes.
RT-11	Transportation infrastructure should be designed to maintain natural hydrologic flow paths; for example, streams should have crossing structures and not be routed down ditches.
RT-12	In fish bearing streams, if temporary placement of stream crossing structures are needed on reconstructed roads the crossing should provide and maintain passage for all life stages of native aquatic organisms and accommodate at least the 100-year flow event. If site-specific conditions preclude that design, size the structure to the largest size the location will accommodate and provides for bankfull width. The temporary structure would be removed after use and the stream crossing rehabilitated.
RT-13	Temporary stream crossing structures or replacement culverts would be placed during low flow conditions and during the instream work window July 15-Sept. 1 on Bull Trout and Westslope Cutthroat trout occupied streams. Applicable state permitting process applies to all actions that modify the streambed/streambank.
RT-14	Reconstruction of new road would be limited to 5 miles within Bull Trout occupied watersheds and no more than 2 miles of reconstruction within riparian management zones.
RT-15	Annual maximum of 2 stream crossing structure replacements within Bull Trout occupied sub-watersheds.
RT-16	Annual haul is limited to 100 truckloads per subwatershed with no more than 5 truckloads per day.
	Geology, Energy and Minerals

Label	Description of the Design Feature
EMIN-1	Apply the following: 1. Forest minerals personnel would provide map information depicting the location of unique geologic features, cave and karst occurrences, geohazards, paleontological resources, inventoried mine sites/features of concern, areas of mine wastes, hazardous mine openings, discharging adits, and active Notices of Intent or Plans of Operations areas to implementation resources prior to implementation. Buffers and/or avoidance may be warranted. 2. Any previously unidentified abandoned-inactive mine features discovered during implementation will be reported to forest minerals and heritage staff. 3. Retain vegetative buffers immediately surrounding mine attributes in conjunction with minerals staff recommendations. 4. Avoid construction of burn piles over mine features that have been closed using polyurethane foam product. 5. Abandoned mine lands features inventoried as hazardous and posing potential risk(s) to physical safety will be flagged by Forest minerals personnel prior to implementation.
EMIN-2	If work is being proposed within a U.S. Environmental Protection Agency-led Superfund Project (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended – a National Priorities List Site), a State Superfund site or a site where the Forest Service utilized CERCLA authority, the Forest Service on-scene coordinator assigned will serve as liaison to ensure communication and coordination of project efforts are maintained.
EMIN-3	Apply the following: • Coordinate project activities with individuals conducting active mining-related operations under an approved Plan of Operations when such operations are located within or adjacent to active treatment units. • Unpatented mining claim corners and discovery points of active claims will be protected.

Appendix C – Implementation Plan and Checklist

Introduction

The environmental assessment describes the effects of proposed activities discussed in the Helena-Lewis and Clark National Forest Forestwide Prescribed Fire Project area. This implementation plan is integral to the analysis of effects in the environmental assessment.

The implementation plan documents the process for implementation of the activities. This plan outlines the process each activity will follow during implementation to ensure the effects are within the scope of the analysis in the environmental assessment, the activity is allowed under the selected alternative in the decision notice, and that all resource-specific guidelines and protection measures are incorporated into activity design. The implementation plan is an essential component of this project for accountability, tracking, decision- making, and documentation purposes. It must be considered alongside the selected alternative, effects analyses, project design features, and the decision notice for the success of the project as a whole.

The implementation plan is designed to be consistent with the Helena-Lewis and Clark National Forest Land Management Plan (Forest Plan). The intent is that this implementation plan will be used over a 20-year timeframe.

The purpose of this document is to describe the implementation process for the Prescribed Fire Project. The primary goals are to:

- ensure that effects of implementation are within the scope of activities and the range of effects described in the environmental assessment and authorized in the decision notice;
- conduct a transparent implementation process that keeps the public and Tribes informed;
- ensure that the national forest continues the phased programmatic agreement for Section 106 compliance with interested federally recognized Tribal governments, the State Historic Preservation Office and other consulting parties;
- ensure implementation of activities is responsive to dynamic on-the-ground conditions, new scientific information, and public/Tribal input;
- ensure integrated engagement of interdisciplinary team members, field resource specialists, and line officers; and
- focus on shared priorities and work to resolve concerns and solve problems related to selection and implementation of prescribed fire activities.

Implementation Process

Activities that occur under the authority of the Forestwide Prescribed Fire Environmental Assessment may take several months to several years to go through all steps of the implementation process. Therefore, at any given time there may be several planned activities in different steps of the process. Each year, the national forest will decide which areas are next to be implemented and information will be available to the public through the forest website.

Process Steps

Step 1) Determine activity to be implemented.

This implementation process starts when the Forest Service identifies an implementation area(s). Activities proposed must be analyzed in the environmental assessment and the effects must be within the thresholds analyzed for resources.

Following the identification of a proposed area, activities that are recommended to be moved forward into implementation by the responsible official will be placed on the national forest program of work as "draft." Maps of the proposed activities and the project proposal forms (appendix A) will be posted in the project files. Activities will be identified with enough time (generally at least one season) prior to implementation so that needed field work may be completed.

Project proposals should focus on how well the activities meet the purpose and need and move the areas towards the desired conditions. Activities are made final after consideration by the responsible official and any changes that are determined to improve the project's ability to meet the desired conditions are incorporated within the bounds of the environmental assessment (see step 5 below).

Step 2) Check against environmental assessment, decision notice, implementation checklist and forest plan consistency table/project design features.

The environmental assessment must be checked to verify that the proposed activities are within the range of activities analyzed under the selected alternative. The decision notice documents the decision rationale for the selected alternative and includes any constraints for activities. The environmental assessment and implementation plan describe the activities analyzed in the environmental assessment without regard to specific locations. Information about each activity includes what it accomplishes, how it is implemented, what constraints and resource-specific guidelines apply, and when it would be implemented. Resource concerns are often mitigated by project design features, which are presented in the Forest Plan Consistency document and the environmental analysis associated with this project.

A proposed activity must adhere to the checklist and project design features to stay within the effects analyzed in the environmental assessment. Documentation will include a summary of each treatment area, a description of the activities that will be implemented, and documentation that the proposed activities are consistent with the project design features and follow the process outlined in the implementation checklist.

Step 3) Obtain Line Officer approval to place on Program of Work

The local district ranger reviews the proposal for an activity including a determination that the activity will meet all requirements under the Decision Notice, the Forest Plan, and other applicable laws, regulations, and policies. The local line officer also reviews and approves any additional or required surveys at this stage.

Proposed projects will be brought to the Forest Leadership Team to be considered for the coming year's program of work. Once approved by the forest supervisor or deputy forest supervisor, projects will be posted on the project webpage and Helena- Lewis and Clark National Forest social media platforms. The Prescribed Fire Out-year Plan will provide the public the opportunity to stay informed of activity implementation, priority listing, and on-the-ground activity design. The implementation website will identify activities within a 3 to 5-year timeframe that will include the current status of already planned and in- process activities, and newly proposed activities.

Step 4) Conduct fieldwork and consultations using resource checklists below

Forest Service personnel will conduct background research, field surveys, and Geographic Information Systems (GIS) analysis of proposed implementation areas to confirm that activities can be implemented consistent with the Decision Notice and in conformance with other applicable laws, regulations, and policies. Surveys confirm location specific conditions and determine if and how the activity can be implemented. Fieldwork may refine plans, identify the applicable project design features, and/or result in a modification of the activity location or timing.

If location specific resource concerns are discovered during the planning for implementation of activities, implementation personnel will confer with the line-officer to ensure that adequate resource protection measures are in place. Personnel implementing the project will be required to stay informed of the location-specific resource protection measures including project design features.

Instructions: It is the responsibility of the resource specialists to ensure that the necessary compliance and consultation actions have been completed and that compliance and/or consultation records are appropriately documented for the specified implementation area. For many resources, additional surveys may be required prior to certifying completion of necessary compliance and consultation. In some instances, existing data can be used to allow for implementation.

Step 5) Line Officer approval to implement.

The line officer reviews the checklists, associated documents, and project design features to determine that the activity has met all requirements under the decision notice and the Helena-Lewis and Clark National Forest Land Management Plan. Once a line officer has determined that the activity has met all requirements, they will approve and sign the checklist.

Step 6) Prepare contracts and other implementation documents, as needed.

Forest Service resource specialists will review or prepare all contract documents prior to bids being solicited to implement the activity. This will include the contract, agreements, burn plans, implementation checklists, activity maps, bid packages, or other implementation instruments as required. See the project design features in appendix B for appropriate measures and provisions that will be incorporated to ensure the project is consistent with the analysis and anticipated effects.

Step 7) Implement the activity, document implementation.

This project may inform adaptation of the forest monitoring plan as needed. Yearly implementation will be tracked on the implementation tracking form (appendix D).

Resource Checklists

For each of the sections below, the associated specialist is responsible for ensuring completion of all items on the checklist; for example, the silviculturist is responsible for all items on the silviculture checklist.

Water Resources

The water resources specialist will review planned project treatments and participate in burn plan development; conduct any necessary field reconnaissance or surveys; and update GIS data layers as needed.

- Provide GIS datasets of water features and resource concern areas to project planners and implementation personnel. Ensure springs, streams, wetlands, peat-forming wetlands (fens and bogs); municipal water supply watersheds, drinking water intakes and source protection areas; and riparian management zones are included in burn plans and project implementation maps, and commercial sale contract packages.
- Review the most current Montana Department of Environmental Quality water quality assessment (303(d)/305(b) lists) for streams and waterbodies present in project vicinity. Verify all planned treatments are consistent with the water resources assessment and effects disclosed in the environmental assessment. Ensure project is consistent with and incorporates applicable total maximum daily load (TMDL) requirements where appropriate to maintain state-assigned thresholds for water quality parameters.
- Coordinate project implementation activities within municipal supply watersheds and public drinking water source projection zones (surface and groundwater) with the State of Montana and municipality. Ensure any applicable requirements from source water protection plans are included in project design, maps, and contracts where necessary. Refer to Forest Plan appendix E and State of Montana databases.
- Determine applicable project design features, Forest Plan standards and guidelines, and Forest Service best management practices for projects based on location, water features present, and proposed activity types.
- Determine appropriate watershed prescribed burn percentages in alignment with project design feature WTR-1.
- Review treatments within riparian management zones to determine appropriate treatments and techniques to meet riparian and aquatic ecosystem desired conditions. Determine which vegetation species, if any, would be removed from riparian management zones during pre-treatment activities and the appropriate remaining vegetation cover post treatment.
- Coordinate with fire planners and implementation personnel to ensure constructed fireline locations will minimize soil disturbance, erosion, and sediment delivery to water resource; and operational measures will maintain riparian management zone desired conditions; prevent fire entry into confirmed or suspected peat-forming wetlands (fens and bogs); and result in a mosaic of low and unburned soil burn severity within riparian management zones.
- Obtain any applicable State permits listed below for activities modifying stream channels, affecting road-stream crossings, or occurring within Streamside Management Zones (SMZs):
    - Montana Stream Protection Act (SPA 124 Permit) – Montana Department of Fish, Wildlife, and Parks.

  - ♦ Montana Short-Term Water Quality Standard for Turbidity (318 Authorization) – Montana Department of Environmental Quality.
  - ♦ Montana Streamside Management Zone Law – Montana Department of Natural Resources and Conservation, Division of Forestry.
- Identify treatment activities most likely to affect water resources for post-implementation monitoring such as constructed fireline, stream crossings, or treatments conducted within the riparian management zone.

Fisheries

Fisheries staff will complete all surveys required by law, regulation, or policy within the implementation area. The list below is not exhaustive, nor does it apply to every treatment. The fisheries biologist will determine which surveys need to be conducted when specific areas are identified. While completing ground reconnaissance, look for opportunities to achieve multiple resource management objectives.

- Work collaboratively with the hydrologist and soil scientist to determine appropriate watershed prescribed burn percentages in alignment with project design features WTR-1 and WTR-2.
- Review treatment units where riparian management zones need to be delineated, for example, mechanical treatment in the outer riparian management zone and/or hand thinning within the inner riparian management zone. All other riparian management zone project design features apply.
- Verify all planned treatments are consistent with the project biological opinion.
- Other required surveys (specify), as approved by the local line officer which could include fish distribution surveys, and any necessary information required in the biological opinion.

Soil Resources

Soil scientist will review planned project treatments and the burn plan to gauge which design criteria will be applied. Soil scientist will conduct field surveys as needed. Surveys would focus on high-risk adverse activities to soils which include mechanical operations, planned burning and mechanical operations on sensitive soils, and/or past harvest and burned areas (wildfire or prescribed fire).

- Conduct field surveys in areas that were identified during the pre-field evaluation. Field surveys can be qualitative or quantitative.
- Determine applicable project design features and Forest Service best management practices for the proposed treatment. Review FW-SOIL-GDL-01, 02, 04 to determine if exceptions are necessary and could be authorized.
- Collaborate with implementation personnel to determine which design criteria to apply to protect moist soils.

Fire and Fuels Resources

Plan units, create GIS maps, conduct field surveys, and stand walkthrough to determine the existing vegetation and fuel conditions and identify the range of potential treatment activities necessary to move the area/unit towards the desired conditions. Identify any pre-burn preparation activities that may be required.

- Coordinate with the silviculturist to plan and prescribe the complete range of treatments that will meet the desired future conditions. Specifically, treatments that reduce fuels, moderate fire behavior and return fire to the landscape under predetermined weather and fuel moisture conditions.
- Coordinate with all resource managers whose resources could be affected by the planned units. This will vary depending on where units are located.
- Coordinate with silviculture and timber within areas of planned and ongoing timber sales.
- Ensure all activities are coordinated with any special use permit holders, private landowners adjacent or affected by the project, and any other persons or groups who have use concerns regarding National Forest System lands in the activity areas, as required by law, regulations, and policies.
- All units planned for prescribed fire (pile or underburn) will be entered into the Montana/Idaho Airshed Group database (or current airshed group database) in accordance with the group's operation guide. https://mi.airshedgroup.org/. Required information consists of latitude/longitude, location description, airshed, unit size, elevation, burn category and type, and fuel loading.
- Obtain current year, United States Department of Agriculture Forest Service major open burning permit from the Montana Department of Environmental Quality. Approval for ignitions will be determined by the Montana/Idaho Airshed Group in coordination with Montana Department of Environmental Quality based on dispersion forecasts and potential impacts.
- Other required surveys (specify), as approved by local line officer: If Unmanned Aerial Systems (drones) or aerial ignition by helicopter is planned for a prescribed burn unit, a Mission Aviation Safety Plan must be completed prior to ignition (see Forest Aviation Plan).

Silviculture Resources

- Conduct stand diagnosis to determine the existing conditions within the project area. Existing conditions shall be compared to the desired condition to determine the departure from desired conditions. In consultation with the fuels specialist and local line officer, select a treatment alternative and prepare silvicultural prescription(s).
- Conduct whitebark pine surveys. Check for consistency with the biological opinion.
- If treatment is to occur in old growth stands, prescriptions will be developed to maintain old growth characteristics.
- Evaluate project area for planted units/regenerating stands that may be impacted by project implementation.
- Evaluate project area for potential genetic resources (plus trees, test plantations, seed orchard, seed collection areas, etc.) that may be impacted during implementation.
- On lands suitable for timber production, design treatments to maintain and enhance tree growth, size and species diversity to move stands towards desired conditions and ensure harvest opportunities in the future.

Plants

- Identify rare/unique plants or rare/unique plant habitats within the proposed project area. Identify design criteria and rehabilitation work that should be incorporated into the burn plan.
- Verify all planned treatments are consistent with the project biological opinion.

- Conduct a pre-field review to determine if surveys are needed for plant species of conservation concern; based on the review conduct surveys where needed prior to implementation or which design criteria should be implemented to protect these species.
- Identify any invasive plant concerns within the proposed project area and develop plan that enables treatment of invasives and protection of species of conservation concern.
- Prioritize weed infestations for treatment in high- risk sites, including treatment operating areas and along access routes. Control weeds as necessary prior to treatment implementation. Modify treatment as needed to reduce expansion of invasive weeds.

Supporting documentation may include: confirmation that the activity fits within the range of effects analyzed in the environmental assessment and why; adjustments or mitigations that were applied to the original proposal due to this resource; surveys or other form of data collection; compliance with laws, regulations, and policies; biological assessment, biological evaluations, and other records of threatened and endangered, candidate, rare, and sensitive species; timing restrictions associated with the activities, as approved by the local line officer; and any other required documentation.

Range

- Identify scope and scale of prescribed fire treatment units and if pre-and post-grazing management needs to occur to move towards desired vegetation conditions.
- Check for range infrastructure to avoid or minimize damage to in the design and implementation of prescribed treatments.
- In treatment units where temporary adjustments in livestock management are needed, allow sufficient time to cooperatively develop grazing schemes with affected permittees prior to implementation.

Documentation may include: confirmation that the activity fits within the range of effects analyzed in the environmental assessment and why; adjustments or mitigations that were applied to the original proposal due to this resource; contacts made with the public pertaining to this resource for this activity; compliance with laws, regulations, and policies; previous treatment plans or reports; and any other required documentation.

Wildlife

- Prior to project implementation, the pre-project implementation consultation form will be submitted to the U. S. Fish and Wildlife Service describing the project activities and consistency with design features and Forest Plan components.
- Verify that the treatments would either maintain or move toward desired conditions (or Northern Rockies Lynx Management Direction goals and objectives) for plan components applicable to wildlife.
- Review proposed treatment locations for threatened species, terrestrial species of conservation concern, and priority migratory bird species in and adjacent to the specific burn area to determine if surveys or project design features are required.
- Verify all planned treatments are consistent with the project biological opinion.
- Prior to implementation, district rangers and biologists will coordinate with regional Montana Department of Fish, Wildlife and Parks staff to incorporate local information where possible.

- Identify big game winter range and fawning/calving habitat and, where present, determine if project design features are required.
- Prior to implementation, evaluate lynx analysis units for amount of area in an unsuitable foraging condition for Canada lynx. Design prescribed fire treatments, so outcomes lead to no more than 30 percent of the lynx analysis unit in stand initiation structural stage (unsuitable foraging habitat condition).
- Evaluate lynx analysis units for amount of area in mature habitat conditions for Canada lynx.
- Evaluate lynx analysis units for amount of area in stand initiation conditions for Canada lynx.
- Conduct lynx habitat surveys to validate modeled structural stages.
- Within the Northern Continental Divide Ecosystem primary conservation area, measures to maintain or improve grizzly bear habitat quantity or quality (such as promoting growth of berry-producing shrubs, forbs, or grasses known to be bear foods) will be identified prior to implementation in areas where it will not increase the risk of grizzly bear-human conflicts.
- Within the Northern Continental Divide Ecosystem primary conservation area, zone 1, and zone 2: consult with the appropriate wildlife biologist to determine applicable plan components for the project area.
- Survey raptor nests if the nest has been active within 5 years of project implementation.
- In order to reduce impacts to nesting birds during the breeding season the wildlife and fuels staff will coordinate prior to implementation to ensure that prescribed fire treatments would not overlap with areas recently burned.
- Identify sagebrush and bitterbrush stands to determine areas that would benefit from prescribed fire treatments and areas within which treatments would not occur.
- Identify and map patches of mountain mahogany.
- Identify forested inclusions within grass and shrubland treatment areas.
- Identify hardwood shrub communities within treatment areas.

Supporting documentation may include: confirmation that the activity fits within the range of effects analyzed in the environmental assessment and why; adjustments or mitigations that were applied to the original proposal due to this resource; surveys or other form of data collection; contacts made with the public pertaining to this resource for this activity; compliance with laws, regulations, and policies; biological assessment, biological evaluations, and other records of threatened and endangered, rare, and sensitive species; if there are any timing restrictions for the activity, approved by the local line officer; and any other required documentation.

Recreation and Roadless

Inventory the recreation attributes that may be affected by treatments. Use the design features to ensure that the recreation opportunities are managed appropriately for the period of treatment implementation and for the long-term. Design implementation to minimize the impact on recreation users to the extent feasible, including having good communication with partners and the public about the impacts of the activities.

Recreation Sites

- Identify priority developed recreation sites for treatment and any other developed sites affected by treatment activities.
- Identify dispersed recreation sites that should be treated or those that need to have a higher degree of fuels clean-up than other general forest areas.

Trails

- Identify the location of any National Forest System Trail, including the CDNST or HCNHT, that may be within treatment activities. Identify temporary impact/displacement of users of the trail and how to communicate with them, for instance, post signs about prescribed fire activities.
- Identify managed snow trails for projects that may be implemented over snow.

Recreation Rentals and Special Uses

- Identify recreation rental facilities and the reservation season that might be impacted by treatment activities.
- Identify the location of any authorized recreation special uses that would be impacted by treatment activities. Identify the types of uses that would be affected.
- Notify permit holders and public prior to implementation.

Designated Areas

- Identify inventoried roadless areas and confirm treatment activities are consistent with the roadless rule.
- Confirm recommended wilderness areas and wilderness study areas and ensure treatments are implemented to maintain wilderness characteristics for possible future designation.
- Confirm that the treatment activities within eligible wild and scenic rivers comply with applicable forest plan components.

Partnerships/Volunteers

- Identify any scheduled project work by partners, volunteer groups, or outfitter and guides in areas that may be impacted by treatment activities.

Public Health and Safety

- Identify any closures that may need to be in place for the safety of the public.
- Notify public before implementation.

Supporting documentation could include: confirmation that the activity fits within the range of effects analyzed in the environmental assessment and why; if adjustments or mitigations were applied to the original proposal due to this resource; surveys or other form of data collection (or reasoning why not needed); contacts made with the public pertaining to this resource for this activity; compliance with laws and regulations; if any developed or dispersed recreation sites are within or near the project area; if there are any timing restrictions; public notifications made/posted; and any other required documentation.

Geology, Energy, and Minerals

Consider the following questions:

- Is the project area known to have any historic or ongoing mining activity?
- Are there active mining operations in the area (Plans of Operation/Notices of Intent)?
- Are there known areas of mine reclamation projects, Federal and/or State Superfund projects that are associated with the project boundary?
- Are there known or the potential for Caves or other Karst features in the project area?
- Are there any active unpatented mining claim holders within the project boundary?
- Is the project within any known areas of geologic hazards (landslides, unstable slopes, highwalls, etc.)?
- Are there any known paleontological resources within the project boundary?

If the response to any of these questions are yes, minerals design features apply. Share design features and other relevant information with implementers.

Supporting documentation may include: confirmation that the activity fits within the range of effects analyzed in the environmental assessment and why; adjustments or mitigations that were applied to the original proposal due to this resource; surveys or other form of data collection, as approved by the local line officer (or reasoning why not needed); contacts made with the public pertaining to this resource for this activity; compliance with laws and regulations; biological assessment, biological evaluations, and other records of threatened and endangered, rare, and sensitive species; if there are any timing restrictions for the activity, approved by the local line officer; and any other required documentation.

Heritage

Some activities may have little or no potential to adversely affect historic properties and may proceed after the heritage specialist has reviewed the proposed activity and the responsible official approves.

If the proposed activity causes the heritage specialist to reach a finding of adverse effect to historic properties, a separate memorandum of agreement will be required as outlined under 36 CFR 800. That document will outline mitigations to be completed by the agency and those mitigations will be completed following the established terms.

Provisions under the Northern Region Protocols for Unanticipated Discoveries and Human Remains outline the process to be followed if newly discovered heritage resources are encountered during implementation. Referred to as “post-review discoveries” under the National Historic Preservation Act and “inadvertent discoveries” under the Native American Graves Protection and Repatriation Act. Those same procedures will apply to this project.

- National Historic Preservation Act, Section 106 compliance has been completed for this treatment area. All cultural resources that are eligible for the National Register of Historic Places or are unevaluated within this treatment area will be avoided unless the heritage specialist has determined a specific treatment does not have the potential to affect certain types of cultural resources.
- Identify cultural resources to be avoided and flag and/or share spatial information with the implementation team.
- Identify cultural resources that can be treated, if protection measures are followed, and share location(s) with the implementation team.
- Confirm all the steps in the final Heritage Implementation Plan have been completed.

Tribal Resources

National Historic Preservation Act, Section 106 compliance has been completed for this treatment area. All cultural resources that are eligible for the National Register of Historic Places or are unevaluated within this treatment area will be avoided unless the heritage specialist has determined a specific treatment does not have the potential to affect certain types of cultural resources.

- Identify cultural resources to be avoided and flag and/or share spatial information with the implementation team.
- Identify cultural resources that can be treated, if protection measures are followed, and share location(s) with the implementation team.
- Confirm all the steps in the final Heritage Implementation Plan have been completed.

Supporting documentation will demonstrate that the agency has met its Section 106 responsibilities under the National Historic Preservation Act prior to implementation. Documents could include inventory reports or other project review documentation; SHPO consultation documentation (letters, emails, etc.); Tribal government consultation documentation (letters, emails, etc.); and any agreement documents (memoranda of agreement or programmatic agreements) that were completed in order to mitigate adverse effects to historic properties. Sensitive information, including site location information will be withheld from the public record in order to protect historic properties, as allowed under Federal law.

Transportation Planning

- Prior to any planned uses of travel on roads closed to the public, review the existing condition of the route and level of use and make recommendations for use to the local line officer.

Lands and Lands Special Uses

- Identify survey needs for land boundaries.
- Identify any special use permits within burn perimeter that may be impacted.

GIS

- File project GIS files in database.

Appendix D – Activity Cards

In areas where specialists determine that fuel loading and/or stand structure is such that prescribed fire behavior may not meet treatment objectives (e.g., result in low severity fire with minimal overstory mortality) and/or pose risk to highly valued resources and assets (for example, wildland-urban interface areas, infrastructure, or sensitive resources), prescribed fire alone may not be a sufficient treatment. In these situations, the Forest Service may use mechanized equipment to reduce the fuel loading and/or stand structure so that when prescribed fire is implemented, it would result in low or mixed severity fire. Desire for low or mixed severity fire is based on forest type and historical fire regime as well proximity to homes or infrastructure.

Prescribed Burning	
Description:	1: Prescribed Burning: Includes understory, broadcast, jackpot, and pile burning. 2: Machine/Hand Line: Machine line could be constructed in high slash areas or hand line could be used. 3: Hazard Tree Removal: Hazard tree removal could occur along containment lines for firefighter and public safety. Removal will be confined to areas where there is a threat to on-the-ground worker safety or where they pose a threat to containment lines.
Objectives:	1: Reintroduce fire as a disturbance process and move vegetation toward desired conditions defined in the forest plan. Reduce the risk of high-severity wildfire in low- and mixed-severity fire regimes, with an emphasis on restoring and maintaining desirable plant community attributes including fuel levels, fire regimes and other ecosystem processes. Desired conditions for various forest types and geographic areas are described in the 2021 Helena-Lewis and Clark Forest Plan and 2021 FEIS for the Forest Plan. See FW-VEGT-DC-01, FW-VEGF-DC-01 and all linked geographic area desired conditions (e.g., Castles VEGT-DC 01 and VEGF-DC 01, Crazies VEGT-DC-01 and CR-VEGF-DC 01, etc.) and FW-VEGF-DC-02, 03, 04; FW-VEGNF-DC-03; and all linked geographic area desired conditions (e.g., Castles VEGF-DC-02, 03; Crazies VEGF-DC-02, 03; etc.). 2: To effectively contain fire and minimize chances of torching and escape fires. 3: To protect firefighter and public safety.
Condition/Situation Trigger	When prescribed fire is determined to be the appropriate tool for achieving desired conditions. This is primary and priority activity.
Related Actions:	Prescribed fire could occur without other fuels reduction work or after other fuels reduction work has been completed.
Methods:	1: Prescribed fires will be ignited using ground and/or aerial based ignitions. 2: Hand line will be used wherever needed for containment lines. Placement will vary but natural and manmade features will be utilized where feasible to minimize ground disturbance to soils, plants, and trails. Construction specifications will vary depending on fuel arrangement and continuity but

Prescribed Burning	
	in general line will be 18 to 24 inches wide scrape to bare mineral soil with saw line removing brush and understory trees on both sides of the line. Water bars will be constructed as needed depending on slope and resources guidelines. Line will also be rehabilitated seasonally as needed or after the burn is declared out. 2: Machine line will be confined to high value areas such as wildland-urban interface, administrative sites, or areas with high slash loadings. Machine lines will be limited to slopes less than 45 percent. Machine line specifications will vary depending on fuel accumulations and continuity, but in general there will be a 2- to 4-foot scrape to bare mineral soil with slash along the line being dispersed and placed off of the containment line. Water bars will be installed according to resource specifications during the construction. These lines will be rehabilitated once the burn is declared out or as soon as it is feasible to do so. 2. Firelines (hand lines and machine lines) will be promptly rehabilitated Construction of machine fireline in riparian management zones will not be used. Hand fireline will be used in riparian management zones only to the extent needed to ensure prescribed fire containment. 3: Hazard tree removal could occur along containment lines for firefighter and public safety. Removal will be confined to areas where there is a threat to on-the-ground worker safety or where they pose a threat to containment lines.
Equipment Used:	Helicopters, engines, trucks, utility-terrain vehicles, unmanned aerial system (i.e., drones), crews, aerial firing devices (plastic sphere dispensers), helitorches, drip torches, terra-torches, etc. Tracked heavy equipment, such as excavator. Hand tools. Aerial ignition, by helitorch or plastic sphere dispenser, may be used to reduce the amount of personnel needed and mitigate safety concerns related to snags and hand ignition.
Timing:	Prescribed burning, machine and handline construction, and hazard tree removal could take place any time of year that objectives could be met.
Duration:	Multiple years depending on opportunities to meet prescribed burn objectives within a given project area.

Non-mechanical Hazardous Fuels Reduction	
Description:	1: Hand piling: Piling residual fuels and slash from thinning activities; hand piling on any percent slope. 2: Pruning: Pruning ladder fuels. 3: Slash re-arrangement: Pullback of slash from leave trees and reducing slash depth across a unit.

Non-mechanical Hazardous Fuels Reduction	
	4: Hazard tree removal: Removing hazardous trees in areas where there is a threat to on-the-ground worker safety or where they pose a threat to containment lines.
Objectives:	1: Reduce surface fuels from thinning activities by piling fuels to be burned in order to control the severity of prescribed fire, limit tree mortality, and to ensure containment. 2: Reduce ladder fuels to discourage crown fire and torching potential in order to minimize tree mortality. 3: Minimize damage or mortality to leave trees. 4: Remove hazardous trees for public and firefighter safety and fireline control mitigation measures.
Condition/Situation Trigger	If prescribed fire cannot be safely introduced in a way that meets objectives, this activity will be the next highest priority and will be used in the following situations: 1: Prior to prescribed fire implementation when needed to reduce fuels to ensure containment efforts and limit tree mortality. 2: When branches of trees begin at the forest floor and continue into the forest canopy, or when small trees create a ladder into the forest canopy. 3: Where exceptionally high surface fuel levels would lead to levels of tree mortality beyond what is desired (for instance, beyond acceptable mortality levels for desired low or mixed severity fire). 4: Where hazardous trees exist in an area such as a fireline where worker safety is threatened.
Related Actions:	These actions could occur during thinning or prior to prescribed burning.
Methods:	Contractors or agency employees using equipment described below.
Equipment Used:	Chainsaws and hand tools.
Timing:	Any time of year when objectives could be met and around timing restrictions for wildlife or other resource protection.
Duration:	Multiple years depending on thinning contracts.

Mechanical Hazardous Fuels Reduction	
Description:	1: Machine piling: Piling residual fuels and slash from activities such as thinning. 2: Chipping and/or Mastication: Reducing fuel loading and continuity by chipping or grinding slash, brush, or understory trees with chipper or equipment with masticating head. Material is ground into chips and small debris reducing fuel continuity and changing fuel arrangement and potential fire behavior. 3: Pruning: Pruning ladder fuels to discourage crown fire and torching.

Mechanical Hazardous Fuels Reduction	
	4: Slash re-arrangement: Pullback of slash from leave trees and reducing slash depth. 5: Hazard tree removal: Removing hazardous trees in areas where there is a threat to on-the-ground worker safety or where they pose a threat to containment lines. 6: Short-range skidding and decking. In areas with excessive levels of down wood (often from intense levels of mortality from large-scale insect attacks) or where thinning occurs.
Objectives:	All: Driving desired conditions from the Forest Plan include: FW-FIRE-DC-02, FIRE-DC-03, FW-VEGT-DC-01, FW-VEGT-DC-02, FW-VEGF-DC 01-08,11, and FW-VEGNF-DC-03. 1: Reduce surface fuels from mechanical activities by piling fuels to be burned in order limit tree mortality, ensure fire containment and enable low or mixed severity prescribed fire, depending on the forest type. 2: To create fuels breaks along private property and around highly valued resources and assets prior to prescribed fire implementation to reduce risk to those resources during prescribed fire activities. 3: Reduce ladder fuels to discourage crown fire and torching potential during prescribed fire in order to limit tree mortality and ensure fire containment. 4: Increase survivability of leave trees during prescribed fire by pulling back residual slash and reducing slash depth. 5: Remove hazardous fuels for public and firefighter safety and fireline control to support controlled and safe prescribed fires. 6: Reduce density and down wood levels to the degree to which prescribed fire could be safely reintroduced with fire severity levels appropriate for the historical fire regime.
Condition/Situation Trigger	This activity would be used where prescribed fire alone or non-mechanical hazardous fuels reduction cannot meet objectives. It is incidental to creating a safe area to introduce prescribed fire and achieve desired mortality levels/fuels reduction. It would be used where there is a high density of 8-10" trees or a high level of snags. 1: After or during activities such as thinning. Machine piling less than 45 percent slope. 2: Prior to prescribed fire treatments when it would meet resource objectives around high value areas such as wildland-urban interface, administrative sites, genetic tree improvement resources, or private property. 3: When branches of trees begin at the forest floor and continue into the forest canopy, or when small trees create a ladder into the forest canopy. 4: Where exceptionally high surface fuel levels would lead to levels of tree mortality beyond what is desired (for instance, beyond acceptable mortality levels for desired low or mixed severity fire). 5: Where hazardous trees exist in an area such as a fireline where worker safety is threatened or where they exist within control lines.

Mechanical Hazardous Fuels Reduction	
	6: In areas where thinning occurs or where high levels of down woody debris prevent reintroduction of prescribed fire at the fire severity level appropriate for the historical fire regime, or to ensure low severity fire near neighborhoods/communities.
Related Actions:	These actions could occur prior to prescribed burning or in conjunction with thinning. Road reconstruction, temp culvert, and culvert replacement could also occur.
Methods:	Contractors or agency employees using equipment as described below.
Equipment Used:	Chainsaws, excavators, chippers, skid-steers, feller-buncher, and mastication/grinding heads.
Timing:	Any time of year when objectives could be met and around timing restrictions for wildlife or other resource protection.
Duration:	Multiple years depending on contracts.

Thinning of trees less than 10 inches diameter at breast height	
Description:	1: Felling trees less than 10 inches diameter at breast height.* 2: Cutting of non-desired (most often conifer) trees to reduce density and restore grasslands and shrublands. Cutting of small, encroaching conifers occurs before prescribed fire is introduced.* *In areas where trees to be removed are 5-10 inches diameter at breast height, the potential for timber or post and pole sales, deck sales, or commercial or public firewood offerings will be considered to offset the cost of fuel reduction work and provide economic opportunities for local communities.
Objectives:	1: Reduce density of small trees to enable effective reintroduction of fire while limiting tree mortality and reducing the risk for high-severity wildfire in low- and mixed-severity fire regimes. Ancillary benefits include improved forest resistance to disturbance (ability to survive disturbances) and trending species composition toward desired conditions (FW-VEGT-DC-01, FW-VEGF-DC-01 and all linked geographic area desired conditions (e.g., Castles VEGT-DC 01 and VEGF-DC 01, Crazies VEGT-DC-01 and CR-VEGF-DC 01, etc.). 2: Maintain and enhance grasslands and shrublands by reducing conifer colonization and reinvigorating grass growth while creating a fuel bed for prescribed fire. Also, maintain landscape heterogeneity.
Condition/Situation Trigger	1: When tree densities exceed what is needed for low or mixed fire severity to occur during prescribed fire, or if needed to improve desired species composition prior to the introduction of fire, aligned with desired conditions outlined in the forest plan for each geographic area (FW-VEGF-DC-02, 03, 04; FW-VEGNF-DC-03; and all linked geographic area desired conditions (e.g., Castles VEGF-DC-02, 03; Crazies VEGF-DC-02, 03; etc.).

Thinning of trees less than 10 inches diameter at breast height	
	2. When patchiness across a geographic area does not reflect historical conditions or conditions expected within a given fire regime (e.g., a mixed severity fire regime).
Related Actions:	Other activities that may occur along with tree thinning, on an as-needed basis, include mechanical or non-mechanical hazardous fuel reduction (see relevant activity cards for more description) and prescribed burning. Road reconstruction, temp culvert, and culvert replacement could also occur.
Methods:	Option 1) Tree/Fuel removal and/or rearrangement by way of manual labor forces (contracted or internal). Felled trees could be lopped and scattered or piled for future burning. Option 2) Tree/Fuel removal and/or rearrangement by way of mechanized equipment (contract or internal). This may include felling, masticating, piling, or whole tree removal.
Equipment Used:	Manual labor would include chainsaws or other hand operated equipment. Mechanized equipment may include any wheeled or tracked equipment. Examples include skidsteers, feller bunchers, and excavators. Reasons for utilizing mechanized equipment instead of manual labor/hand treatment include capturing economic value to reduce cost of fuels reduction and provide economic opportunities to local communities and/or to protect worker safety. Mechanized equipment is limited in most cases to slopes less than 40 percent.
Timing:	Year round, but typically from July 1 through November 15 and/or dependent on timing restrictions identified by resource specialists.
Duration:	Multiple years.

In areas where mechanized equipment is authorized to reduce fuel loading and/or modify stand structure, and the trees to be removed are between 5 inches and 10 inches diameter at breast height, treatment areas would be evaluated for timber sales, deck sales and/or public firewood collection. Commercial harvest can be an effective tool for achieving fuel treatment objectives within specific conditions. Selling merchantable timber or decks would offset the costs of prescribed burning and other fuel reduction efforts and also enhance treatment cost-effectiveness.

Commercial Timber Sale	
Description:	1. Commercial timber sales can be used when treatment unit(s) as a whole would be economically viable for logging, hauling, and costs associated with required compliance work. 2. A commercial timber sale contract will be created, advertised, and awarded according to handbook direction. 3. Timber sale contracts will primarily handle sawlog material. Non-saw or other products may be removed when economically viable.

Commercial Timber Sale	
Objectives:	All: Driving desired conditions from the Forest Plan include FW-FIRE-DC-02, FIRE-DC-03, FW- VEGT-DC-01, FW-VEGT-DC-02, FW-VEGF-DC 01-08,11, and FW-VEGNF-DC-03. 1. Utilize merchantable material that is commercially viable through timber sale harvest and reduce fuel loadings of overstocked stands. 2. Move stands towards desired conditions while utilizing forest products and reducing costs associated with service contracts. 3. Concentrate fuel loadings at landings for centralized locations for later disposal. 4. Create control lines along private property, roads, ridgelines, and around highly valued resources and assets prior to prescribed fire implementation to reduce risk to those resources during prescribed fire activities. Strategic locations would aid in modifying fire behavior prior to prescribed fire treatments. 5. Hazard tree removal could occur where necessary for worker safety.
Condition/Situation Trigger	1. Commercial Timber Sale contracts can be used when proposed treatments are adjacent to existing road. 2. Live trees between 7 and 10 inches diameter at breast height and at least 60 feet tall are generally going to be sawlog material. It would take approximately 8-10 inches diameter at breast height and 60' tall lodgepole pine to create a log truck load (4.5MBF or 9CCF or 28tons). 3. Material for removal should be greater than 28 tons per acre of sawlog material. Unit or combined units should be greater than 30 acres of ground-based harvesting. Generally, no more than 45 percent slopes with a favorable skid or 35 percent adverse skidding. Units need access via FS system roads suitable for haul and equipment mobilization. Haul distances to forest products facilities must be within reasonable distances. 4. Design treatments on lands suitable for timber production, to maintain and enhance tree growth, size and species diversity to move stands towards desired conditions and ensure harvest opportunities in the future. 5. If cutting only trees under 10" will not meet the fuels objectives and desired stand conditions, it may be desirable to defer treatment in favor of a traditional timber sale under a different or future NEPA decision.
Related Actions:	Harvest could occur prior to any other post-harvest fuel treatments or burning.

Commercial Timber Sale	
Methods:	1: If areas meet conditions described above consult with timber personnel to gauge sale viability and market interest. 1: Trees for cut or leave would be marked according to silvicultural prescription. 2: Contract would be created, advertised, and awarded. 2: Trees would be cut and skidded to landing according to contract. 3 Trees would be limbed and bucked within utilization specs. 4. Ground-based mechanized equipment may operate in the outer riparian management zone for desired wildlife and aquatic conditions.
Equipment Used:	Typical ground-based logging equipment includes a feller buncher, skidder, processor, excavator, dozer, log loader and log trucks.
Timing:	Commercial timber sales can take place any time of year when objectives would be met. Typical logging seasons are June through September and December through March. Work can occur outside these windows depending on ground conditions.
Duration:	Multiple years depending on contract.

Commercial Deck Sale	
Description:	1. Sale of decked merchantable material generated from separate fuels treatment. 2. Deck Sale Contracts can be used when decks are economically viable for removal. 3. A deck sale contract will be created, advertised, and awarded according to handbook direction 4. Deck sale contracts will primarily handle sawlog material. Non-saw or other products may be removed when economically viable.
Objectives:	1. Utilize merchantable material that is commercially viable through deck sale. 2. Concentrate fuel loadings (trees) at landings for centralized locations for later disposal. 3. Sale of material generated through service contracts that would otherwise be masticated, burned, or left onsite. 4. Hazard tree removal could occur where necessary for worker safety.
Condition/Situation Trigger	1. Locate decks or landing adjacent to roads with adequate space for equipment to process, load, and pile slash 2. It is anticipated that the access routes to facilitate deck removal would meet minimum best management practice standards and be completed as part of the mechanical fuels treatments. 3. Typically, a deck sale would not be less than 10 loads and concentrated in as few decks as possible Decks sold under contract should be within a reasonable haul range to market
Related Actions:	These actions could occur during thinning after other mechanical fuels treatments.
Methods:	Contractors using equipment described below to remove material from sale area.

Commercial Deck Sale	
Equipment Used:	Processor, log loader, excavator, and/or self-loading log truck
Timing:	Any time of year when objectives could be met and around timing restrictions for wildlife or other resource protection.
Duration:	Multiple years depending on contract

Personal Use Firewood Removal	
Description:	Allow public to cut firewood from decked material or any scattered individual trees along open system roads using personal use firewood permits.
Objectives:	All: Driving desired conditions from the Forest Plan include: FW-FIRE-DC-02, FIRE-DC-03, FW- VEGT-DC-01, FW-VEGT-DC-02, FW-VEGF-DC 01-08,11, and FW-VEGNF-DC-03. 1. Concentrate fuel loadings at landings for centralized locations for later disposal. 2. Public utilization of material generated through service contracts that would otherwise be masticated, burned, or left onsite 3. Hazard tree removal could occur where necessary for public safety.
Condition/Situation Trigger	1. Decked material generated through fuels treatments is not economically viable for commercial removal. 2. Decked material is too small for handling by log trucks. 3. Decks are too small or are too spread out for removal by log trucks 4. When District Ranger determines public use firewood needs outweigh a deck sale contract Material is on open system roads or roads that could be opened to the public.
Related Actions:	These actions could occur after or in conjunction with fuels treatments.
Methods:	Public removal using equipment as described below.
Equipment Used:	Chainsaws, trucks, and trailers
Timing:	Any time of year when objectives could be met and around timing restrictions for wildlife or other resource protection.
Duration:	Multiple years depending on amount of material.

Appendix E – Implementation Forms

Implementation Proposal Form

Project:		District:	
Contact person and title:			
Legal description or location, (include geographic area):			
Size (acres)			
Description, include: • Wildland-urban interface, • Priority fireshed, • Using special funding, • Within IRA (percent), or • Other designation			
Project file location:			

List all maps and general activity documents	Date	Project file name

Implementation Tracking Form

Project Name		Geographic Area	Rearrangement of fuels (Hand)	Rearrangement of fuels (Mechanical)	Prescribed Fire	Level 1 road use
Activity Name	Year		Acres	Acres	Acres	Miles
Total Remaining:						

Appendix F – Cumulative Effects Activities

Past vegetation management activities, fire, and natural forest development and succession created the current vegetation condition across the Helena Lewis and Clark Forestwide Prescribed Fire project area. These vegetation conditions are compared to the effects of the proposed action throughout the direct and indirect effects sections of each resource area. Ongoing, current Forest vegetation projects are listed in table 6. These projects are in the implementation phase. The table includes NEPA project name, a brief description of the project, geographic area, decision acres and percent of project completed to date.

Reasonably foreseeable national forest vegetation projects are listed in table 7 and similar information is displayed. These projects are still in the planning phase, which means there is potential for changes due to public input, changed conditions, etcetera. Over the planned years of implementation for this project, it is expected the present and ongoing and reasonably foreseeable projects lists would change. Ongoing present projects would shift to past, and reasonably foreseeable projects would begin implementation, with new vegetation projects added to the list.

Table 6. Present and ongoing forest vegetation projects

Project Name	Description	Geographic Area	Acres of Mechanical Treatment	Acres of hand or Aerial treatment	Acres of Commercial Harvest	Percent Implemented
1988 Elkhorns Habitat Improvement Decision	Hand slashing small conifers (generally up to 8" diameter) followed by prescribed fire. Treatments will enhance aspen and willow regeneration, promote age class and tree species and expand grasslands/shrublands through removal of conifer colonization.	Elkhorns	0 acres	1,982 acres	0 acres	54 percent
Elk Smith Project	Hand slashing small conifers generally up to 16 feet in height followed by prescribed fire. Treatments will reduce fuel loading and increase the potential to effectively manage future wildfire within the project area and lands immediately to the west.	Rocky Mountain	0 acres	10,531 acres	0 acres	10 percent
Hogum Wildfire Resilience Project	Commercial harvest of trees, hand pile/burn, jackpot burning and broadcast/underburn. Treatments will reduce hazardous fuels, enhance aspen, restore forested structure, function and composition.	Upper Blackfoot	0 acres	1,390 acres	1,061 acres	5 percent
Horsefly	Commercial harvest of trees, non-commercial vegetation treatments (slashing, thinning, piling), rearrangement of hazardous fuels, planting and restoration treatments of aspen, 5-needle pine and meadows. Treatments will provide wood products, improve forest health and landscape resiliency and reduce wildfire risk.	Little Belts	0 acres	5,737 acres	4,606 acres	0 percent

Project Name	**Description**	**Geographic Area**	**Acres of Mechanical Treatment**	**Acres of hand or** Aerial treatment	**Acres of Commercial Harvest**	**Percent** Implemented
Johnny Crow	Hand slashing and/or girdling conifer trees less than 12" diameter-at-breast height and/or use prescribed fire. Treatments are designed to improve foraging habitat and structural diversity for ground-nesting birds.	Elkhorns	0 acres	13,525 acres	0 acres	22 percent
Little Snowy Mountains Restoration Project	Hand thinning of trees less than 7" diameter breast high, mastication of trees less than 9 inches, prescribed burning, timber harvest, aspen enhancement and meadow restoration. Treatments limit tree removal over 17". Treatments are designed to restore dry-site open ponderosa pine and its associated ecological communities, reduce the risk of stand replacing wildfires and reduce the threat of epidemic levels of insect and disease infestations.	Snowies	5,247 acres	5,588 acres	0 acres	29 percent
Middleman	Commercial harvest of trees, non-commercial vegetation treatments, pre-commercial thinning, rearrangement of fuels, piling of fuels, and prescribed fire treatments. Project addresses life safety, ecosystem enhancement, increased forage production, increased water quality, and sustainable local economies.	Big Belts	0 acres	46,462 acres	6,669 acres	10 percent
Moose Creek Vegetation Project	Commercial harvest of trees, precommercial thinning, lop and scatter, slashing, handpile, handpile burning, jackpot and understory burning. Treatments are designed to provide wood products, maintain/restore forest structure, function, composition and connectivity that have been impacted by insect and disease and retain larger trees.	Little Belts	0 acres	171 acres	2,024 acres	99 percent
Telegraph Vegetation Project	Commercial timber harvest, precommercial thinning, slashing, whitebark pine daylighting (selective tree removal), mechanical re-arrangement of concentrations of fuel, underburning and prescribed fire. Treatments are designed to be responsive to mountain pine beetle outbreak by ensuring diverse and sustainable forest stands and wildlife habitat, improving conditions for fire suppression, recovering economic value of dead and dying trees, maintaining and improving watershed.	Divide	336 acres	2,359 acres	2,983 acres	45 percent

Project Name	**Description**	**Geographic Area**	**Acres of Mechanical Treatment**	**Acres of hand or** Aerial treatment	**Acres of Commercial Harvest**	**Percent** Implemented
Tenmile-South Helena	Commercial timber harvest, precommercial thinning, slashing, mechanical rearrangement of fuels, underburning and prescribed fire. Treatments are designed to maintain consistent water quantity-quality within Helena's municipal watershed and improving conditions for public and firefighters safety across the landscape in the event of a wildfire	Divide	1,950 acres	12,345 acres	3,300 acres	30 percent
Upper Sheep Creek Vegetation Project	Commercial harvest of trees, precommercial thinning, lop and scatter, slashing, handpile, handpile burning, jackpot and understory burning. Treatments are designed to provide wood products, maintain/restore forest structure, function, composition and connectivity that have been impacted by insect and disease and retain larger trees.	Little Belts	0 acres	424 acres	2,355 acres	99 percent
Willow Creek Vegetation Project	Commercial harvest of trees, non-commercial thinning and prescribed fire treatments to maintain or restore structure, function, composition and connectivity of forest systems effected by insects and disease.	Upper Blackfoot	0 acres	769 acres	1,371 acres	65 percent
Coyote-Divide Vegetation Project	Commercial harvest of trees, non-commercial vegetation treatments and prescribed fire. Mechanical and/or hand treatment methods would be used to accomplish treatment objectives. Implementation of prescribed fire would occur by hand or aerial methods. Purpose and need for project includes life safety, forested resiliency, diversity and restoration and wildland-urban interface.*	Little Belts	894 acres	4,540 acres	2507 acres*	0 percent
South Fork Judith Fuel Break CE	Non-Commercial mechanical and hand thinning followed with prescribed fire to create a linear fuel break along roads and powerlines within high-risk wildland-urban interface.	Little Belts	1766 acres	1230 acres	0 acres	1 percent
Wood Duck	Commercial harvest of trees to address ongoing insect activity and potential widespread tree mortality.	Big Belts	0 acres	263 acres	2,714 acres	36 percent

Table 7. Reasonably foreseeable future vegetation projects

Project Name	Description	Geographic Area	Acres of Mechanical Treatment	Acres of hand or Aerial treatment	Acres of Commercial Harvest	Percent Implemented
Bonanza	Commercial harvest of trees and post-harvest prescribed fire. P&N is restoration, resiliency and diversity and providing wood products for local infrastructure sustainability	Castles	0	1,284	1,980	0 percent
Larabee Hat	Commercial harvest, non-commercial treatments and prescribed fire. Project P&N: Forested resiliency, diversity, restoration, modify fuels within the wildland-urban interface, wood products and watershed improvements.	Divide		13,860	3,126	0 percent

* Where appropriate, prescribed fire would be applied in units post-harvest.

Appendix G – Glossary

Backburn/Backing fire: Used in some localities to specify fire set to spread against the wind in prescribed burning (NWCG).

Broadcast burning: A type of prescribed fire that uses surface fire on a broad area of a burn unit, often when no overstory trees are present. In some instances, broadcast burning is used to remove overstory vegetation to create openings and optimal conditions for regenerating vegetation.

Burn block: A discrete area within a larger prescribed or fire use project (NWCG).

Burn plan: See Prescribed Fire Burn Plan.

Burn prescription: The prescription is the measurable criteria during which a prescribed fire may be ignited to meet the prescribed fire objectives. The prescription will describe a range of low-to-high limits for the environmental (for example temperature, relative humidity) or fire behavior (for example flame length) parameters (or both) required to meet prescribed fire objectives (NWCG).

Condition class: See also Vegetation Condition Class (table 8); Depiction of the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components. These classes categorize and describe vegetation composition and structure conditions that currently exist inside the fire regime groups. Based on the coarse-scale national data, they serve as generalized wildfire rankings. The risk of loss of key ecosystem components from wildfires increases from Condition Class 1 (lowest risk) to Condition Class 3 (highest risk) (NWCG).

Controlled burn: See prescribed fire.

Departure: The amount that current vegetation has departed from simulated historical vegetation reference conditions (NWCG).

Fire effects: The physical, biological, and ecological impacts of fire on the environment (NWCG).

Fire intensity: The amount of energy produced by a fire at the flaming front, often described by flame height (NWCG).

Fire regime: Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Fire regimes can often be described as cycles because some parts of the histories usually get repeated, and the repetitions can be counted and measured, such as fire return interval (NWCG).

Fire regime condition class (FRCC): See condition class.

Fire return interval: The fire return interval (FRI) quantifies the average period between fires under the presumed historical fire regime. The mean fire-return interval is defined as the statistical average of all fire intervals in each individual sample and is calculated by recording the number of annual growth rings between each fire scar, summing the intervals, and then dividing this result by the total number of intervals (LANDFIRE).

Fire risk: The chance of fire starting, as determined by the presence and activity of causative agents (NWCG).

Fire severity: In fire regime condition class methodology, this is the effect of fire in terms of upper layer canopy replacement (mortality). Replacement may or may not cause a lethal effect on the plants. For example, replacement fire in grassland simply removes the leaves, which usually resprout from the basal crown; whereas replacement fire in most conifers causes total tree mortality. Severity Class: No fire effects less than 5 percent replacement; Low 6-25 percent replacement; Mixed 26-75 percent replacement; Replacement greater than 75 percent replacement (Fire Regime Condition Class Guidebook).

Degree to which a site has been altered or disrupted by fire; loosely, a product of fire intensity and residence time (NWCG).

A qualitative assessment of the heat pulse directed toward the ground during a fire. Burn severity relates to soil heating, large fuel and duff consumption, consumption of the litter and organic layer beneath trees and isolated shrubs, and mortality of buried plant parts (NWCG).

Fire treatment: The use of fire to accomplish a specified objective (NWCG).

Jackpot burning: A fire treatment type. A prescribed fire to deliberately burn natural or modified concentrations (jackpots) of wildland fuels under specified environmental conditions, which allows the fire to be confined to a predetermined area and produces the fireline intensity and rate of spread required to attain planned resource management objectives (NWCG).

Maintenance Burning: Maintenance burning refers to the periodic application of controlled fire to an area that has previously been burned or treated to sustain desired ecological conditions. Maintenance burns are typically conducted at regular intervals based on site-specific fire regimes and management objectives.

Natural disturbance: Natural disturbances include fires, insect outbreaks, disease epidemics, droughts, floods, hurricanes, windstorms, landslides, avalanches, and volcanic eruptions. In terms of frequency and area affected, the two major natural disturbances affecting Forest Service landscapes are fire and insect outbreaks. These two natural disturbance regimes are responsible for much of the variation we see in vegetation structure and composition (Source Aldo Leopold Wilderness Research Institute).

Natural fire regime: The reference fire regime that is operating in the absence of modern human interference. Natural fire regimes can include anthropogenic influences, such as American Indian fire use, that may have contributed to the development of native species' fire adaptations (Source FRCC Guidebook).

Pile burning: Prescribed fire that burns discrete piles of fuels with some surface fire allowed to spread between them.

Prescribed fire: Prescribed fires, also known as prescribed burns or controlled burns, refer to the controlled application of fire by a team of fire experts under specified weather conditions to restore health to ecosystems that depend on fire (NWCG).

Prescribed fire burn plan: A plan required for each fire application ignited by management. Plans are documents prepared by qualified personnel, approved by the agency administrator, and include criteria for

the conditions under which the fire will be conducted (a prescription). [Interagency Prescribed Fire Planning and Implementation Procedures Guide (nwcg.gov)].

Soil Burn Severity: Soil burn severity is defined by Parsons et al. (2010) as "the effect of a fire on ground surface characteristics, including char depth, organic matter loss, altered soil color and structure, and reduced infiltration. The classification of post-fire soil condition is based on fire-induced changes in physical and biological soil properties. During post-fire assessments, there has been intentional effort to use the term "soil burn severity" to differentiate post-fire soil properties from fire effects on vegetation (such as tree mortality) and/or general fire effects on long-term ecosystem health." Soil burn severity classes, described in detail in Parsons et al. (2010), include:

- Low soil burn severity: Surface organic layers are not completely consumed and are still recognizable. Structural aggregate stability is not changed from its unburned condition, and roots are generally unchanged because the heat pulse below the soil surface was not great enough to consume or char any underlying organics.
- Moderate soil burn severity: Up to 80 percent of the pre-fire ground cover (litter and ground fuels) may be consumed but generally not all of it. Fine roots may be scorched but are rarely completely consumed over much of the area. There may be potential for recruitment of effective ground cover from scorched needles or leaves remaining in the canopy that will soon fall to the ground. Soil structure is generally unchanged.
- High soil burn severity: All or nearly all the pre-fire ground cover and surface organic matter (litter, duff, and fine roots) is generally consumed. Bare soil or ash is exposed and susceptible to erosion, and aggregate structure may be less stable.

Resiliency: At a general level used to refer to the ability of a system (ecological or human) to resist damage and recover from a disturbance. In ecology, resiliency tends to refer to the ability of the system to return to the pre disturbance state with no assessment of whether that state is desirable or not. From a social perspective, resilience may reference ability to return to the original state but also can refer to the ability to recover to a state more likely to resist or recover quickly from future disturbance (NWCG).

Understory burn: (also underburning); a kind of prescribed fire used to reduce ladder fuels in key locations in order to remove surface fuels but not all of the overstory vegetation.

Values at Risk: The elements of a community or natural area considered valuable by an individual or community that could be negatively impacted by a wildfire or wildfire operations. These values can vary by community and can include diverse characteristics such as homes, specific structures, water supply, power grids, natural and cultural resources, community infrastructure, and other economic, environmental, and social values.

Vegetation Burn Severity: The effect of a fire on vegetative ecosystem properties, often defined by the degree of scorch, consumption, and mortality of vegetation and the projected or ultimate vegetative recovery (Parsons et al. 2010). Vegetation burn severity depends on the fire intensity and the degree to which ecosystem properties are (or are not) fire resistant. For example, a fire of exactly the same fireline intensity might kill thin-barked trees but have little effect on thick-barked trees, or it may root-kill rather than canopy-kill trees, which would result in greater mortality than initially observed.

Vegetation condition class (LANDFIRE):

Table 8. Vegetation condition class

Vegetation Condition Class	Description	Potential Risks
I.A Very Low, Vegetation Departure 0-16 percent	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) etc. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components are low.
I.B Low to Moderate, Vegetation Departure 17-33 percent	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) etc. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components are low.
II.A Moderate to Low, Vegetation Departure 34-50 percent	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Risk of loss of key ecosystem components are moderate.
II.B Moderate to High, Vegetation Departure 51-66 percent	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Risk of loss of key ecosystem components are moderate.
III.A High, Vegetation Departure 67-83 percent	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Risk of loss of key ecosystem components are high.
III.B Very High, Vegetation Departure 84-100 percent	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Risk of loss of key ecosystem components are high.
NB	NB = Non-Burnable (includes barren, water, sparse vegetation)	Not applicable

Primary sources Fire Regime Condition Class Guidebook V, 1.3.0, June 2008; NWCG. https://www.nwcg.gov/publications/pms205

Wildland-urban interface: In the absence of a community wildfire protection plan, the Healthy Forest Restoration Act definition of wildland-urban interface applies:

(A) an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or

(B) in the case of any area for which a community wildfire protection plan is not in effect:

(i) an area extending 0.5 miles from the boundary of an at-risk community;

(ii) an area within 1.5 miles of the boundary of an at-risk community, including any land that—

(I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;

(II) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or

(III) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and

(iii) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

Appendix H – Response to Public Comments

Response to comments submitted for the Helena-Lewis and Clark Forestwide Prescribed Fire Environmental Assessment

Law, Regulation, and Policy

Scope of Project

Concern Summary: Several commenters suggested that the proposal was too broad or lacked specific locations or survey data necessary to do environmental analysis.

To address this concern, the Helena-Lewis and Clark added more detail to the proposed action and in the introduction to clarify the intent and desired outcomes for this project. We added a monitoring and public engagement section to the proposed action to demonstrate our commitment to continued public engagement and learning, and we added multiple appendices to further clarify the intent and outcomes of this project. Appendix D includes activity cards that describe the conditions under which each management activity would occur. Appendix I includes preliminary silvicultural prescriptions, and Appendix J includes pilot projects envisioned by Helena-Lewis and Clark staff to test the sufficiency of our proposed action and project implementation process and checklists. Wealso clarified in the proposed action how much activity would consist of prescribed fire, non-mechanical fuels reduction and mechanical fuels reduction. As stated in the purpose and need, the project is designed intentionally to allow for flexibility needed to address changing conditions, and we clarify and add detail from the literature and the Helena-Lewis and Clark landscape to further demonstrate the dramatic and pressing need for this flexibility. Rather than identifying specific locations for prescribed fire now, this project would use a prioritization approach as described in the proposed action section. We would also use design features to mitigate potential environmental effects and the implementation plan/checklist to provide sideboards to the actions and ensure consistency with other laws, regulations, and policies. Our analysis considers application of fire and associated treatments within the analysis area, along with the design features and location-specific review required in the implementation plan/checklist.

Location-specific Survey

Concern Summary: Several commenters suggested that a detailed and location-specific resource survey should be completed and addressed in the analysis.

Under the proposed action framework, a location-specific review and a survey to confirm resource conditions and effects are consistent with the analysis would occur prior to implementing prescribed fire as part of the implementation plan and checklist process (see appendix C). This would help ensure we have the most current and best available information to inform implementation. Resource specialists would review the design features and the implementation checklist and determine what survey work needs to be done in that specific area, depending on the conditions and resources present and allowable within the scope of this project.

Purpose and Need

Concern Summary: Some commenters expressed concern about the purpose and need, particularly the need to restore the project area to historical conditions. Commenters had concerns that, due to climate change and other factors, historical conditions may not be achievable or desirable considering future climate or uses.

We consider this a lot internally as well. As noted in the proposed action, while longer fire seasons and changing weather conditions argue for a more aggressive approach to management, this project does not even quite reach historical levels of burning. However, this project would allow the Helena-Lewis and Clark to make critical progress in strategically selected areas where we would be able to reduce the severity of wildfire and thus increase the amount of live forest in the long term, amongst other benefits. Desired conditions and objectives would be informed by the Forest Plan, which was developed based on knowledge about historical fire return internals and how these fire return internals shaped our forests in the past. Another important purpose of the project is reducing the risk of catastrophic wildfire, an agency priority. Increasing the pace and scale of prescribed fire would result in the lessening of uncharacteristic fuel loading and would increase the resiliency of existing vegetation groups to future stressors like climate change, insects, and disease.

Recreation and Roadless

Concern Summary: Trails, camping, parking, access, visuals

Three comments were focused on recreational access from the project and the support for more trail and road access into the forest. Twenty-seven comments were focused on designated areas including roadless, wilderness study areas and recommended wilderness. Concerns arose from prescribed fire activities and fireline construction within those designated areas. Also, the authorization of the project within the roadless rule and the exceptions utilized in the analysis. Fifteen unique comments focused on the Roadless Rule. Those comments indicated the Forest Service was in violation of the Roadless Rule and the Roadless Rule exceptions utilized in the project analysis. Two comments were focused on economics and analyzing the cost of the types of treatments as well as the impact to local economies for area closures. One comment focused on visual resources and a request to disclose whether each unit meets the visual quality standard.

Access: Fireline placement would be selected strategically in places that would be easiest to restore. All fireline would be rehabilitated to prevent erosion and unauthorized use.

Designated Areas: Project activities will occur in all designated areas except Designated Wilderness and Research Natural Areas. Activities will be consistent with the 2021 Forest Plan components associated with the designations.

Inventoried Roadless Areas: The Roadless Rule 36 CFR Part 294 Paragraph (b)(2) allows timber cutting, sale, or removal in inventoried roadless areas when incidental to implementation of a management activity not otherwise prohibited by this rule. Examples of these activities include but are not limited to trail construction or maintenance; removal of hazard trees adjacent to classified roads for public health and safety reasons; fireline construction for wildland fire suppression or control of prescribed fire; survey and maintenance of property boundaries; other authorized activities such as ski runs and utility corridors; or for road construction and reconstruction where allowed by this rule. No road construction is proposed in roadless areas.

The roadless report analyzed effects to wilderness characteristics for forestwide inventoried roadless areas, recommended wilderness and wilderness study areas. Direct and indirect effects were analyzed as well as wilderness characteristics. The project is directly in accordance with CFR 294.13 (b)(1)(ii) which allows for management in roadless areas in order to maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period, along with prescribed fire, a non-prohibited activity. Prescribed fire treatments would restore

ecosystem composition and structure by reducing existing fuel loading, stimulating vegetation that is adapted to periodic burning, and creating patches of natural regeneration. Treatments would re-establish fire to mimic natural disturbance on the landscape and maintain/enhance ecological communities that have been in decline. No road construction or reconstruction is proposed in the inventoried roadless areas or elsewhere in the project area.

The proposed action would help create a mosaic of vegetation and fuel structure to be more resistant and resilient to wildfire. Any units within the roadless areas would focus on maintaining or restoring the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes, or to reduce high severity fire in wildland-urban interface areas. In both the Silviculture Report and Fire, Fuels, and Air Quality Report, the total acres within the inventoried roadless areas and roadless expanses are used to place into context the vegetation conditions and magnitude of proposed treatments.

Scenery

Treatments will be designed to meet visual quality objectives for the project area.

Economics

Treatments will be implemented based on the availability of funding. Area closures would be minimized to the extent allowed under the project design features and implementation checklists.

The responsible official has considerable discretion in determining the appropriate level and type of social and economic analysis required for the project decision. The Forest Service Manual (FSM 1970.6) provides non-binding guidance as to the scope of social and economic analysis required in project decision-making: “The responsible line officer determines the scope, appropriate level, and complexity of economic and social analysis needed.” When the agency determines that economic or social and natural or physical environmental effects are interrelated, the environmental impact statement shall discuss and give appropriate consideration to these effects on the human environment (40 CFR 1502.16(b); 40 CFR 1508.14). Note that social or economic effects alone cannot trigger ‘significance’ determinations and the preparation of an environmental impact statement (40 CFR 1502.16(b); 40 CFR 1508.14).

Fisheries

Comment Summary: Comments regarding fisheries resources were mostly related to habitat conditions, both baseline and effects of the proposed action. The specialist report, and supporting documentation, address the bulk of concerns. The bull trout consultation process with the U.S. Fish and Wildlife Service is expected to provide further rationale and confirmation of assumptions, analysis estimates, and effects determinations.

A few comments related to logging and road building were outside the scope of the project.

Comments related to best management practices are addressed in the Water Resources section of this document.

Wildlife

Wildlife Management

Comment Summary: Three comments were received on the project that relate to wildlife resources present in the project area and potential effects resulting from the proposed management activities. These comments also discussed concerns with reliance on project design features to minimize potential project-related impacts to federally listed terrestrial wildlife species.

The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report discusses the effects of the project to several wildlife habitats. Species associated with those habitats are listed in appendix B of the report as well as in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the effects of the project to species of conservation concern, listed, and proposed wildlife species.

Project design features have been developed to assure project conformance with the forest plan and to minimize potential adverse impacts to wildlife species and habitats from the project. These project design features are an integral part of the proposed action and will be applied as stated in appendix B of the environmental assessment. Under design feature WL-9, if a listed or proposed species is discovered within or adjacent to the project area, project activities will cease until it is recommended how best to proceed by the appropriate wildlife biologist.

Wildlife Habitat

Comment Summary: Twenty-three comments were received on the project that relate to wildlife habitat and cover present in the project area and potential effects resulting from the proposed management activities. These comments focused on unauthorized public use of project roads, habitat security and hiding cover for wildlife, snag densities, federally listed wildlife species, designated critical habitat, and connectivity habitat.

The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report discusses the effects of the project to several wildlife habitats. Species associated with those habitats are listed in appendix B of the report as well as in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the effects of the project to species of conservation concern, federally listed wildlife species, and designated critical habitat for lynx. Connectivity habitat for grizzly bear, Canada lynx, and North American wolverine is addressed on pages 19, 26, 57, 60, 69-71, and 81.

The Forestwide Prescribed Fire Forest Vegetation Report discloses snag densities for the project area. Also see the Forest Plan EIS, section 3.9 and appendix H, for information on snags in the project area.

The potential effects of the Forestwide Prescribed Fire Project to habitat security and cover for wildlife are described in the Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report, Forestwide Prescribed Fire Terrestrial Species At Risk Report, and Forestwide Prescribed Fire Elk Report in applicable sections. The potential effects to wildlife from reductions in cover will be minimized by the application of several project design criteria (see appendix B – Project Design Features; VEGNF-2, VEGNF-4, WL-1, WL-4, Wl-5, WL-17, WL-NCDE PCA – 1, and WL-NCDE PCA – 3).

Travel management is not a component of the Forestwide Prescribed Fire Project. The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report, Forestwide Prescribed Fire Terrestrial Species At Risk Report, and Forestwide Prescribed Fire Elk Report disclose the potential effects of the project to

wildlife from the use of closed roads for implementation. Relative to secure (core) habitat for grizzly bears, temporary project implementation within the recovery zone is not expected to exceed 5 years (PCA-NCDE-GDL-01), and PCA-NCDE-STD-02 requires that administrative use on roads with public restrictions does not exceed either six trips (three round trips) per week or one thirty-day unlimited use period during the non-denning season. The reports have been updated to include additional information regarding the potential effects to wildlife from unauthorized public motorized use of closed roads that are currently vegetated and would be "re-opened" (for instance, brushed or masticated) during implementation for administrative project use.

Project design features have been developed to minimize potential adverse impacts to wildlife species and habitat security from project use of closed roads (see appendix B; RT-1, RT-3, RT-4, RT-5). For example, under design feature WL-NCDE PCA-1, measures to reduce the risk of disturbance to grizzly bear populations within the Northern Continental Divide Ecosystem primary conservation area will be site-specific and identified prior to implementation. Measures may include restricting activities in spring habitat during the spring, providing areas with low levels of human activity adjacent to areas with high levels of disturbance, limiting the duration of the activity, or limiting the use of closed roads.

The environmental assessment outlines considerations for prioritizing areas for implementation within the project area and by geographic area group. Prior to implementation, district rangers and biologists will coordinate with regional Montana Department of Fish Wildlife and Parks staff to incorporate local information where possible (see resource checklist).

Elk Habitat

Comment Summary: Seven comments were received on the project that relate to big game (elk and mule deer) populations and habitat present in the project area and potential effects resulting from the proposed management activities. These comments also discussed concerns with the analysis methods and resource indicators used to assess potential impacts to big game from the project, including the inclusion of private and state ownerships in the analysis; the lack of forest plan standards and guidelines for big game habitat; the definition of hiding cover; and the potential displacement of elk to private lands during the hunting season. One commenter requested information on the current elk population status per hunting district, and how these compare to Montana Fish Wildlife and Parks objectives.

The Forestwide Prescribed Fire Elk Report discloses the effects of the project to elk and elk habitat. The report addresses effects to spring, summer, and winter cover; habitat effectiveness; and habitat security. The methodology and information used to calculate each resource element/indicator (above) is described in the report. The analysis utilizes the recommendations in the U.S. Forest Service and Montana Department of Fish Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests (U.S. Department of Agriculture and Montana Fish Wildlife and Parks 2013). The Forestwide Prescribed Fire Elk Report states that the "analysis serves as a proxy for assessing the availability of habitat for some other big game species, such as white-tailed deer and mule deer that have broadly similar requirements and importance to the public" (p. 4).

The elk analysis unit is the scale at which effects to elk are analyzed. The "U.S. Forest Service and Montana Department of Fish Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests" encourages consideration of conditions on all ownerships in the analysis unit when designing and analyzing projects (p. 8). As noted therein, the proportion of Federal lands in each elk analysis unit varies greatly, and in many areas, National Forest System lands are interspersed with large areas of private land. Habitat

effectiveness and elk security are based, in large part, on motorized route densities open to the public and thus require consideration of roads on all ownerships. The potential effects of the project to elk security on National Forest System lands are provided for each elk analysis unit and geographic area in the Forestwide Prescribed Fire Elk Report (see elk security acres and preferred elk security acres eligible for treatment, tables 15 and 16, pp. 31-35).

Travel management is not a component of the Forestwide Prescribed Fire Project. That is, while this project is bound by past travel management decisions, this project does not alter any travel management decisions. The Forestwide Prescribed Fire Elk Report discloses the potential effects of the project from the use of closed roads for implementation. As stated in the report, "habitat effectiveness […] would remain unchanged in the long term (after implementation is complete) since these roads would remain closed to the public" (p. 31).

There are no standards for big game thermal cover and hiding cover in the forest plan. The primary assumption underlying the forest plan is that effects to vegetation systems and characteristics in the plan area (the coarse filter approach defined in the 2012 Planning Rule) provide the basis for understanding most of the potential effects to wildlife diversity. The Federal Register (volume 77, number 68, p. 21212) states that "[t]he premise behind the coarse-filter approach is that native species evolved and adapted within the limits established by natural landforms, vegetation, and disturbance patterns prior to extensive human alteration. […] These ecological conditions should be sufficient to sustain viable populations of native plant and animal species considered to be common or secure within the planning area. These coarse-filter requirements are also expected to support the persistence of any species currently considered imperiled or vulnerable across their ranges or within the planning area." As such, the Forestwide Prescribed Fire Elk Report relies on the effects to vegetation as described in the Prescribed Fire Vegetation Report because big game are common and secure within the project area. The conclusions in that report, and in the elk report, is that the project is consistent with all forest plan components for vegetation and wildlife habitat, which means that the needs of wildlife species dependent on these habitats are met.

As stated in the wildlife section of the potentially affected environment, "the viability of elk and the persistence of elk populations are not currently a concern in Montana or on the Helena-Lewis and Clark National Forest." The estimated elk population and trend by hunting district and geographic area are available in the Forest Plan Environmental Impact Statement (EIS) (pp. 419-420).

The Forestwide Prescribed Fire Elk Report has been updated to include information regarding the potential for displacement of elk to private lands.

At Risk Species - Threatened and Endangered Species and Species of Conservation Concern

Comment Summary: Fifteen comments were received on the project that relate to wildlife species of conservation concern and federally listed wildlife species and designated critical habitat that may be present in the project area. These comments focused on species considered in the wildlife reports, "take" of federally listed species, project consultation with the U.S. Fish and Wildlife Service, and consultation processes for species that may be listed as endangered or threatened during the life of the project.

In accordance with the Endangered Species Act and its implementation regulations, the Helena-Lewis and Clark National Forest is required to consult with the U.S. Fish and Wildlife Service regarding the determinations of effects of the project on species listed as threatened or endangered, and on designated critical habitat for those species when a determination of "may affect" has been made. A project

biological assessment has been prepared for grizzly bear, Canada lynx, lynx critical habitat, and North American wolverine that discusses the direct, indirect, and cumulative effects of the project to these listed species and critical habitat. The biological assessment has maps of habitat for federally listed species in the project by geographic area (see figures 3 – 30). The consultation process with the U.S. Fish and Wildlife Service is expected to provide further rationale, project requirements, and confirmation of the effects determinations.

As stated in the biological assessment (p. 2), "[a] revised assessment will be prepared if (1) new information reveals effects that may impact threatened or endangered species or their habitats in a manner or to an extent not considered in this assessment; (2) the proposed action is modified in a way that generates effects not considered in this assessment; or (3) a new species is listed, or habitat identified that may be affected by the proposed action."

Under the 2012 Planning Rule and the 2021 Helena-Lewis and Clark Forest Plan there are no longer management indicator species and sensitive species have been replaced with species of conservation concern. Wildlife species of conservation concern, flammulated owl and Lewis's woodpecker, are analyzed in the Forestwide Prescribed Fire Terrestrial Species At Risk Report. Northern goshawk is considered in the Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report.

Canada Lynx and Snowshoe Hare Habitat

Comment Summary: Twenty-two comments were received on the project that relate to Canada lynx and designated critical habitat present in the project area and potential effects resulting from the proposed management activities. These comments focused on evaluating effects to snowshoe hare populations, Canada lynx, and lynx critical habitat, including effects to lynx population viability, individual lynx analysis units, and linkage habitat. These comments also discussed concerns with clearcuts, activities in roadless areas, consistency with forest plan standards for precommercial thinning treatments, consistency with the Canada Lynx Conservation Assessment and Strategy, the lack of current best science and considerations for lynx winter habitat in the Northern Rockies Lynx Management Direction, inclusion of considerations for maintaining or moving towards desired conditions within occupied and critical lynx habitat as recommended in Holbrook et al. (2019), and reinitiation of consultation on the Northern Rockies Lynx Management Direction with the U.S. Fish and Wildlife Service.

The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the effects of the project to Canada lynx and lynx critical habitat. The report addresses effects to components of lynx habitat, including snowshoe hare habitat, lynx denning and other habitat; linkage habitat; and critical habitat. The potential effects of the project to lynx habitat are provided for each lynx analysis unit (see lynx habitat structural stage and primary constituent element acres eligible for treatment, tables 16-18 and 21-22, pp. 47-56 and 67-69). Lynx analysis units have not been removed in this project. Project effects to designated critical habitat are assessed separately. That analysis focuses on the primary constituent element of lynx critical habitat at the landscape scale, using the combined lynx analysis units as the analysis unit, consistent with the lynx critical habitat rule (U.S. Department of the Interior 2014). In accordance with the Endangered Species Act and its implementation regulations, the Helena-Lewis and Clark National Forest will consult with the U.S. Fish and Wildlife Service regarding the determinations of effects of the project to Canada lynx and designated critical habitat. The consultation process with the U.S. Fish and Wildlife Service is expected to provide further rationale, project requirements, and confirmation of the effects determinations for Canada lynx and lynx critical habitat.

Table 18 in the Forestwide Prescribed Fire Project Roadless Report discloses the wildlife resources present in the inventoried roadless areas and the potential effects of the project to roadless area

characteristics, which include the diversity of animal communities and habitat for wildlife species dependent on large undisturbed areas of land. Canada lynx and lynx critical habitat is considered in that report and in the Forestwide Prescribed Fire Terrestrial Species At Risk Report. The report does not assume that roadless areas will not be treated. Rather, the analysis discloses that roadless areas facilitate connectivity for lynx (see pp. 58, 60).

The analysis in the Forestwide Prescribed Fire Terrestrial Species At Risk Report is based on the current best science. As stated in the report, the analysis utilizes information from the Northern Rockies Lynx Management Direction (see the forest plan, appendix F) and the Canada Lynx Conservation Assessment and Strategy (Interagency Lynx Biology Team 2013). Since the development of the Northern Rockies Lynx Management Direction, new research related to lynx has become available. Additional studies considered in this analysis are summarized in the Forest Plan EIS (pp. 381-388) and described on page 37 of the wildlife report. Although these studies post-date the Northern Rockies Lynx Management Direction, the findings are consistent with the general approach taken by the Northern Rockies Lynx Management Direction, which emphasizes the importance of relationships between lynx, snowshoe hare, and spruce-fir habitats with dense young conifer growth. As noted above, project effects to designated critical habitat are assessed separately from that applied to the Northern Rockies Lynx Management Direction. Any consultation efforts that may be related to the Northern Rockies Lynx Management Direction are outside of the scope of this project.

See the Forestwide Prescribed Fire Project Terrestrial Species At Risk Report for discussion of Holbrook et al. 2019. The report states, “Holbrook and others (Holbrook et al. 2019) found that the abundance and arrangement of structural classes strongly influenced reproductive success for female lynx, but the probability of a female producing kittens was most associated with the connectivity of mature, multistoried forest (composed of mostly spruce fir)."

See the Forestwide Prescribed Fire Project Terrestrial Species At Risk Report and the forest plan consistency table in the project record. Project design features have been developed to assure project conformance with the forest plan and to minimize potential adverse impacts to Canada lynx and lynx habitat from the project. As described in the Forestwide Prescribed Fire Project Terrestrial Species At Risk Report, there would be no treatments in multistory hare habitat outside of the wildland-urban interface and any multistory habitat proposed for treatment in the wildland-urban interface would be treated under allowable exemptions in the forest plan (see U.S. Department of Agriculture 2020a, pp. 70-72). Where multistory, stand initiation, or early stand initiation habitat is present within treatment units in the wildland-urban interface, project design features require that treatments retain habitat to the extent practicable. At a minimum, treatments would be designed so outcomes lead to no more than 30 percent of the lynx analysis unit in an unsuitable foraging condition for Canada lynx.

Pre-commercial thinning and clearcuts are not a component of the Forestwide Prescribed Fire Project. Potential effects to stand initiation structural stage habitat from the project, including acres eligible for treatment, are disclosed in the Forestwide Prescribed Fire Terrestrial Species At Risk Report.

Grizzly Bear

Comment Summary: Twenty-five comments were received on the project that relate to grizzly bears that may be present in the project area and potential effects resulting from the proposed management activities. These comments focused on activities in roadless areas; motorized route management, including road building activities permitted under the revised forest plan; evaluating effects to grizzly bear from use of project roads; secure and core habitats; connectivity habitat; consistency with the Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem and the

Interagency Grizzly Bear Guidelines; reliance on the 1986 forest plan biological opinion for grizzly bear management; and compliance with the Endangered Species Act.

The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the direct, indirect, and cumulative effects of the project to grizzly bear. The report addresses effects to components of grizzly bear habitat, including secure and core habitats, forage and cover, and connectivity. The potential effects of the project to secure and core habitats on National Forest System lands are provided for each grizzly bear analysis unit and grizzly bear management subunit in the project (see habitat acres eligible for treatment, tables 11-12, pp. 24-25). In accordance with the Endangered Species Act and its implementation regulations, the Helena-Lewis and Clark National Forest will consult with the U.S. Fish and Wildlife Service regarding the determination of effects of the project to grizzly bear. The consultation process with the U.S. Fish and Wildlife Service is expected to provide further rationale, project requirements, and confirmation of the effects determination for grizzly bear.

1. Travel management is not a component of the Forestwide Prescribed Fire Project. The Forestwide Prescribed Fire Terrestrial Species At Risk Report discloses the potential effects of the project to grizzly bears from the use of closed roads for implementation. See the "Documentation for Development of Secure Habitat Analysis for Grizzly Bears Outside of the Northern Continental Divide Ecosystem Recovery Zone/Primary Conservation Area on the Helena-Lewis Clark National Forest" in the project record for background information. All roads are considered in the analysis.

The Forestwide Prescribed Fire Terrestrial Species At Risk Report notes the importance of the project area for connectivity between grizzly bear populations in the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem (pp. 15, 19-20). Within the primary conservation area and zone 1, the objective is to contribute to the recovery of the grizzly bear population in the Northern Continental Divide Ecosystem and provide opportunity for grizzly bears to move between the Northern Continental Divide Ecosystem and other ecosystems (pp. 16-17). In zone 2, the objective is to maintain existing resource management and recreational opportunities while maintaining the opportunity for grizzly bears to move between the Northern Continental Divide Ecosystem and other ecosystems. As stated in the report (p. 19), roads and developments are the primary causes of grizzly bear habitat fragmentation. The importance of inventoried roadless areas in providing connectivity habitat for grizzly bear is described on pages 19 and 26. The Forestwide Prescribed Fire Project Roadless Report likewise discloses the wildlife resources present in the inventoried roadless areas and the potential effects of the project to roadless area characteristics, which include the diversity of animal communities and habitat for wildlife species dependent on large undisturbed areas of land (table 18). Grizzly bear habitat is considered in that report.

The analysis in the Forestwide Prescribed Fire Terrestrial Species At Risk Report is based on the current best science. As stated in the report (pp. 8-9), the analysis utilizes information from the Interagency Grizzly Bear Committee (Interagency Grizzly Bear Committee 1986, 1998), "Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem" (Northern Continental Divide Ecosystem Subcommittee 2018, 2019), the "Grizzly Bear Management Plan for Western Montana" (Dood et al. 2006), and the Grizzly Bear Recovery Plan (U.S. Department of the Interior 1993). The "Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species, 2020 Forest Plan for the Helena-Lewis and Clark National Forest" and its supplements (U.S. Department of Agriculture 2020a, 2021b, 2024) have also been utilized – and in some cases directly excerpted – since that document provides a synthesis of the most recent research of effects of motorized access on grizzly bears. Also utilized is the "2021 Biological Assessment for Ongoing Travel Plans Helena-Lewis and Clark National Forest". The report has been updated to include information from Proctor et al. 2018b relating to habitat

security. Grizzly bear food sources are referenced on pages 8, 26, and 30 (also see Zager 1983). Ten percent canopy cover is the amount of tree cover that is required for a stand to be considered forested cover (for instance, not grassland or shrubland).

See the Forestwide Prescribed Fire Project Terrestrial Species At Risk Report and the forest plan consistency table in the project record. Project design features have been developed to assure project conformance with the forest plan and to minimize potential adverse impacts to grizzly bear from the project. The forest plan revision and consultation efforts related to the forest plan are outside of the scope of this project.

Wolverine

Comment Summary: Two comments were received on the project that relate to North American wolverine and potential effects resulting from the proposed management activities. These comments focused on evaluating effects to the availability of big game for wolverine foraging, as well as project effects to temperature and snow depths.

The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the effects of the project to North American wolverine. The report addresses effects to components of wolverine habitat, including effects to food availability (big game). The potential effects of the project to big game are discussed on pages 79-80 and in the Forestwide Prescribed Fire Elk Report. In accordance with the Endangered Species Act and its implementation regulations, the Helena-Lewis and Clark National Forest will consult with the U.S. Fish and Wildlife Service regarding the determinations of effects of the project to wolverine.

The Forest Plan environmental impact statement describes the vulnerability of forest vegetation in the project area due to a changing climate and more specifically, to an increased risk and frequency of insects and fire (pp. 173-178). Management strategies that maintain and protect forests and their resilience to disturbances and stressors can mitigate climate-induced changes and vulnerabilities to carbon dynamics. As stated in the Forestwide Prescribed Fire Terrestrial Species At Risk Report, “[k]ey characteristics of wolverine life history that are influenced by a changing climate include snow depth, which remains unaffected by the project” (p. 80).

Public Involvement through NEPA

Comment Summary: One comment was received expressing concern that wildlife habitats, including habitat for landbirds, that may be present in the project area(s) were not disclosed to the public.

The project area contains habitat for numerous species of wildlife, including landbirds. Wildlife habitat types include riparian habitats; grass and shrub habitats; dry and mixed conifer habitats; high elevation habitats; late successional forest, large trees, and old growth, and snags and coarse woody debris. These are discussed in the Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report. Species associated with those habitats are listed in appendix B of the report as well as in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. Table 1 in the Forestwide Prescribed Fire Birds of Conservation Concern Report shows the geographic location and habitat for each bird species of conservation concern in the project. The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the available habitat and effects of the project to species of conservation concern, listed, and proposed wildlife species, which include two bird species: Lewis’s woodpecker and flammulated owl. The Forestwide Prescribed Fire Wildlife Biological Assessment (see figures 3-30) has maps of habitat for federally listed wildlife species in the project by geographic area.

Old Growth Terminology and Impacted Species

Comment Summary: One commenter expressed concern with old growth associated wildlife species that may be present in the project area and potential effects resulting from the proposed management activities. The comments focused on the definition of old growth forest in the forest plan, the lack of information for acres of old growth forest in the project, and the list of old growth associated species considered in the wildlife reports.

The forest plan defines old growth stands as those that meet the definition in Green et al. 1992, as amended. As stated in the Forestwide Prescribed Fire Forest Vegetation Report on page 4, "The final environmental impact statement for the revised forest plan provides an assessment of old growth for the forest (see section 3.9 "Old Growth, Snags, and Coarse Woody Debris"). This assessment utilized "forest inventory analysis" […] plot data to estimate current old growth conditions. Figures 9-12 of the Forest Plan Environmental Impact Statement provides estimates for old growth forestwide, by geographic area, and by cover type." This project will improve the Helena-Lewis and Clark's ability to protect remaining old forest by increasing old forest resistance to wildfire (for instance, improving old forest's ability to survive wildfires).

The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report discusses the effects of the project to a variety of wildlife habitat groupings and associated species, including those associated with late successional forest, large trees, and old growth. Wildlife species associated with those habitats are listed in appendix B of the report as well as in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. See the Forestwide Prescribed Fire Forest Vegetation Report for additional project-specific information related to old growth.

Old Growth Juniper

Comment Summary: One commenter expressed concern with mature and old growth juniper-dependent wildlife species and potential effects resulting from the proposed management activities.

The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report discusses the effects of the project to a variety of wildlife habitat groupings and associated species, including those associated with grass and shrub habitats, which includes juniper. Late successional forest, large trees, and old growth habitats are also discussed. Wildlife species associated with those habitats are listed in appendix B of the report as well as in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. See the Forestwide Prescribed Fire Forest Vegetation Report for additional project-specific information relating to old growth and juniper.

The project would not remove any trees, including juniper, that are larger than 10 inches diameter. Although the project aims to restore meadows and grasslands that are being encroached by conifers, which may include juniper, it is unlikely that these trees would have reached "old" age. Additionally, design features would ensure that pockets of conifers would be maintained in grass and shrublands in the form of forested inclusions where needed to provide cover for wildlife. See the Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report (p. 14). Grass and shrub habitats in the project area are threatened by encroachment from conifers, including juniper, partly because of fire exclusion as well as drought. As stated in the Proposed Action section, Implementation Process, "[o]ne of the considerations for implementation is to minimize effects of prescribed fire on grasslands, shrublands, winter range, or areas with high erosion potential and where invasive annual grasses are present. The Forestwide Prescribed Fire Elk Report addresses effects of the project to big game winter range. The wildlife reports have been updated to include information relating to juniper.

Birds

Comment Summary: Fourteen comments were received on the project that relate to nesting birds that may be present in the project area and potential effects resulting from the proposed management activities. These comments focused on compliance with the Migratory Bird Treaty Act; time of year of prescribed fires; temperature increases caused by the project; conformance with forest plan requirements for snags; project effects to old growth and snag associated bird species, including woodpeckers and raptors; viability analyses; and the inclusion of pre-implementation raptor surveys and mitigation measures for discovered nests.

The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report discusses the effects of the project to several wildlife habitats and associated species, including birds protected by the Migratory Bird Treaty Act as well as those associated with snags and old growth. Woodpeckers and raptors are addressed in the analysis. Species are listed in appendix B of the report as well as in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the effects of the project to flammulated owl and Lewis's woodpecker.

Proposed treatments are not designed for specific removal of snags, and the project is consistent with forest plan components that provide retention guidelines for snags and coarse woody debris (see the Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report, p. 19, and the Forestwide Prescribed Fire Terrestrial Species At Risk Report, p. 87). The Forestwide Prescribed Fire Forest Vegetation Report discloses snag densities for the project area. See CR 62 for additional information related to habitat for old growth associated bird species.

Several project design features have been developed that will avoid or reduce the potential impacts of proposed activities to breeding birds (see appendix B – Project Design Features; WL-1, WL-2, WL-3, WL-6, WL-8, WL-12, WL-13, and WL-14). Proposed treatment units will be reviewed prior to project implementation by the Wildlife Biologist to determine survey needs. The review will take into consideration project activities such as prescribed fire timing and location impacts on breeding birds. Based on the species found and the potential impacts to the species, appropriate protection measures will be applied. In-depth information on protection measures for birds within the project area and the process for determining pre-implementation survey needs are in appendix B and appendix C.

1. The primary assumption underlying the forest plan is that effects to vegetation systems and characteristics in the plan area (i.e., the coarse filter approach defined in the 2012 Planning Rule) provide the basis for understanding most of the potential effects to wildlife diversity. The Federal Register (volume 77, number 68, p. 21212) states that "[t]he premise behind the coarse-filter approach is that native species evolved and adapted within the limits established by natural landforms, vegetation, and disturbance patterns prior to extensive human alteration. […] These ecological conditions should be sufficient to sustain viable populations of native plant and animal species considered to be common or secure within the planning area. These coarse-filter requirements are also expected to support the persistence of any species currently considered imperiled or vulnerable across their ranges or within the planning area." As such, the Forestwide Prescribed Terrestrial Wildlife Diversity Report relies on the effects to vegetation as described in the Prescribed Fire Vegetation Report. The conclusions in that report, and in the wildlife diversity report, is that the project is consistent with all forest plan components for vegetation and wildlife, which means that the needs of wildlife species dependent on these habitats are met.

As stated in the Other Laws, Regulation, and Policy section, "Executive Order 13186 directs Federal agencies to consider effects of Federal actions on landbird species of concern, integrate bird conservation

principles, measures, and practices into their activities, and to the extent practicable, avoid or minimize adverse impacts to migratory birds and bird habitats. […] The action complies with Executive Order 13186 because high priority migratory bird species and breeding habitats are analyzed. The action does not include purposeful or intentional take of migratory birds. This project would not adversely affect migratory bird populations but may result in an unintentional take of individuals during proposed activities."

While management activities could occur at any time of year, activities would most likely occur in the spring and fall. However, pre-implementation field work may refine plans, identify the applicable project design features, and/or result in a modification of the activity location or timing (see appendix C). For example, under WL-8, project treatments occurring during the peak breeding/nesting season from April 1 to July 1 would be implemented in a manner that avoids or minimizes impacts to nesting birds of conservation concern and Montana priority bird species to the extent practicable such as by consulting with a wildlife biologist if an active nest is found and avoiding any active migratory nests encountered during implementation with a 100-foot buffer until the young have fledged.

See the Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report (p. 13), which states that the effects of a changing climate to the habitats described in the report are more likely associated with changes in disturbance dynamics rather than increased temperatures.

Wildlife – Purpose and Need

Comment Summary: Seven comments were received that relate to the purpose and need of the project in relation to wildlife habitat. These comments also discussed concerns with effects to sage grouse and sagebrush habitat and the lack of evidence demonstrating the benefit of the project to wildlife resources.

The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report discusses the effects of the project to several wildlife habitats. Species associated with those habitats are listed in appendix B of the report as well as in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the effects of the project to species of conservation concern, listed, and proposed wildlife species.

The purpose of the project is to reduce the risk of uncharacteristically severe wildfire and influence how wildfire and other disturbances will shape the landscape and impact local communities. There is a need for wildfire resistant and resilient ecosystems that align with the Wildfire Crisis Strategy and meet the desired conditions of the forest plan (see Purpose and Need section). As stated in the Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report (p. 21), the project would result in more open forest conditions and reduced fuel loading and would thus improve the resistance and resilience of vegetation communities to natural disturbances such as insects and disease and wildfire. In general, project activities would be designed to promote less dense, more open-canopied forests, which would be intermixed with areas of dense cover. This mix of forest structure would result in a mosaic of habitats that would provide for a diversity of wildlife species.

Prescribed fire activities will not target sagebrush or bitterbrush stands and efforts will be taken to limit sagebrush and bitterbrush mortality (such as fuel breaks between adjacent treatments). Sagebrush and bitterbrush stands will be identified prior to implementation (see project design feature VEGNF-2 in appendix B). As stated in the Forest Plan EIS (p. 321), while portions of the eastern part of the Helena-Lewis and Clark National Forest adjoin identified general habitat for sage grouse, conservation focus is on private lands.

Wildlife Restoration in Roadless Areas

Comment Summary: Eight comments were received on the project that relate to wildlife resources present in inventoried roadless areas and potential effects resulting from the proposed management activities. One commenter expressed concern that the project does not comply with the 2001 Roadless Area Conservation Rule.

The Forestwide Prescribed Fire Terrestrial Wildlife Diversity Report discusses the effects of the project to several wildlife habitats, including those occurring within inventoried roadless areas. Species associated with those habitats are listed in appendix B of the report and in the Forestwide Prescribed Fire Birds of Conservation Concern Report in the project record. The Forestwide Prescribed Fire Terrestrial Species At Risk Report discusses the effects of the project to species of conservation concern, federally listed wildlife species, and designated critical habitat for lynx. The importance of inventoried roadless areas in providing connectivity habitat for grizzly bear, Canada lynx, and North American wolverine is described on pages 19, 26, 57, 60, 69-71, and 81.

Table 18 in the Forestwide Prescribed Fire Project Roadless Report discloses the wildlife resources present in the inventoried roadless areas and the potential effects of the project to roadless area characteristics, which include the diversity of animal communities and habitat for wildlife species dependent on large undisturbed areas of land. See the Recreation and Scenery section above for additional information on project compliance with the 2001 Roadless Area Conservation Rule.

Fire and Fuels

Concern summary: effects analysis, wildland-urban interface, risk management, natural fire process/natural range of variation/biomimicry, site specificity and prioritization, cross-boundary treatments, contracting/pile placement, acreage of treatments, maintenance clarification, smoke/air quality/public information, and smoke management/air quality.

Effects Analysis

Comment Summary: Seventeen of the comments received were related to effects analysis. The comments requested more clarity on current forest conditions, their departure from historical conditions and fire regimes, and what actions might be undertaken to achieve desired conditions. Additionally, there are concerns that this decision will be used to undertake commercial timber harvest; that there should be a requirement to include a prescribed fire component in every project; that the environmental assessment needs to provide better information about mixed and high severity fire regimes and how those vegetation types will be treated; the effectiveness of the project at limiting high/extreme fire behavior; and that tree regeneration needs to be provided for. Finally, comments request that VMAP be used rather than LANDFIRE, and that prescriptions are shared for desired percentage of exposed mineral soil, maximum desired size of openings created, and minimum crown cover retained.

The project silviculture report includes information from the 2021 Forest Plan about current and desired vegetation conditions across the forest. In addition, the introduction and purpose and need were revised to clarify how fuels conditions are departed from the natural range, the impacts of that departure on our forests, and the impacts on how wildfires would burn across the landscape. The effectiveness of prescribed fire across forest types and additional information from the literature describing why prescribed fire is effective have been added for clarity. Moreover, the purpose and need and proposed action in the environmental assessment have been revised to clarify how the project will approach mixed and high-severity fire regimes. The environmental assessment updates derived in part from literature provided by commentors. We also added information in the proposed action to help readers visualize how

treatments would be distributed across the landscape and how the acreage proposed compares to the historical fire regimes for the forest types distributed across the project area.

The proposed action was updated to include a description of the circumstances under which mechanical or hand treatment (e.g., thinning) would not be followed by prescribed fire. Additionally, we created Activity Cards (appendix D) that describe treatment type by objectives, conditions that would trigger use, related actions, methods, equipment used, timing and duration. We also created preliminary silvicultural prescriptions for forest type to help readers visualize the kind of work we would implement under this decision.

A commentor requested that VMAP be used rather than LANDFIRE due to Forest Plan use of VMAP. Both were used in the analysis for this project. The Silviculture Report used VMAP results to show desired vegetation conditions and departure by Geographic Area. The Fire and Fuels Report used LANDFIRE, but the environmental assessment was updated to show more information about Natural Range of Variability from the Forest Plan Volume 5, appendix I, which was estimated using the vegetation model SIMPPLLE (SIMulating Patterns and Processes at Landscape level scaLEs).

Prescriptions for each treatment area will vary depending on site conditions and objectives. Project design features (appendix B) will be followed; for example, Soil-8 provides guidelines for exposure of mineral soil. Objectives such as maximum desired size of openings created, and minimum crown cover retained will be defined in silviculture prescriptions and incorporated in project design and burn plans. Tree regeneration is monitored by the silviculture program, and both empirical evidence and modeling provide inputs to design projects to work toward desired conditions. Project design information will be available to the public annually as described in the Monitoring and Public Engagement section of the proposed action.

Wildland-urban Interface

Concern Summary: Eleven comments were received relating to fire and fuels in the wildland-urban interface. Most share their preference that the project focus on the wildland-urban interface. Other comments point to the principle that home hardening is key to better fire outcomes and suggest focusing within 100-200 feet of homes. Another urges the agency to direct its resources to supporting firewise education and reducing risk in the home-ignition zone.

As stated by the commentors, research indicates that a focus on the home ignition zone is key to reducing home loss. While this project will allow for maintenance treatments in wildland-urban interface areas to maintain the significant investments that have already been made in these areas, one of the new benefits of this project is the ability to focus on restoration outside of the wildland-urban interface where we will be able to use prescribed fire to restore natural fire regimes in order to reduce the severity of fire where appropriate (e.g., generally low severity fire in low-severity forest types).

Natural Fire Processes, Natural Range of Variability, and Biomimicry

Comment Summary: Twenty-three comments were received relating to natural fire processes, natural range of variation, and biomimicry. Some comments expressed concerns about how the project relates to future fire management, including restoring the role of naturally occurring fire. One suggests that if the purpose and need focuses on uncharacteristic fuel loading, prescribed fire projects should focus on fire regimes 1 and 2. A couple of comments would like better consideration of maximizing retention of soil moisture and cooler microclimates. Commentors are concerned that the project is assuming past states will continue and doesn't account for climate change in assessing project effectiveness. Another comment states that recent science questions whether current trends toward higher wildfire severities are

substantially departed from historic range of variation. Finally, there is concern that the project is overstating the effectiveness of actions and also doesn't account for wildfire triggered conversions to other forest types.

In response to comments, we have clarified the purpose and need to express the project's connection to future fire management. The environmental assessment has been updated to discuss how the project relates to uncharacteristic fuel loading and how and why it might be used in areas that have less significant and more subtle departure from historical fire return intervals. Additionally, the Fire and Fuels Report now includes information about the tradeoffs between and appropriate use of stand-opening treatments compared to retention of shade and the wind-reducing effect of denser stands.

The environmental assessment now has a section on the use of modeled natural range of variability relative to changing climate conditions, in addition to projected future climate conditions relative to project effectiveness. The literature provided by commentors was considered to clarify the extent to which higher wildfire severities are substantially departed from historic range of variation, and additional literature was added to show the increasing and more recent body of evidence that counters this claim. As stated in the response to comments on effects analysis, the environmental assessment has been updated to reflect the effectiveness of the project at limiting high/extreme fire behavior.

Site-specificity and Prioritization

Comment Summary: Fourteen comments asked for clarification on site specificity and prioritization. There is concern that it is not possible to evaluate whether the Forest Service is taking a "hard look" at how the project will avoid significant impacts, nor where projects might occur. Several propose specific clarifications: The agency ought to identify priority treatment areas with maps; identify known locations unlikely to be treated outside of Wilderness and Research Natural Areas; show heat maps of higher and lower likelihood for projects; and provide site-selection criteria in a decision tree. One asks that the reference to "northern portion of Divide Geographic Area" be more clearly defined. The EPA recommends switching to a programmatic NEPA document that commits to tiered, site-specific NEPA analyses that provide opportunities for public involvement and comment on individual projects.

In response to these and other concerns, we have created a more detailed description of when each potential management activity would occur (Activity Cards, appendix D), developed preliminary silvicultural prescriptions by forest type (appendix I), added more detailed information in the section on how we will prioritize work across the landscape (Proposed Action), added information on how much prescribed fire or other fuels reductions activities will be implemented by geographic area, and added a monitoring and engagement section to the proposed action. Every project area considered and treated will follow project design features (appendix B) and an Implementation Plan and Checklist (appendix C) to avoid significant impacts. We also clarified the area referred to as "northern portion of Divide Geographic Area." We have chosen not to identify priority treatment areas with maps because over the course of the project, those will change based on wildfires and other changed conditions on the ground. Instead, we have included three priority projects envisioned by district rangers and their staffs (appendix J) to help readers visualize the types of work we would like to implement under this project. We added additional details and literature to describe the critical importance of maintaining flexibility and describe why that is a key component of this project. Finally, we clarified in the environmental assessment that high severity fire regime activities are not a high priority. A programmatic environmental impact statement would not create the much-needed flexibility to meet the known changes that will occur in this frequent-disturbance landscape we are entrusted with managing. In fact, such a path would create even more process and planning and would require at least 72 years, presuming ideal timelines and no delays. Even then, important areas would not be addressed.

Cross-Boundary Treatments

Comment Summary: Four comments were received about cross-boundary treatments. The comments recommended that the national forest clarify how cross-boundary work will be incorporated and how fuel reduction or lack thereof on adjacent non-National Forest System lands will impact efficacy of the project. Montana Department of Natural Resources would appreciate if each year planned activities be shared with the public and partners so that they can help prioritize projects and assist with coordinating treatments on the national forest with work on neighboring state and private lands.

Cross boundary treatments are key to taking advantage of strategic locations for infrastructure protection and sometimes fire containment, particularly in wildland-urban interface areas. Dependence on non-Forest Service lands for project efficacy would vary depending on the geographic area in question, and the Forest Service would be more likely to invest in work where private lands management was needed for efficacy when a firm commitment and partnership is in place with neighboring landowners. The Helena-Lewis and Clark is committed to sharing planned projects at least annually and will share multi-year plans as they are developed, as described the monitoring and public engagement section of the proposed action.

Contracting and Pile Placement

Comment Summary: Nine comments were received related to contracting/pile placement. The comments expressed concern that piles placed near leave trees will kill them when they're burned.

Pile placement relative to leave trees is a specification that appears in work descriptions in contracts. It is then up to agency contracting personnel to ensure that the specification is adhered to. Conditions during pile burning, especially wind, can produce long flame lengths that kill leave trees. Burn plans have objectives that address acceptable leave tree mortality, and the fire and fuels choose burn windows to meet this and other objectives. Both contract specifications and burn plan objectives can be requested from the Helena-Lewis and Clark National Forest. We understand that some burn piles in the Helena area (some not on national forest land) have been too close to leave trees and have caused unwanted mortality. We will consider this in creating specifications for our contracts in the future.

Acreage of Treatments

Comment Summary: Twelve comments were received relating to the acreage of treatments. The comments ask for clarification on how many acres will be burned over the 20-year life of the project; if maintenance fits under the acreage limits; the size of individual potential projects; what proportion of treatment is anticipated within each fire regime; a recommendation that the Forest Service focus on the right acres versus a certain number of acres; the significance of the table showing acres burned from 2014-2023 and why other decades weren't also shown; and a request for better rationale of why the number of acres were chosen.

We envision that prescribed fire acreage will slowly increase over time and that in 20 years, roughly half of the prescribed fire acreage would be maintenance prescribed fire. We added an estimate to the environmental assessment of total acreage envisioned to be managed over the course of the project - 17 percent of the project area. Most of the prescribed fire would occur in forest types that are associated with low and mixed severity fire regimes. We agree with commenters that suggest it's important to focus on strategic acres rather than the number of acres, particularly as we will still be under the acreage that historically burned in this landscape. It will be crucial to strategically place our management to be most effective at protecting areas with critical values. The text accompanying the table that showed acreage burned over the last 10 years was incorrect and thus confusing and misleading. We've corrected the text

and better explained why we're referring to wildfire acres burned in this context. Finally, we increased our estimate of the number of acres on which we may use prescribed fire annually to account for potential growth based on new opportunities for implementation that aren't in place currently (e.g., increased capacity, partnerships) and to better account for a steady increase in maintenance burning as the project progresses over time. Our initial estimate of acreage in the draft environmental assessment was based purely on capacity and not on ecological need. It also didn't account for significant maintenance burning.

Maintenance and Purpose

Comment Summary: One comment asked for clarification about which management actions are authorized under maintenance and for what purpose. This comment asks what maintenance entails, and how the need for it will be determined. Additionally, the comment requests an analysis of the effects of repeatedly returning to a site and of keeping roads open to facilitate future maintenance.

The goal of maintenance activities is to maintain the investment we've made in reducing fuels in particular areas. Much of the Helena-Lewis and Clark's recent investment in fuels work has been in the Helena wildland-urban interface, and we would like to maintain the lower levels of fuels in these areas to continue to keep the potential for high severity fire lower. The least expensive management tool to meet this need is prescribed fire and ideally, no additional mechanical management activities would be needed. If we miss the window for prescribed fire (e.g., we wait 20 years instead of applying prescribed fire at 15 years), some additional mechanical fuels reduction could be needed to safely reintroduce fire to reduce surface fuels once again. One of the benefits of this project is the ability to create better long-term plans that include maintenance burning so we don't miss these windows. The monitoring component of this project, as described in the proposed action, will help ensure we are tracking the need for maintenance. Closed roads will not be kept open for potential future maintenance. All treatment methods will be options, but maintenance usually will require less intensive treatment, as described. A common purpose for maintenance treatments is to retain desired conditions or to address changing conditions before they require numerous entries to restore. For example, within a decade or two post-wildfire or prescribed fire, a maintenance prescribed fire alone might be proposed rather than significant pre-treatment thinning. This approach can increase the longevity of fuel reduction effectiveness to influence fire behavior and severity and maintain wildfire management options. We added clarification on maintenance to the environmental assessment.

Air Quality

Smoke, Air Quality, and Public Information

Comment Summary: Eleven comments related to smoke, air quality, and public information. Comments expressed concern about excessive smoke and a need for a better process for who the public can notify at all hours, and how to tell that their concerns are being considered/addressed. Commenters would like further information on prescribed fire operations and prescribed burn authorization in general. The EPA commented that air quality was another concern that leads them to recommend programmatic NEPA with site-specific analyses. They also suggest evaluation of potential air emissions and significant air impacts associated with conducting the planned burns (broadcast, pile burning, etc.), gasoline and diesel emissions from equipment used in the planned activities, emissions from idling equipment, and emissions from vehicles traveling on paved and unpaved roads, including re-entrained dust. The EPA comment also recommends including design features and best management practices in NEPA documents.

Air quality regulations are discussed in the Air Quality Report (Fire, Fuels, and Air Quality) and in the environmental assessment. We are required to comply with Montana Department of Environmental

Quality regulations, which meet or exceed the requirements of the Clean Air Act. The primary system for compliance is the Montana/Idaho Airshed Group Airshed Management System. Additionally, every prescribed fire is entered into Montana's county-by-county Burn Permit and Notification Service. This ensures that each county's dispatch has burn information and a contact number that can be shared with the public at all hours. Project design features are an essential component of the project and are included as recommended.

Montana Counties Burn Permit and Notification Service

Smoke Management and Air Quality

Comment Summary: Twenty-three comments were received about smoke management and air quality. The comments expressed concern about the prolonged period of the year during which air quality could be degraded by smoke; the need to minimize smoke in all phases of prescribed fires; a request to use alternatives to fire near communities; the placement of more quantitative air quality monitoring sensors to provide better air quality information to burn personnel and the public; effective termination capacity to shut down burns rapidly; and that air quality protection should be a project priority.

The environmental assessment and air quality report note that climate change could increase the likelihood of fires and the duration of fire season. Burn windows could extend due to warmer conditions. Nevertheless, we will still be required to comply with air quality regulations as described in the environmental assessment. As described in the environmental assessment, there is no match for prescribed fire in terms of its ability to reduce surface fuels and thus both slow the spread and severity of wildfire. Smoke from prescribed fires is less damaging to public health and more manageable (e.g., through wind direction) than wildfire smoke. The fire and smoke map on the AirNow website shows the location of air quality sensors; this information will be added to the Air Quality Report. Burn plans consider staffing and equipment to terminate burns due to poor smoke dispersion (and other factors). However, it is not possible to immediately stop smoke production. We will continue to pursue partnerships with local government agencies and organizations to mitigate impacts to communities from prescribed fire smoke.

Monitors: Fire and Smoke Map (airnow.gov)

Water Resources

Concern Summary: Three comments were received supporting the use of prescribed fire and associated activities within riparian areas to maintain or improve vegetation characteristics and the inherent ability to serve as natural fire breaks.

Ten comments were received on the project that relate to water resources and fisheries present in the project area and potential effects resulting from the proposed management activities (CR 46). The comments focused on inclusion of the Montana Department of Environmental Quality in project review; evaluating project effects on riparian, wetland, and aquatic ecosystems, water quality, and overall watershed condition; use of the FSWEPP model; evaluation of cumulative effects; and livestock grazing.

Fisheries and aquatic species, and potential effects resulting from the proposed project activities, are discussed in the Fisheries Report and Biological Evaluation and summarized in the environmental assessment (pp. 12-13, 24, and 43-46). Refer also to response to comments for Fisheries.

The Water Resources Report discloses the water resources present in the project area (pp. 12-24 and appendix A, map series 1 through 9). A summary of the water resources present in the project area is also included in the potentially affected environment section. The Water Resources Report also discusses

current and projected climate conditions, including discussion of hydrologic drivers such as severe thunderstorms and rain-on-snow or rain-on-snowmelt events (water resources report, pp. 11, 16-17).

Potential effects of the proposed action and the current management alternative on individual water resources as well as overall watershed condition and functions is discussed in the Water Resources Report on pages 24-31. The methodology, resource indicators, and modeling used in evaluation of potential project effects on water resources and watershed characteristics are described in the Water Resources Report (pp. 2-8) and the Water Resources Supplemental on FSWEPP[3] model inputs, scenarios, and results (65 pp.). A summary of the water resources effects analysis for both alternatives is also included in the environmental assessment (pp. 23-24 and 39-42).

Proposed project activities that overlap permitted livestock grazing areas will be coordinated between the Forest Service and grazing permittees to allow for rest following prescribed burning as summarized in the environmental assessment (p. 48 and appendix C – Implementation Plan and Checklist). Livestock grazing will be addressed pre-implementation through the implementation checklist process. The monitoring of vegetation conditions and prescribe rest from grazing depending upon post-project conditions would just be one of the tools used for best management practices. The range specialist would ensure applicable design elements and implementation checklist coordination would occur prior to implementation as part of the implementation plan and checklist.

The Montana Department of Natural Resources and Conservation and Department of Environmental Quality both have oversight related to water resources in the State of Montana. Both the Montana Department of Natural Resources and the Department of Environmental Quality were notified during the public scoping and comment periods for the project.

The Forest Service used FSWEPP modeling to evaluate the potential for the proposed project to increase runoff, erosion, and off-site sediment transport to water features. FSWEPP model assumptions, methodology, data inputs, management scenarios, and results are contained in the Water Resources Report. The EPA Region 8 office requested the water resources analysis consider project-related increased road use and opening of currently closed roads and that the modeling supplemental report be made available to the public to review. Analysis and discussion of project-related road use, as well as mechanical firelines, was added to the Water Resources Report. The FSWEPP modeling supplemental report was added to the supporting document package for public review as part of the final environmental assessment.

EPA expressed concerns related to the Forest Service Watershed Condition Framework classification ratings of “impaired” with respect to impaired water quality assessments by the Montana Department of Environmental Quality. Clarification statements were added to the revised Water Resources Report to avoid confusion between the Forest Service watershed condition classification ratings of “impaired” watershed function and regulatory listings of water quality impairment, assessed by the Montana Department of Environmental Quality under the Clean Water Act. The Montana Department of Environmental Quality identified sources of impairment to water quality were also added to table 12 in the revised Water Resources Report for additional clarification.

[3] The Watershed Erosion Prediction Project (WEPP) modeling tool is a physically-based soil erosion prediction technology, and has a number of customized interfaces developed for common applications, including roads, managed forests, forests following wildfire, and rangelands.

Two commentors requested more discussion on how the project would improve watershed health and cumulative watershed effects. The water resources report was updated to include a more robust discussion of cumulative watershed effects and crosswalk of how the proposed project will maintain or improve individual watershed indicators, as well as overall watershed function.

Best Management Practices

Concern Summary: Six comments were received that discussed concerns with reliance on best management practices to minimize sediment delivery from roads (in particular, temporary or newly constructed roads) to water features and associated impacts to water quality (CR 49). Four additional comments were received with concerns on the effectiveness of best management practices to protect water quality and aquatic species habitats and the Helena-Lewis and Clark National Forest record of compliance with State of Montana best management practices (CR 73). Lastly, two comments expressed concerns with best management practices designed to limit erosion and stream sediment for current weather conditions to be effective for anticipated changes in climate (CR 47).

Access to project areas will be via existing system roads and no new or temporary roads will be constructed under this decision. Open system roads would continue to receive maintenance and repairs as needed. Access to the project areas via existing system roads would include some level 1 closed system roads that may require some maintenance and reconstruction to allow equipment and vehicle access. This could include removing access barriers, brushing, and light blading which would be accomplished where needed following guidance in Forest Service best management practices Road-3 and Road-4, project design features, and Forest Plan direction. Level 1 closed roads accessed for project implementation would not be open to the public at any time. Closed level 1 roads that are opened for project implementation would be returned to a hydrologically stable state and closed to access following completion of management activities in accordance with Forest Service best management practice Road-6 (USDA Forest Service 2012). Refer also to the Transportation section for additional road-related comment responses.

Forest Service best management practices are used to control nonpoint source pollution to meet applicable state water quality standards and regulations, as well as Clean Water Act and Safe Drinking Water Act requirements. The Forest Service has a long history of working with States and other partners to carry out the Forest Service best management practice programs, including agreements with the U.S. Environmental Protection Agency (EPA) and many States to implement and monitor best management practices (USDA Forest Service 2012). Best management practices, along with project design features, Forest Plan standards and guidelines, and streamside management zone practices have all been included in the proposed project to minimize disturbance to soil and water resources.

The National Forest Service best management practices program is modeled after a successful 20-year-old regional program in the Forest Service Pacific Southwest Region (Region 5) (USDA Forest Service 2012). Best management practices “are considered the most effective means of preventing or reducing the amount of pollution by nonpoint sources to a level compatible with water quality goals” (Furniss et al. 2010). Best management practices can also be used in climate change adaptation strategies to conserve and promote more resilient soil and water resources in the future (Furniss et al. 2010). The proposed project includes recommended adaptation strategies listed in Furniss et al. (2010) for management of fire and fuels, while also incorporating strategies for promoting and maintaining watershed processes.

The most recent Montana best management practices monitoring, conducted in 2022, included thirteen Forest Service sites, two of which were located on the Helena-Lewis and Clark National Forest (Vessar 2022). The scores for application and effectiveness to protect soil and water resources on Federal lands

were rated high at 96 percent and 97 percent, respectively (Vessar 2022). Federal land management was the only ownership category that improved best management practice application and effectiveness ratings in all categories compared to the previous 2018 best management practice field review ratings (Vessar 2022). The monitoring report further notes that the 2022 ratings "are encouraging given the fact that many of the Federal roads were built long before the implementation of best management practices or even their development" (Vessar 2022).

A more robust discussion of Forest Service best management practices, their use in climate adaptation strategies, and compliance with Montana State best management practice monitoring was added to the Water Resources Report.

Prescribed Fire Effects and Climate Change

Concern Summary: Nine comments were received expressing specific climate change concerns related to potential prescribed fire effects on aridification; mercury release (particularly from abandoned mine sites); changes in the timing and availability of water in the soil, as well as runoff; and minimizing adverse impacts to soils and their ecosystem functions. A comment was also received from the EPA expressing concerns about anticipated climate changes, such as extended drought and increased frequency of severe storms, delaying vegetation recovery following project implementation and extending the potential timeframe of project-related erosion and sedimentation. The EPA provided a recent study looking at the impacts of warmer and drier climates on post-fire conifer recruitment for consideration. EPA also recommended the water resources effects analysis include discussion of climate change impacts on revegetation and rehabilitation of treated areas, constructed firelines, and re-opened roads. EPA further recommended that the environmental assessment include an evaluation of whether climate adaptation and resiliency measures are needed to address potential impacts of drought and higher temperatures on post-project site recovery.

The environmental assessment discusses current forest conditions and the need for treatment to increase ecosystem resiliency and reduce the risk of high-severity wildfires occurrence due to changes in climate (pp. 1, 5, 13-14). Consideration of potential effects resulting from a changing climate is discussed in detail throughout the specialist reports and summarized in the draft environmental assessment were pertinent. The changing climate is considered throughout the Environmental Impacts section of the environmental assessment for the no-action (Current Management) and proposed action alternatives (pp. 27-70). More detailed analysis and discussion of climate change for the proposed project is presented in the Forest Carbon Cycling report. Impacts to soil and water resources in consideration of a changing climate were considered for both project alternatives (refer to the soils report and water resources report for details).

Conservation measures have been included in the project design to minimize soil disturbance and maintain soil health and function; protect water resources; and maintain water quality, availability, and overall watershed ecosystem functions. These measures include project design features listed in the environmental assessment appendix B and Forest Plan standards and guidelines, Region 1 soil and water conservation practices, and Forest Service best management practices. These measures include requirements for timing and conduct of prescribed burning operations during optimal weather and soil moisture conditions to result in low-to-moderate soil burn severity in order to minimize impacts to soil and water resources. Refer to environmental assessment appendix B project design features WTR-1 through WTR-6, RMZ-1 through RMZ-7, and SOIL-1 through SOIL-8. Additionally, project design feature WTR-3 was specifically developed for treatments within EPA Superfund sites associated with historic mining areas to minimize ground disturbance, maintain ground cover and vegetative buffers near water features, and prevent off-site transport of any contaminated soils to water features.

The effects analysis in the water resources report was updated to provide clarification of vegetative recovery as it pertains to establishment of effective ground cover (litter, organic matter, grass and forb recovery) following disturbance and to avoid confusion with re-establishment of conifer trees. The EPA provided literature was reviewed and incorporated into the watershed effects analyses in the water resources report. The water resources report was also revised to clarify potential project effects, including more robust discussion of revegetation and rehabilitation of treated areas, constructed firelines, and re-opened roads, in light of anticipated climate changes.

Vegetation and Timber

Concern Summary: There were several concerns about the use of commercial timber operation from the proposed action and how small diameter trees would be utilized. Additional concerns were raised on the topic of mechanical vegetation treatment, which include invasives and noxious weeds, soil impacts, treatment in roadless area, use of prescribed fire only where mechanical treatments have occurred, and calling into question the effectiveness of thinning and fuel reduction on fire behavior. Some concerns were raised related to the lack of analysis of impacts to and from forest pests. Several comments were received related to old growth; including disclosing current mature and old growth, and inventories and methodologies. Additional commentors raised concerns related to habitat typing not being used in the analysis.

We clarified in the environmental assessment that commercial activity is not typical or akin to traditional Forest Service timber sales. No road building will occur through this project, which is associated with all of our traditional timber sales, and a 10-inch diameter limit is in place. Rather, commercial activity such as post and pole sales or commercial firewood sales would be allowed to help recapture some of the high cost of implementing fuels restoration work. The impact of our restoration work doesn't change based on the contracting mechanism we use to implement the work; it simply allows us to achieve more restoration because the cost is reduced. Additional concerns were raised due to mechanical vegetation treatments. Thinning by mechanical methods may be used prior to prescribed fire activities in order to reduce risk undesirable results (e.g., high levels of forest mortality) and to allow for fire to be safely and effectively introduced. Thinning would only be utilized for smaller diameter trees in order to remove fuel ladders and break up continuous fuel layers. Prescribed fire will be used as a stand-alone treatment where viable. Assessments would be made during the pre-treatment planning phase (see appendix C of environmental assessment) pertaining to the pre-burn treatment needs, such as thinning. The treatments of the proposed action are anticipated to reduce fuel loads and the risk of widespread tree mortality due to fire. However, the proposed treatments are not anticipated to eliminate the risk of wildfire within the treated areas. Ground-based mechanized equipment can damage the soil resource. However, activities within the project area are designed to minimize the risk of damage to the soil resource while meeting project objectives. The Helena Lewis and Clark National Forest has forest plan standards and guidelines that must be followed which help protect the soil resource and thus mycorrhizal networks. In part, soil standard 2 states that "land management activities shall not create detrimental soil conditions on more than 15 percent of an activity area". Design features and the forest plan will ensure that the risk of noxious weed introduction or spread shall be determined and appropriate mitigation measure shall be implemented. Activities within the project area shall be designed to minimize the risk of spreading invasive species and meet multiple use and ecological objectives (Helena Lewis and Clark National Forest Standards). In addition, guidelines in the Helena Lewis and Clark National Forest Plan include that during management activities integrated pest management tools should be used to prevent the spread of and/or decrease existing infestations of state of Montana listed noxious weeds and other priority invasive species.

Some commentors were concerned about the forest health issues and the analysis related bark beetle species. Information related to Douglas-fir beetle, mountain pine beetle, and Western spruce budworm were added to the vegetation specialist report.

Several concerns were raised regarding old growth. These include disclosure of current old growth, mature and old growth inventories and methodology, and conduction of an analysis on improving old growth resilience to wildfire. Estimated current old growth for the Helena-Lewis and Clark National Forest is 11percent forestwide, 8 percent for the warm-dry potential vegetation type, 14 percent for the cool moist potential vegetation type, and 15 percent for the cold potential vegetation type (figure 9 of the 2021 Helena-Lewis and Clark Land Management Plan Final Environmental Impact Statement, page 222). Individual treatment areas would be assessed for old growth during the implementation planning phase (see appendix C- Implementation Plan and Checklist of the environmental assessment). Methodology for assessing old growth would be in accordance with the 2021 revised forest plan. Old growth assessments would be conducted during the implementation planning period (see appendix C). All treatments would improve the resistance of old forest to high severity fire if old forest is present. With respect to juniper within the project area, prescribed fire may be used in order to reduce stocking in areas where juniper abundance is outside of desired conditions and to treat juniper encroachment of grasslands, shrublands, and forested area. Prescribed fire treatments in areas where juniper is present would typically occur in areas where natural fire regimes are considered to be frequent and/or juniper is occurring outside of the range of the desired conditions. A request was made for an analysis on how to make current old growth more resilient. While this was addressed by the forest plant revision final environmental impact statement (Volume 1, pages 219-246) in more detail, we did add critical information related to old forests and resistance to disturbances like wildfire in the introduction.

Some commentors raised concerns related to habitat typing not being used in the analysis. The Helena-Lewis and Clark National Forest utilizes broad potential vegetation categories to classify vegetation into large groups with similar characteristics. The use of these broad potential vegetation groups is fitting for an analysis at a large scale and for activities that have similar effects across a range of habitat types, such as this project. The Endangered Species Act does not require the use of habitat typing nor does the literature suggest such a use would be beneficial to determining potential effects.

Botany

Concern Summary: Four comments were received on the project that were in relation to protecting endangered, threatened and sensitive plant species. The comments were focused on protecting rare species from direct impacts from management actions. In particular, comments were received regarding spring and early summer prescribed burning impacts on rare plant resources.

Proposed treatment units within the project area will be reviewed for rare plant concerns prior to project implementation by the Helena-Lewis and Clark National Forest Botanist to determine survey needs. The review will take into consideration project activities such as prescribed fire timing and location and potential impacts on rare plants. Based on the species of rare plants found and the potential impacts on the rare plant, appropriate protection measures will be applied. In-depth information on protection measures for rare plant species within the project area and the process for determining pre-implementation survey needs are located in the Forestwide Prescribed Fire Project Botany Report.

Invasive Monitoring and Herbicide Application

Concern Summary: Twenty-seven comments were received on the project that relate to invasive plants and herbicide application. The comments range from requesting invasive plant locations and scale of

impact of invasive plants in the project area to post treatment concerns and concern about project activities increasing the amount and number of invasive plants within the project area.

The Helena Lewis and Clark National Forest Plan Standards for all proposed activities within the project states that the risk of noxious weed introduction or spread shall be determined and appropriate mitigation measure shall be implemented. Activities within the project area shall be designed to minimize the risk of spreading invasive species and meet multiple use and ecological objectives (Helena Lewis and Clark National Forest Plan Standards). In addition, guidelines in the Helena Lewis and Clark National Forest Plan include that during management activities integrated pest management tools should be used to prevent the spread of and/or decrease existing infestations of state of Montana listed noxious weeds and other priority invasive species. Strategies will be used within the project to minimize weed establishment and spread. Project proponents would segment the Forestwide Prescribed Fire project area into projects within geographic areas that align with implementation treatment priorities and timeframes; in turn, this would allow for realistic and strategic noxious weeds management within the noted priority geographic areas.

- Some weed inventories have been completed across the Helena-Lewis and Clark National Forest. Weed infestations would be inventoried prior to prescribed fire and mechanized implementation.
    - Inventory would be focused within mechanical fuels reduction areas, prescribed fire units, access routes to units, and areas of high traffic spread vectors and sources of infestation (for example, parking lots, trailheads, roadsides, staging areas, fire containment lines, and gravel pits).
    - Invasive inventory would capture such information as noxious weed type, location, acres infested.
        - Cheatgrass is listed as a species of concern rather than an invasive species on the State of Montana noxious weed list; however, inventory of cheatgrass would be included in this project's invasive inventory to gather and maintain current, real-time data for this landscape.
- Coordination of overall noxious weed treatment approach for treatment units will occur on forest. Forest staff will collectively with project proponents and other specialists as needed, review inventory data, coordinate timing of noxious weeds treatments to align with project implementation activities, and review and apply design features to address areas of resource concern.
- Monitoring would occur to measure effectiveness prior to starting treatment within the next geographic area.
    - Monitor would occur in and around disturbance areas within the project area for new invasive plant introductions once annually, during the growing season, for at least 3 years after implementation is completed.
    - Monitoring treated invasive plant populations will occur once annually for at least 3 years to determine efficacy of treatment and determine retreatment needs.

Greater in-depth information on the non-native invasive plant species present in the project area and how these plants will be inventoried, assessed, and monitored can be found in the Forestwide Prescribed Fire Project Noxious Weeds Project report. The Helena National Forest Noxious Weed Vegetation Treatment Final Environmental Impact Statement and Record of Decision (U.S. Department of Agriculture, Forest Service, 2006; U.S. Department of Agriculture, Forest Service, Helena National Forest, 2006), prescribed

specific guidance for noxious weed management on the Helena-Lewis and Clark National Forest and would be followed for all noxious weed management within the project area.

Whitebark Pine and Limber Pine

Concern Summary: Eight comments were received that discussed concerns with project activities on whitebark pine. Comments were focused on whitebark pine seedling and sapling recruitment and loss from silviculture treatment as well as loss from prescribed fire activities. Also included in the comments were concerns regarding faster growing whitebark pine and research linking faster growing whitebark pine to increased mountain pine beetle infestations.

The biological assessment for whitebark pine for the Helena-Lewis and Clark Forestwide Prescribed Fire project details the project design features that will be implemented in the project to reduce impacts to whitebark pine. Pre-implementation surveys may be needed in units proposed for treatment and will be determined by the Helena-Lewis and Clark National Forest silviculturist or forest botanist. Prescribed fire in habitat where whitebark pine is present will have specific design features (see the Biological Assessment for Whitebark Pine for the project) to protect known whitebark pine individuals from the impact of prescribed fire. Research has shown that greater tree ring width as a result of faster growth has been linked to tree vigor and possible greater resistance to mountain pine beetle in some species, but not necessarily for whitebark pine. Research by Six et. al (2021) showed that faster growth in whitebark pine was the strongest predictor of mortality due to mountain pine beetle which indicates that thinning treatments may be detrimental to whitebark pine. This research as well as other whitebark pine research referenced in the Biological Assessment for Whitebark Pine for the Helena-Lewis and Clark Forestwide Prescribed Fire project will be taken into consideration when assessing thinning treatments and prescribed fire treatment in whitebark pine occupied habitat.

Soils

Concern Summary: Primary concerns related to soils are about the amount of detrimental soil disturbance that currently exists, is expected to occur after ground disturbance activities occur, and the amount expected to remain after restoration activities occur. Also, that analytical data to support restoration activities should be disclosed.

Proposed treatment units will be reviewed for detrimental soil disturbance prior to project implementation. Please refer to the Implementation Plan and Checklist in appendix C of the environmental assessment. Soil standard FW-SOIL-STD-02 in the Helena-Lewis and Clark National Forest's forest plan states, in part, "in activity areas where less than 15 percent detrimental soil conditions exist from prior activities, the cumulative detrimental effect of the current activity following project implementation and restoration must not exceed 15 percent." To meet this standard, design features have been developed to ensure the soil resource is protected from ground-based disturbance and prescribed fire treatments while still meeting project objectives. In addition, best management practices would be followed. Units would be monitored, as needed, post implementation and any restoration activities would be recommended by the soil scientist to ensure units meet forest plan standards and guidelines.

The expected amount of detrimental soil disturbance in each treatment unit that will be developed would not exceed 15 percent per soil standard FW-SOIL-STD-02.

Please review the soil report and see references cited as to the rationale behind restoration activities that may be developed after project implementation.

Transportation

Concern Summary: Twelve comments were received with concerns about the construction, reconstruction, and decommissioning of existing and temporary roads used to access the project areas.

Access to project areas will be via existing system roads and no new or temporary roads will be constructed under this decision. Open system roads would continue to receive maintenance and repairs as needed. Access to the project areas via existing system roads would include some level 1 closed system roads that would require some maintenance and reconstruction to allow access. Access on level 1 closed roads would only be for project implementation and not be open to the public at any time. Closed level 1 roads that are opened for project implementation would be returned to a hydrologically stable state and closed to access at the completion of the project. Monitoring of unauthorized use of closed system roads would continue and the closure methods would be repaired or revised as needed. Although this decision does not propose any travel planning, implementation of the current travel plans would continue and removal of unauthorized roads from the landscape would not be affected by this decision.

Heritage

Badger-Two Medicine Concerns

Concern summary: Nine comments were received related to concerns with Tribal consultation and project activities occurring in the Badger Two Medicine. These comments were focused on the requirement of the Helena- Lewis and Clark National Forest to follow the 2021 Forest Plan and the plan components directly related to the Badger Two Medicine (FEIS 2021, Volume 2, p. 120-123). In addition, some comments reiterated the need for meaningful Tribal consultation in regard to projects occurring in the Badger Two Medicine. One comment pointed out that the current undertaking provided a perfect opportunity for the Forest Service to coordinate, hire, or contract with the Blackfeet Nation when implementing activities within the Badger Two Medicine. Finally, one comment identified potential project focus areas within the Badger Two Medicine where the current undertaking would be most beneficial.

As per the 2021 Forest Plan (FEIS 2021, Volume 2, p. 120-123), all components of the plan associated with the Badger-Two Medicine (RM-BTM-DC-01-03, RM-BTM-STD-01-02, and RM-BTM-SUIT-01) will be followed during the implementation of this undertaking. In addition, the primitive and semi-primitive non-motorized nature of the Badger-Two Medicine will remain the same. Furthermore, consultation with the Blackfeet Nation regarding project activities within the Badger-Two Medicine will continue throughout project implementation (see reply to Tribal and SHPO consultation below). The Forest gives thanks for the recommendations to treat areas affected by recent wildfires and for the recommendation to hire Blackfeet Tribal members or Blackfeet-owned or managed forestry crews to perform work within the Badger-Two Medicine area.

Tribal and SHPO Consultation Concerns

Concern Summary: Nine comments were received related to Tribal and SHPO consultation concerns. These comments focused on the perceived lack of SHPO and Tribal consultation for this project.

As described in the Heritage Report for the Helena-Lewis and Clark Forestwide Prescribed Fire Project, the national forest has implemented the 2021 National Programmatic Agreement for Phasing Section 106 of the National Historic Preservation Act (NHPA) for large-scale multi-year undertakings. Twelve Tribes, the Montana State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation, were all invited to be consulting parties in the development of the Heritage Implementation

Plan for the current undertaking. Idaho SHPO was not invited since none of the project area occurs in Idaho. Two Tribes, the Blackfeet Nation and Northern Cheyenne, responded that they wanted to be consulting parties in the Heritage Implementation Plan development. The Forest has completed a Heritage Implementation Plan which outlines how the national forest will continue meaningful consultation and meet Section 106 compliance—including any necessary cultural resources inventories—throughout this multi-year undertaking. The Heritage Implementation Plan will be signed by consulting parties and the agency official before the decision notice for this environmental assessment.

Appendix I – Preliminary Silvicultural Prescriptions

Silvicultural prescriptions are planning and implementation documents that describe management goals and objectives, current environmental conditions (vegetation type, density, structure, distribution; fuel loading; disturbances; etc.), desired short- and long-term conditions, and specific treatment activities necessary to achieve desired conditions. Design features and mitigation measures would further refine where and how activities are implemented. The silvicultural prescription would be incorporated into the burn plan.

Although silvicultural prescriptions are generally developed at the stand or unit level, prescriptions under the Forestwide Prescribed Fire Project would utilize a broader landscape approach that is guided by vegetation groupings. Objectives for the broader landscape would be achieved through implementation of a single treatment or sequence of treatments prescribed for each site-specific vegetation group or subgroup.

The following is general information about desired conditions, treatment objectives, and potential treatment activities that may occur in the predominant broad potential vegetation types (BPVT) represented on the national forest. Actual prescriptions to be implemented under this environmental assessment would be based on project-specific objectives, site-specific data, applicable design features, and implementation limitations.

Warm/Dry Broad Potential Vegetation Type

Ponderosa pine forest and savanna, dry Douglas-fir, and limber pine habitat types

Desired Conditions

- Emphasize fire adapted species – quaking aspen, ponderosa pine, and limber pine
- Retain large and very large trees – primarily ponderosa pine and Douglas-fir
- Maintain savannas and non-forested conditions
- Maintain complex landscape and stand structure reflective of high frequency, low intensity disturbance regime

Treatment Objectives

- Use prescribed fire alone (without mechanical fuels reduction) where prescribed fire can achieve objectives without unwanted impacts to forests (e.g., high mortality levels)
- Create diverse landscape with variable tree size classes and densities and small openings
- Increase crown spacing (limited ability on this objective given 10” diameter at breast height limit)
- Remove ladder fuels and understory tree density
- Reduce meadow encroachment
- Re-introduce periodic, low intensity fire
- Stimulate production of understory grass, forb, and shrub species

Potential Treatment Types to Achieve Objectives

- Hand thin – slash, lop, and scatter or hand pile and pile burn cut material

- Mechanical thin – mastication or chipping
- Low to mixed severity prescribed fire

Cool Moist Broad Potential Vegetation Type

Lodgepole pine, moist Douglas-fir, subalpine fir, spruce, and western larch habitat types

Desired Conditions

- Resilient forest consisting of a diversity of species and age/size classes appropriate for each forest type
- Low frequency, high severity fire
- Reduce density from high to medium/low where appropriate; Dense, multi-storied forest structure are desired for some vegetation types
- Forest patches tend to be fairly large

Treatment Objectives

- Use prescribed fire alone (without mechanical fuels reduction) where prescribed fire can achieve objectives without unwanted impacts to forests (e.g., high mortality levels)
- Increase landscape heterogeneity with patch sizes appropriate for the forest type
- Reduce understory density
- Maintain or create multiple age/size classes
- Maintain single-storied, even-aged lodgepole pine stands

Potential Treatment Types to Achieve Objectives

- Hand thin – slash, lop, and scatter or hand pile and pile burn cut material
- Mechanical thin – mastication or chipping
- Mixed to high severity prescribed fire

Cold Broad Potential Vegetation Type

Lodgepole pine, subalpine fir, Engelmann spruce, and whitebark pine habitat types.

Desired Conditions

- Improve forest resilience by emphasizing the presence and persistence of whitebark pine
- Decrease subalpine fir and Engelmann spruce presence other than on north and east aspects, swales, moist basins, and riparian areas
- Increase the presence of large tree size class
- Reduce density from high to medium/low.
- Patch size reflects a natural, mixed severity fire regime

Treatment Objectives

- Use prescribed fire alone (without mechanical fuels reduction) where prescribed fire can achieve objectives without unwanted impacts to forests (e.g., high mortality levels)

- Maintain and promote whitebark pine across its natural range
- Reduce the quantity of subalpine fir and Engelmann spruce
- Support persistence of alpine meadows
- Support natural landscape patterns that are resistant to unnaturally large and severe wildfires.

Potential Treatment Types to Achieve Objectives

- Hand thin – slash, lop, and scatter or hand pile and pile burn cut material
- Remove conifer encroachment from meadows
- Prune, especially in whitebark pine
- Machine thin and pile
- Mixed severity prescribed fire; low severity in healthy whitebark pine stands

Riparian/Wetland Broad Potential Vegetation Type

Black and narrowleaf cottonwood, quaking aspen, various shrub species, Engelmann spruce and subalpine fir on wet sites, and Douglas-fir and Rocky Mountain juniper on drier sites

Desired Conditions

- Maintain deciduous tree species and associated riparian shrubs
- Manage vegetation within riparian management zones to provide for wildlife habitat use and connectivity while maintaining, restoring, or enhancing these riparian areas.

Treatment Objectives

- Use prescribed fire alone (without mechanical fuels reduction) where prescribed fire can achieve objectives without unwanted impacts to forests (e.g., high mortality levels)
- Promote deciduous tree species and regenerate aspen
- Reduce conifer encroachment
- Promote riparian plant communities

Potential Treatment Types to Achieve Objectives

- Hand thin and remove competing conifers – slash, lop, and scatter cut material
- Machine thin, where appropriate
- Pile slash for use as a livestock barrier
- Low to mixed severity prescribed fire

Non-Forested

Composed of xeric grassland, mesic grassland, xeric shrubland/woodland, mesic shrubland, and alpine broad potential vegetation types

Desired Conditions

- Reduce conifer and juniper encroachment

- Retain mountain mahogany and big mountain sagebrush

Treatment Objectives

- Reduce conifer encroachment
- Stimulate production of desired grasses, forbs, and shrubs

Potential Treatment Types to Achieve Objectives

- Hand thin and remove conifer encroachment – slash, lop, and scatter cut material
- High frequency, low to moderate intensity, mixed severity prescribed fire with a mosaic pattern
- Low frequency, high severity fire in alpine vegetation types

Appendix J: Example Projects

Introduction

The environmental assessment describes the effects of proposed activities discussed in the Helena-Lewis and Clark National Forest Forestwide Prescribed Fire Project area. This appendix describes three example projects that were envisioned by district rangers and their staff to serve as pilots to test and improve our implementation checklist and ensure we weren't neglecting key components for this project (figure 22). We include them here to give interested groups and individuals a better sense of the kinds of activities we intend to implement through this project.

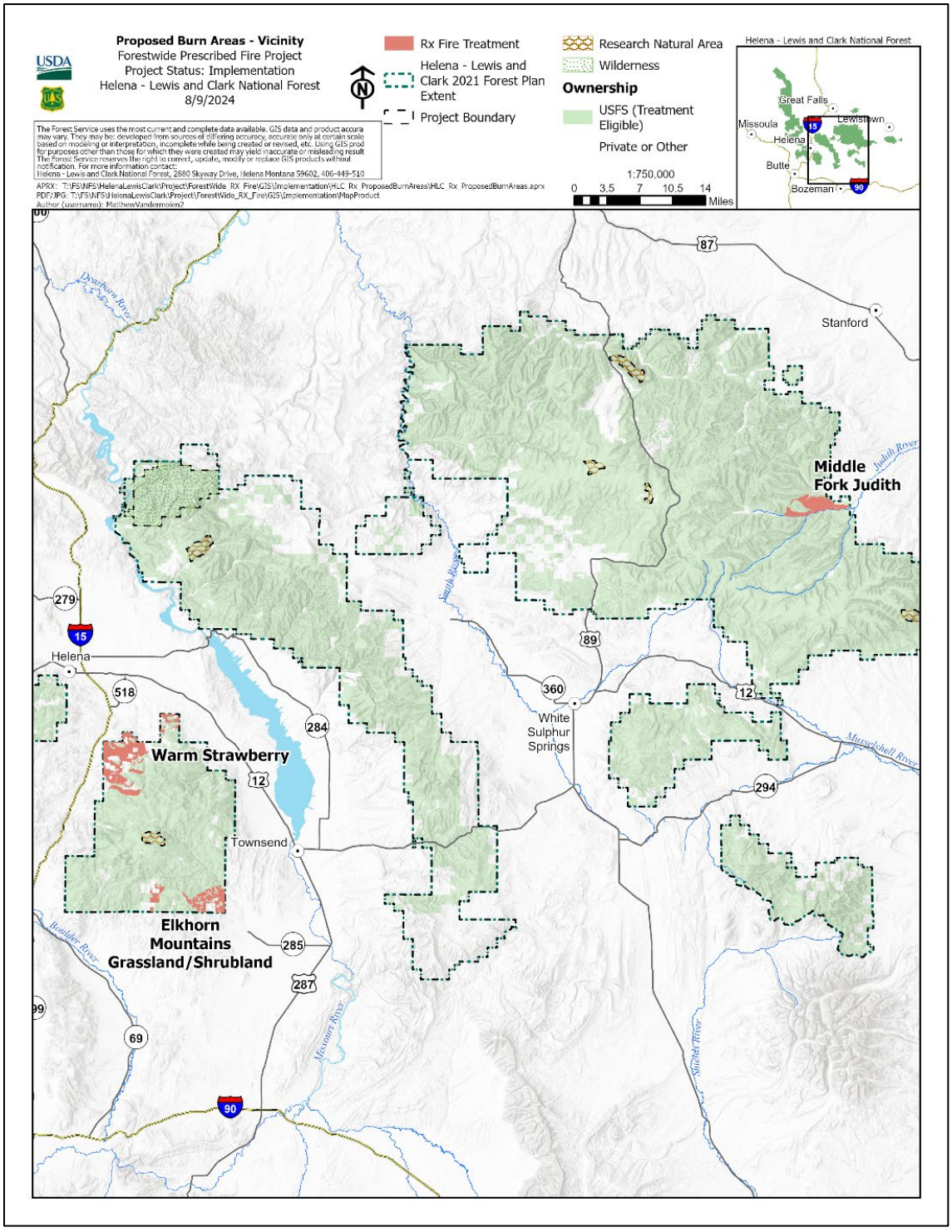

Figure 22. Vicinity map

Project 1: Elkhorns Grassland/Shrubland Prescribed Fire, Townsend Ranger District

The Townsend Ranger District envisions using the Helena-Lewis and Clark National Forest Forestwide Prescribed Fire Project Environmental Assessment decision to treat approximately 33,452 acres of the

grassland/shrubland habitat type in the Elkhorn Mountain Range over the course of 20 years. Treatments would benefit both the Townsend and Helena Ranger Districts and potentially the Beaverhead-Deerlodge National Forest. Prescribed fire would restore historical conditions and resistance and resilience to wildfire as well as reduce wildfire risk in wildland-urban interface areas, a municipal watershed, and high risk firesheds.

In the first year of implementation, the ranger district envisions treating approximately 4,800 acres of this area (figure 23). Activities would include mechanical treatment (ground based or hand-slashing with chainsaw) to remove colonizing conifers in open meadows and create a fuel bed for prescribed fire operations. After mechanical treatments are completed, prescribed fire, specifically broadcast burning, would be implemented to remove surface and activity fuels. Where possible, prescribed fire will be used as a stand-alone treatment to remove colonizing conifers and reduce surface fuels. Overall, treatments would result in a 70 to 90 percent reduction of colonizing conifers within grassland/shrubland habitat types and maintain critical landscape heterogeneity that reduces fire spread and severity, maintaining more live forest over the long term while improving wildlife habitat and hunting opportunities.

While prescribed fire operations would not decrease the chance of any wildfire occurring, they will provide breaks between forest stands which will help to limit the spread and size of a high-intensity wildfire. This would result in more and safer options for managing wildfires in the area and would move the landscape towards the goals and objectives for the Elkhorn Wildlife Management Area as described in the Forest Plan.

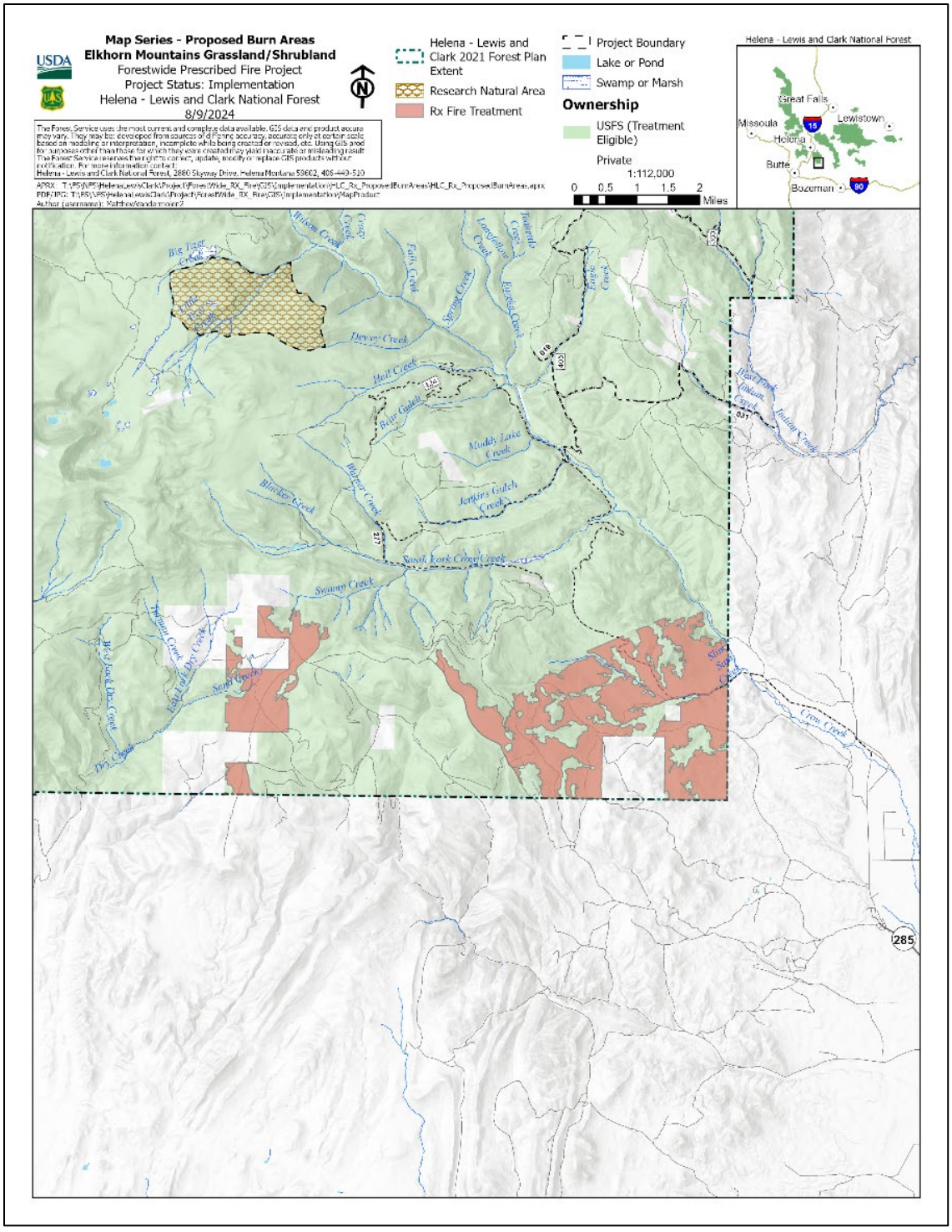

Figure 23. Envisioned initial management area, Elkhorn Mountains grassland/shrublands

Project 2: Middle Fork Judith Prescribed Fire, Judith-Musselshell Ranger District

This envisioned project area is within the Middle Fork Wilderness Study Area. The Middle Fork Prescribed Fire (MFPF) project is located in the Woodchopper Ridge area southwest of Sapphire Village. The envisioned burn areas are located in T13N, R11E, Sections (or portions of) 27-33 (figure 24). The project envisions prescribed burning and slashing of small diameter non-commercial trees. Treatment area 1 (1,022 acres) is mainly an open ponderosa pine forest type with some slopes greater than 50 percent and is also adjacent to a primary evacuation route for local residents. Treatment Area 2 (3,129 acres) includes the Arch Coulee trail and trail 6531, which are primary evacuation routes for homeowners in the Middle Fork. Vegetation is primarily ponderosa pine and grasslands with significant conifer encroachment.

The purpose of this prescribed burning would be to return fire to a fire-dependent ecosystem. Project implementation would help reduce the severity of future wildfires. Ancillary benefits include maintaining big game winter range and improving overall forest health. A carefully planned program of underburning can reduce fine fuels and ladder fuels, thereby reducing the risk of future wildfire damage to forests and communities. Burning can also increase big game forage quality by regenerating shrubs and grasses and improve forest health by decreasing the threat of disease and insect damage.

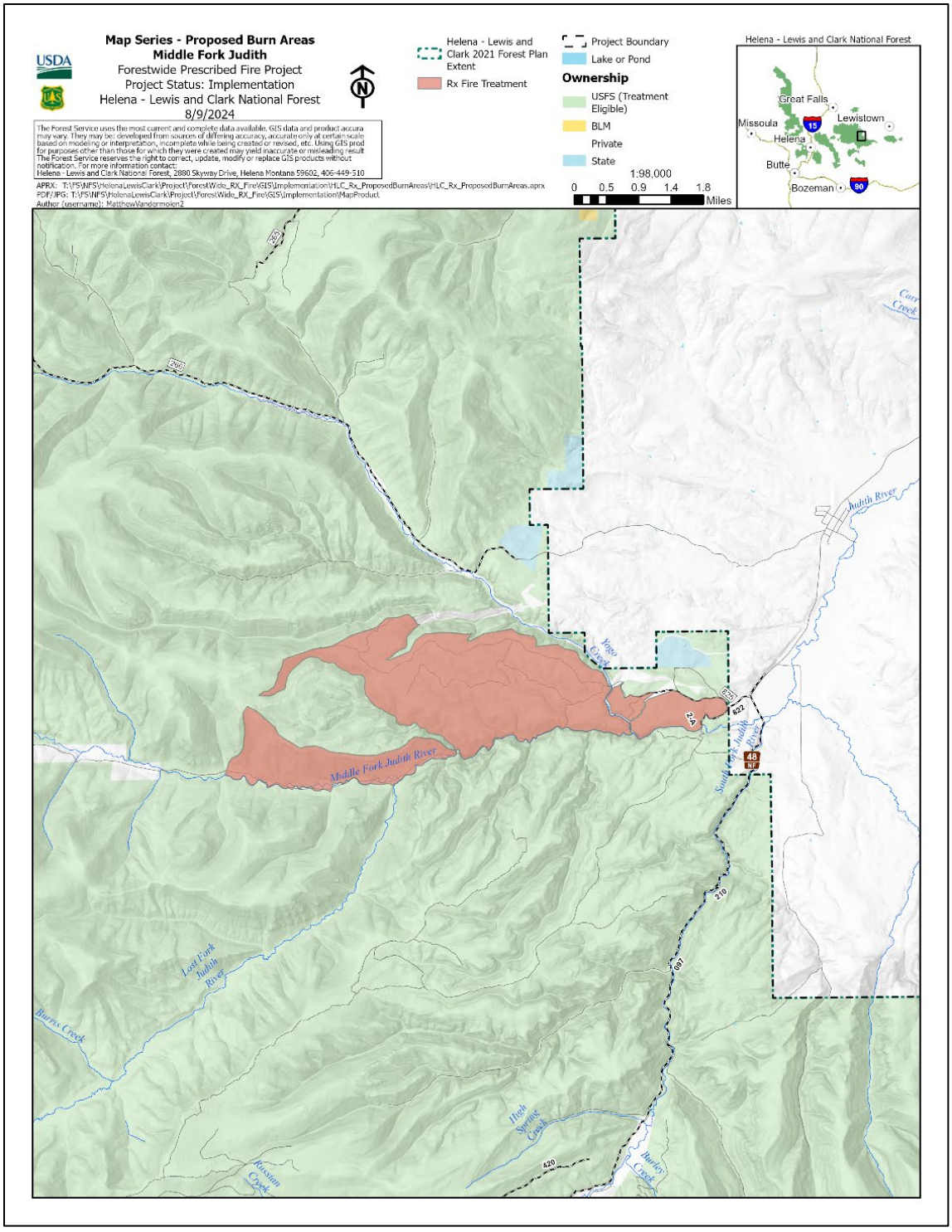

Figure 24. Envisioned Middle Fork Judith management areas

Project 3: Warm Strawberry, Helena Ranger District

This envisioned management areas fall within the High Risk Firesheds of Boulder, Montana City and Helena as defined by the Wildfire Crisis Strategy (figure 25). They also fall entirely within the wildland-urban interface, as defined by the Healthy Forest Restoration Act (HFRA). There are multiple private land inholdings throughout the area, and the north and west boundaries of the project area have the communities of Clancy and Montana City directly adjacent. There is a small portion of Inventoried Roadless Area (IRA) located in the southeast corner, but the 2 units located within the IRA are also directly adjacent to private lands with structures. This area also falls within the municipal watershed of East Helena (McClellan Creek). There are 537 acres of mechanical rearrangement of fuels envisioned. The remainder of the treatments would be a combination of rearrangement of fuels by hand and prescribed fire without rearrangement of fuels.

This area of the Elkhorns is largely ponderosa pine and dry site Douglas-fir that historically had frequent fire return intervals (2-15 years). A portion of the project area includes the 1988 Warm Springs Fire and is characterized by thick, young lodgepole pine (greater than 10,000 stems/acre) creating the potential for a very intense wildfire.

Objectives for this project would be to treat around private boundaries, reducing heavy fuel loadings from pine beetle activity of the past decade through mechanical or hand treatments, and prescribed burning. Ancillary benefits include restoration of some historical openings for the benefit of wildlife and enhancement of forage, which would also help reduce the severity of future wildfires.

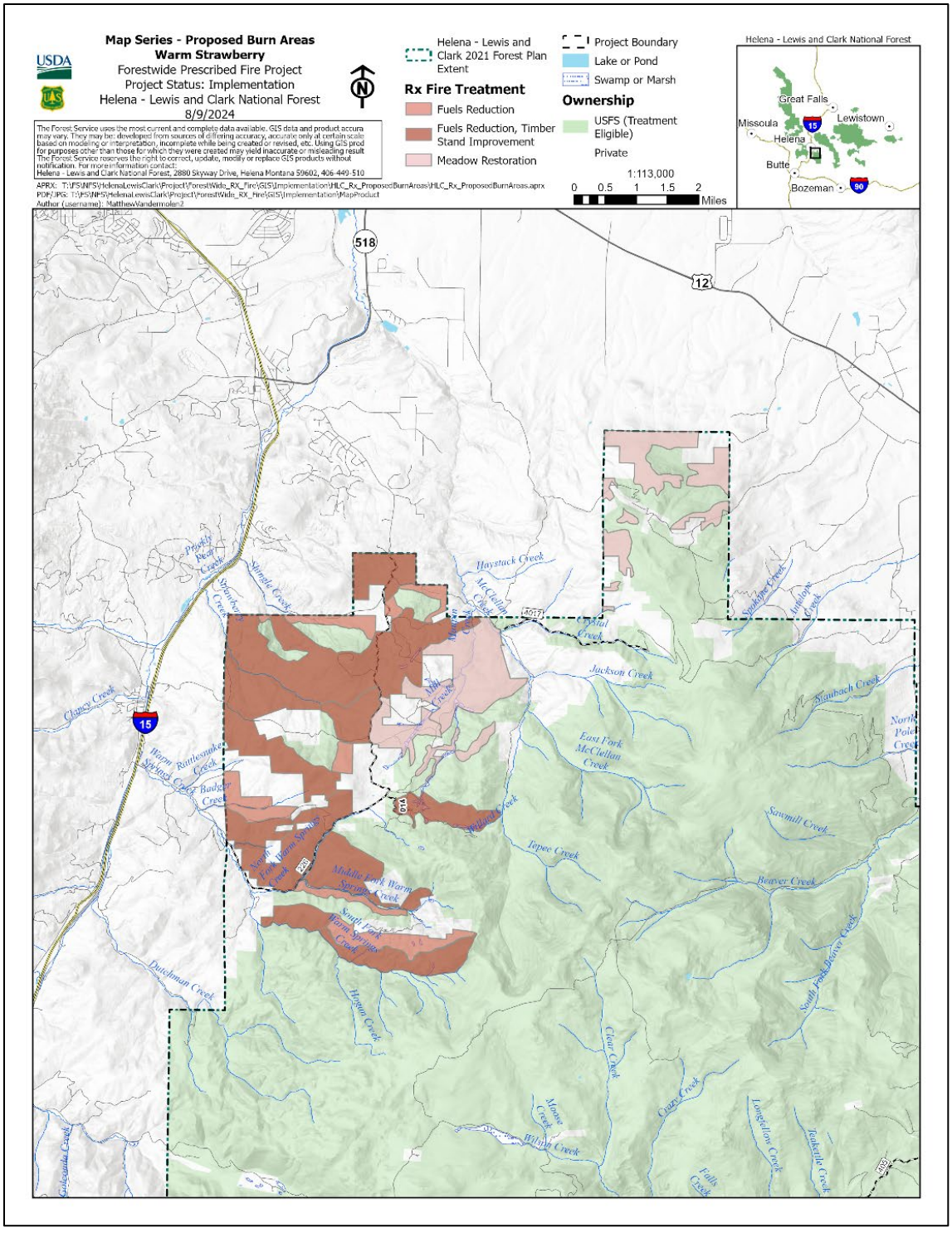

Figure 25. Warm Strawberry Project Area

Draft Decision Notice and Draft Finding of No Significant Impact for the Helena-Lewis and Clark Forestwide Prescribed Fire Project

USDA Forest Service
Lincoln, Helena, Townsend, Judith-Musselshell, Rocky Mountain, and Belt Creek-White Sulphur Springs ranger districts
Helena-Lewis and Clark National Forest
Broadwater, Lewis and Clark, Meagher, Gallatin, Cascade, Wheatland, Sweet Grass, Park, Jefferson, Powell, Chouteau, Judith Basin, Glacier, Teton, Ponderosa, Fergus, and Golden Valley counties, Montana

Introduction

The Helena-Lewis and Clark National Forest is proposing a forestwide approach to reducing wildfire impacts by applying prescribed fire, mechanical treatments, and hand treatments. This approach would increase our ability to maintain live forest over the long-term, better protect communities, increase safety during wildfire management operations, and reduce the cost to taxpayers of managing wildfires. Prescribed fire and other strategic fuels reduction work are important actions the Forest Service can take to effectively meet the wildfire crisis across this landscape (Agee and Skinner 2005, Martinson and Omi 2013, Hessburg et al. 2019, Hood et al. 2021, Prichard et al. 2021).

The 2.9-million-acre Helena-Lewis and Clark National Forest is a frequent-disturbance landscape, meaning wildfires and mortality from insects, disease, and other disturbances are common. These disturbances are expected to increase in frequency and severity into the future due to longer fire seasons and multiple forest stressors such as drought and insect attacks (Vose et al. 2012). Forest density and tree species composition has shifted in many dry forests (Arno et al. 1995, Naficy et al. 2010, Hood et al. 2021), forest patterns have been homogenized (more contiguous forest areas, loss of age class diversity or structural diversity) in forests with a more mixed severity fire regime (Heyerdahl et al. 2006, Naficy et al. 20, Hood et al. 2021), and climate conditions are changing (Rocca et al. 2014, Parks and Abatzoglou 2020). For example, fire frequency has increased by about 500 percent since the 1970s and burned area has increased by 1700 percent in the in the Rockies (Hood et al. 2021, Westerling 2016). Current conditions make forests susceptible to high levels of mortality and make it challenging to support persistence of important habitats. Current conditions also pose a heightened risk to communities in and around central Montana.

The Helena-Lewis and Clark National Forest currently implements between about 8,000 and 15,000 acres of mechanical, hand and prescribed fire fuel treatments each year. Over the last ten years, the national forest has experienced an average of roughly 24,000 acres a year of wildfire. Inclusive of wildfire, we currently don’t meet half of what burned historically. Needless to say, this doesn’t allow us to address the extreme fire deficit or account for longer fire seasons, increased drought conditions, and larger and more severe wildfires. This depicts a problem common across forests in western North America; the current pace and scale of fuel reduction management activities, and particularly prescribed fire, do not match the scale of the challenge (Kolden 2019, Parks and Abatzoglou 2020, Prichard et al. 2021). This matters because of how it sets the landscape up for wildfires today and how that affects the trajectory of forests moving forward over time.

Recent public and congressional support for aggressive action to address large wildfires and their impacts led to the Forest Service's 10-year wildfire crisis strategy and a call to dramatically increase the amount of work we do to reduce the impacts of large-scale, high-severity wildfire on our landscapes and in our communities (USDA 2022).

Purpose and Need

There is a need for wildfire resistant and resilient ecosystems that align with the Wildfire Crisis Strategy and meet the desired conditions of the Helena-Lewis and Clark 2021 Land Management Plan (Forest Plan). This project aims to reduce the impacts of severe wildfire and improve forest resilience in the Helena-Lewis and Clark National Forest through prescribed fire and mechanical/hand fuel reduction treatments. The approach prioritizes flexibility by allowing treatments to be based on real-time ecological conditions, ensuring timely and effective wildfire mitigation. The purpose of this project is to reduce the impacts from severe wildfire and influence how wildfire and other disturbances will shape the landscape and impact local communities for example by enabling the Helena-Lewis and Clark to maintain more live forest over the long-term, better protect communities, increase safety during wildfire management operations, and reduce the cost to taxpayers of managing wildfires. This project will also reduce the need for intensive fuels treatments within the next couple decades by moving an estimated 17 percent of the national forest into a maintenance mode that would allow fire managers to strategically utilize prescribed fire or wildfire to manage forest vegetation (assuming roughly half of the 40,000 acre Proposed Action are maintenance prescribed fire).

A key aspect of this project is shifting away from rigid, site-specific planning that takes decades to implement and instead embracing a landscape-scale, adaptive approach. By decoupling fuel reduction work from commercial timber sales, managers can prioritize areas based on ecological and social risk, rather than economic timber value. The project will enable managers to adapt to quickly changing ecological conditions and address the known need for prescribed fire to reduce the severity and impacts of wildfire across a wide range of forest types and conditions.

The Helena-Lewis and Clark National Forest is now and was historically shaped by frequent disturbances (Hood et al. 2021, USDA Forest Service 2021). As noted in the introduction, the forest had an average of about 78,000 acres burn at low or mixed severity every year and would have experienced an average of over 20,000 acres of high severity fire every year. For much of the last century, wildfire area burned has diminished compared to historical conditions (Marlon et al. 2012, Hood et al. 2021). Effective fire suppression has led to the unintentional and dramatic landscape changes described in the introduction.

Given longer fire seasons, higher likelihood of drought conditions, and higher likelihood of hot weather conditions, wildfires are expected to become more frequent than they were in the past (Westerling 2006, Littell et al. 2009, Marlon et al. 2012, Parks and Abatzoglou 2020). Because of the increased number of homes in the wildland-urban interface (Noonan-Wright and Seielstad 2022), these wildfires also carry a much greater risk to the safety of local residents and their homes and businesses.

Prescribed fire has been shown to increase heterogeneity in fuels to modify fire behavior and decrease fire severity (Arkle et al. 2012, Safford et al. 2012, Stephens et al. 2014, Tubbesing et. al. 2019.) Mechanical and burning treatments combined are typically the most effective at both changing forest structure (e.g., reducing both density and ladder fuels that support high severity fires) and composition (promoting more fire-tolerant species) and reducing surface fuels that carry fire across the landscape and directly impact how quickly a fire burns (Fule et al. 2012, Martinson and Omi 2013, Hood et al. 2024). Fuel reduction treatments can greatly increase resistance to insect attacks and maintain lower wildfire hazard (Hood et al.

2024). Safford et al. (2012) share their view that quantitative assessments of fuel treatment effects on fire severity in frequent-fire forest types "hardly merit further effort" because the benefits are so obvious and well-known in terms of their ability to reduce the severity of wildfire (for instance, reduce the amount of mortality caused by wildfires) and reduce the speed with which wildfires burn across the landscape (Safford et al. 2012, Hood et al. 2024, Stephens et al. 2014). Safford et al. (2012) further conclude that fuel treatments that incorporate explicit removal of surface fuels can be expected to significantly reduce fire severity and canopy tree mortality, even under relatively extreme weather conditions.

The response of forests to fire derives from its resistance (ability to survive a fire) and its ability to recover after fire, or its resilience (Hood et al. 2021). Generally, a resistant and resilient landscape consists of a diversity of age classes, species composition, and successional stages so not all areas are susceptible to the same disturbances (USDA FS 2021). Particularly in light of changing climate conditions (such as increase in fire frequency of 500 percent and an increase in burned area of 1700 percent), managing toward natural range of variability or the center of the natural range of variability is a high-risk strategy. Instead, managing for a wide range of conditions across the landscape that better mimic the high diversity of the area's natural fire regimes (Hood et al. 2021) may be more effective at supporting forests' resistance and resilience to disturbances.

When fueled by extreme disturbance or climatic events, apparent landscape stability can shift abruptly, changing the distribution of age classes, species, or structures (Hessburg et al. 2020). Broad-scale and abrupt landscape changes can be difficult for plants, animals, and human communities to withstand (Liu et al. 2007, Spies et al. 2014). Managers need to plan for this uncertainty and be ready to adapt as natural systems change by developing practical, adaptive approaches (Folke et al. 1996, Shafritz et al. 2005, Millar et al. 2007, Wellstead et al. 2013, Angeler and Allen 2016). This project increases the adaptability of management policy to changing conditions in the dynamic landscapes within the analysis area.

The scientific literature repeatedly demonstrates the failure of rigid management policies in dynamic systems (Holling 1973, Stephens et al. 2013, Chaffin et al. 2014). Inflexible plans and administrative or operational constraints will likely fail over time (Herrfahrdt-Pahle and Pahl-Wostl 2012, Gaines et al. 2022). The need for flexibility to adapt to changing conditions is clear, particularly in light of anticipated changes in climate (Shafritz et al. 2005, Millar et al. 2007, Wellstead et al. 2013, Angeler and Allen 2016).

Not surprisingly then, the Forest Service has frequently been in a position of spending 2 to 3 years on environmental analysis for a site-specific prescribed burning project only to have a wildland fire come through and burn part or all of the project area prior to National Environmental Policy Act analysis completion or project implementation, including several recent projects: Cabin Gulch, Boulder Baldy and Middleman. The approach for this project allows for proposed treatments to be aligned with the conditions on the ground at the time of implementation. For prescribed burning, this is particularly necessary since site-specific conditions that allow for safe burning can be quite dynamic. This provides the ability to place burn units in the right place at the right time. In addition, landscape-level planning allows managers to choose among several areas for implementation, providing opportunities for smoke dispersion and flexibility between the planning and the implementation stages. Also critical is that this project enables fuels work to be divorced from planning and implementing the forest's commercial timber sale program. Sometimes commercial timber and fuels priorities overlap, and sometimes they don't. This project allows managers to more easily implement fuels work in areas where there is little to no commercial timber value but other important values at risk, such as people's homes, or unique and hard-to-replace habitats such as old growth forests. There is significant and pressing ecological and social need for more prescribed fire on the landscape, as described above, and our traditional planning approach does not come close to meeting this very real, very pressing need. With our traditional approach, it would take

us at least 70 years (with ideal timelines and no delays) to plan across this project landscape, and even at 70 years, many important areas would be missed. That is just for planning. For implementation, additional years would be required. Ecologically and socially, we don't have the luxury of that kind of time before impacts from wildfires are realized, such as setting our forests on trajectories that can't be changed in our lifetimes, or lost homes, or more tragically, more lost lives.

While this project is focused on reducing the social and ecological impacts of severe wildfire (e.g., many thousands of acres of contiguous forest mortality, hazardous levels of smoke in communities, dangerous firefighting conditions, high taxpayer costs of fighting fires), it will also have ancillary benefits. One such benefit is the increased ability of the forest to use wildfire to achieve these same management objectives. Another ancillary benefit is that the project would improve forest resistance to insects, disease, and drought (fewer trees would die from various disturbances) as tree growth and vigor increases from reduced resource competition.

Decision and Reasons for the Decision

Based upon my review of all alternatives, I have decided to implement the Proposed Action, authorizing prescribed burning, hand treatments, and mechanical treatments of up to 40,000 acres annually across the project area (approximately 2,295,000 acres).

The interdisciplinary team considered varying conditions and silvicultural prescriptions by vegetation type and developed project sideboards in the EA appendix D: Activity Cards and appendix I: Preliminary Silvicultural Prescriptions, respectively. Details on prescribed burning, non-mechanical hazardous fuels reduction, mechanical hazardous fuels reduction, thinning of trees <10" diameter-at-breast height, including commercial timber commercial deck sales, and personal use firewood removal are presented in the Activity Cards (appendix D of the EA). The desired conditions, treatment objectives, and potential treatment activities that may occur by vegetation type are presented in the Preliminary Silvicultural Prescriptions (appendix I of the EA).

When compared to the no action alternative, this alternative will better meet the purpose and need of the project, including reducing uncharacteristic wildfire, by combining the best land management tools to accomplish the desired condition of the Forest Plan and meet agency priorities around the Wildfire Crisis Strategy (FS-1187a). This project complies with all applicable law, regulation, and policy as required during analysis and review but also complies with all current law. The project uses the former NEPA regulations rather than the new NEPA regulations, as provided for in the new regulations.

The Proposed Action was developed throughout the course of the project to account for changes to best available scientific information, updated GIS data, concerns brought up by the public and interdisciplinary team, and requests from U.S. Fish and Wildlife Service during Endangered Species Act consultation, modifying the Proposed Action Alternative and creating additional mitigation measures to alleviate issues raised. The Proposed Action was finalized by the Responsible Official on January 17, 2025.

Other Alternatives Considered

In addition to the selected alternative, I considered the no action ("Current Management") alternative. A comparison of these alternatives is found throughout the environmental impacts described in each specialist report and succinctly summarized in their respective sections of the EA.

No Action "Current Management"

Under the no action ("Current Management") alternative, current management plans would continue to guide management of the project area. The need to reduce uncharacteristic wildfires and help alleviate wildfire concerns in local communities and businesses would occur over the next 70+ years. Current fire management on the forest, even when combined with wildfire acreages, does not meet even half of the acreage historically burned on the Helena-Lewis and Clark National Forest. This creates additional excess fuels each year and alone elevates wildfire risk into the future, but especially when considered along with cumulative effects such as more extreme weather events combined with a drier climate.

Public Involvement and Scoping

The Helena-Lewis and Clark National Forest released the project purpose and need and proposed action for a 30-day scoping period from April 7, 2023, to May 8, 2023. The Helena-Lewis and Clark National Forest received 25 comments from state and local agencies, recreational advocacy groups, environmental organizations, and individuals.

The Helena-Lewis and Clark National Forest released the draft environmental assessment for a 30-day comment period from February 8, 2024 to March 10, 2024. The Helena-Lewis and Clark National Forest received 34 comments from State and local agencies, Tribal governments, non-profit groups, and individuals. Appendix H of the environmental assessment contains a summary of the Helena-Lewis and Clark National Forest response to these public comments. The primary concerns included the scope of the project and site-specific analysis disclosing effects to recreation, fish and wildlife, ESA species, and vegetation including invasive species management. Comments specific to fire and fuels included concerns about efficacy of prescribed fire to meet desired conditions, fire risk management, site prioritization including a request to focus on WUI, air quality, and smoke management.

Tribal consultation was initiated on March 1, 2023 with formal invitations sent to twelve tribes to be a heritage implementation plan consulting party. This project includes a phased national programmatic agreement requiring the development of a Heritage Implementation Plan through consultation with invited stakeholders including the Advisory Council on Historic Properties, Montana State Historic Preservation Office, and Tribal Historic Preservation Office. The Heritage Implementation Plan for this project was signed on December 5, 2024.

Finding of No Significant Impact

Fire and Fuels

Issues identified

To compare effects between no action/current management and the proposed action, we used the following indicators:

- Landscape pattern of forest/non-forest: this indicator was selected because of its critical role in reducing the adverse effects of rapidly spreading high intensity and high severity wildfires (see Potentially Affected Environment, Introduction, and Purpose and Need).
- Risk to the safety and health of the public and firefighters, and damage or loss to infrastructure from wildfire: this indicator was selected mainly to assess the risk to the public, firefighters, homes, and communities from wildfires.

- Adaptability: this indicator assesses the ability of managers to adapt to changing conditions through time (See Introduction and Purpose and Need).

Fuels reduction treatments in the proposed action change the amount, configuration, and spacing of live and dead vegetation with the purpose of creating conditions that result in more manageable fire intensity and reduced severity from wildfires. Prescribed fires are fires intentionally ignited under a range of pre-determined weather and fuel moisture conditions to meet specific resource management objectives. Fuel reduction treatments that include fire have been shown to be more effective at reducing fire intensity than mechanical treatment alone (Stephens et al. 2009, Kalies and Kent 2016). Fire behavior and subsequent effects are most dependent on changes in surface fuels (Fule et al. 2012, Graham et al. 2012, Safford et al. 2012, Martinson and Omi 2013). One effective way of reducing surface fuels and fire severity is through prescribed fire. Prescribed fire reduces flammability and quantity of fuels thereby reducing intensity and speed of wildfire (Stephens et al. 2014). In addition to managing surface fuels, reducing ladder fuels (shrubs, small trees) and raising the crown base height of standing trees reduces the probability that a low severity surface fire will become a high severity crown fire (Graham et al. 2012). Mechanical and burning treatments combined are typically the most effective at both changing forest structure and composition and reducing surface fuels (Fule et al. 2012, Martinson and Omi 2013, Hood et al 2024) and are also the most durable (Graham et al. 2012). Although extreme fire behavior including strong winds and column-driven fire spread can overwhelm individual treatments, there is strong scientific evidence that even under extreme weather conditions, fuel reduction treatments are effective at moderating fire intensity and severity across a range of forest types and wildfire events (Prichard et al. 2021).

Up to approximately 40,000 acres a year could be managed for hazardous fuels reduction under the proposed action. While this is only roughly half of the 78,000 acres that historically burned every year at low or mixed severity, it would provide the forest with greatly enhanced flexibility to strategically reduce risk of wildfire and increase the resistance of forests to wildfires and other disturbances (i.e. help forests survive wildfires and droughts, etc.) (Millar et al. 2007, Halosky et al. 2018, Hood et al. 2024, Hood et al. 2026).

Changes in fire behavior would extend beyond WUI areas and areas where timber harvest is scheduled to occur. Effects would continue to be localized but are also expected to be detectable at the geographic area scale because of the increased ability to use prescribed fire to reduce fuel levels on thousands of acres rather than small patches of 10 acres, or 40 acres or hundreds of acres as is common under current management. The ability to maintain and support more small openings and reduce fuels outside of the WUI would increase landscape heterogeneity and dampen fire behavior in areas where fuels work has been completed while reducing the risk of large-scale forest mortality. As most of the landscape will remain unmanaged (approximately 83 percent), forest cover will continue to expand at the landscape scale.

The proposed action specifically incorporates flexibility that enables managers to do essential work to maintain live forests over time and reduce risk to communities even as the frequent-disturbance landscape we manage continues to change, while also protecting communities and firefighters. The proposed action alternative increases the adaptability of management policy to changing conditions in the dynamic landscapes within the analysis area compared to current management through the following effects.

- The proposed action would save 70 years of planning time and resources.
- Coverage of the landscape including areas that don’t have timber value but are important to change how wildfires burn across our landscapes and affect communities, ensuring a more comprehensive risk-reduction strategy.

- Ability to incorporate real-time data and post-disturbance flexibility to allow for rapid response following wildfires or insect outbreaks, rather than relying on outdated analyses.

Air Quality Resources

Issues identified

- Contribution to exceedances of national ambient air quality standards.

Prescribed burning may affect public health through effects to air quality from smoke. Prior to prescribed fire operations, fire managers will coordinate with Federal, State, and local regulatory agencies to protect air quality as required by the Clean Air Act and Idaho State regulations. Prescribed burning will comply with the Operations Guide of the Montana/Idaho Airshed Group.

The Clean Air Act is the comprehensive Federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants (42 U.S.C. 7401 et seq.). One of the goals of the Clean Air Act was to set and achieve NAAQS in every state by 1975 to address the public health and welfare risks posed by certain widespread air pollutants. The setting of these pollutant standards was coupled with directing the states to develop state implementation plans (SIPs), applicable to appropriate industrial sources in the state, to achieve these standards. General Conformity ensures that the actions taken by Federal agencies do not interfere with a State or Tribe's ability to attain and maintain the NAAQS for air quality, as required under Clean Air Act section 176(c), and to prevent Federal actions from causing or contributing to new air quality violations, worsening existing violations, or hindering the attainment of air quality standards. Federal agencies must analyze the potential air quality impacts of their proposed actions and demonstrate that they conform to the applicable state implementation plan.

Prescribed burning that is regulated by the States having approved smoke management programs complies with the Clean Air Act. In Montana, the State’s smoke management program is called Title 17, and the program is managed by the Montana Department of Environmental Quality. Under General Conformity prescribed burning conducted by the Federal land management agencies is required to comply with the State’s smoke management program and therefore, prescribed fire projects in nonattainment or maintenance areas are presumed to comply with, or “conform,” to the Federal Clean Air Act’s conformity rule.

Threatened, Endangered, and Candidate Species

Grizzly Bear

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, transportation, and prescribed burning could disturb individuals and reduce the quality or quantity of forested habitat, including secure and core habitat.

Prescribed fire and fuel reduction activities would increase forage availability within a year of treatment, and forage would remain high for up to 30 years. Thinning of small diameter trees, fuel rearrangement, and fireline construction would reduce hiding cover in forested habitats for up to ten to 20 years. By following project design features to retain hardwood shrubs throughout the project area and cover adjacent to openings and riparian areas, detrimental impacts to grizzly bear habitats would be minimized.

Project use of closed roads for implementation and associated brushing or mastication would temporarily increase open motorized route density and would thus temporarily reduce secure and core habitats in grizzly bear analysis units and bear management subunits. By following project design features that limit administrative use of closed roads in the recovery zone and require gates or other impediments to discourage public access throughout the project area, detrimental impacts to habitat security would be minimized.

Project activities, including helicopter use, would temporarily disturb individuals and disrupt grizzly bear movements during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable, and implementation will cease if grizzly bears are discovered within or adjacent to the treatment area. Project activities will also be restricted within important grizzly bear habitats during spring. Areas of untreated forest would remain interspersed with treated stands year-round, providing a variety of alternate local travel routes. Connectivity would be facilitated by the distribution of inventoried roadless areas in the project area.

The effects from previous decisions including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreational activities are not expected to contribute to loss of hiding cover, secure habitat, or core habitat at the scale of the grizzly bear analysis unit or bear management subunit. Nor are they likely to combine with the effects described above to reduce hiding cover, secure habitat, or core habitat at the scale of the grizzly bear analysis unit or bear management subunit. See the Wildlife Species At Risk Report in the project record for additional information.

Canada lynx and designated critical habitat

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, and prescribed burning could disturb individuals and reduce the quality or quantity of lynx habitat, including linkage habitat and designated critical habitat.

Prescribed fire and fuel reduction activities would remove or alter sapling-sized conifer trees and understory shrubs that provide suitable foraging habitat and travel cover for lynx for up to ten years until the site understory regenerates. These activities would also likely reduce some downed wood that contributes to denning habitat. By following project design features to retain foraging and multistory habitat and coarse woody debris, loss of suitable habitat and effects to linkage habitat would be minimized. Implementation of the project would ensure that prescribed fire outcomes lead to no more than 30 percent unsuitable foraging habitat in each lynx analysis unit (design feature WL-Lynx –1). The individual project activities are expected to result in relatively small-scale changes in relation to the large lynx home range size.

Projects activities in designated critical habitat would be consistent with the impacts to lynx habitat described above. The project would not create permanent travel routes that facilitate snow compaction.

Project activities would temporarily disturb individuals and disrupt lynx movement patterns during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable, and implementation will cease if lynx are discovered within or adjacent to the treatment area. Connectivity would be facilitated by the distribution of inventoried roadless areas in the project area.

The effects from previous decisions including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreational activities are not expected to contribute to loss of

lynx suitable habitat, linkage habitat, or designated critical habitat and its primary constituent element, at the scale of the lynx analysis unit. Nor are they likely to combine with the effects described above to reduce lynx suitable habitat, linkage habitat, or designated critical habitat and its primary constituent element, at the scale of the lynx analysis unit. See the Wildlife Species At Risk Report in the project record for additional information.

Wolverine

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, transportation, and prescribed burning could disturb individuals and alter prey availability and use of habitats.

Prescribed fire and fuel reduction activities would alter the distribution of wolverine prey such as big game for up to ten to 12 years following treatment. Big game are likely to avoid areas where implementation is actively occurring, temporarily reducing potential foraging opportunities for wolverine in primary and maternal habitats. However, it is unlikely that prey resources would change appreciably at the scale of the geographic area. In the long term (ten to 20 years), project activities may improve the health of big game herds, which would contribute to a sustainable prey base for wolverine.

Project activities, including the use of mechanical equipment and associated noise, would temporarily disturb individuals and potentially disrupt wolverine dispersal and foraging during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable, and implementation will cease if wolverine are discovered within or adjacent to the treatment area. Connectivity would be facilitated by the distribution of inventoried roadless areas in the project area.

The effects from previous decisions including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreational activities are not expected to contribute to loss of prey availability or changes to wolverine habitat at the scale of the geographic area. Nor are they likely to combine with the effects described above to reduce prey availability or degrade wolverine habitat at the scale of the geographic area. See the Wildlife Species At Risk Report in the project record for additional information.

Whitebark Pine

Issues identified

- Thinning of trees, fuel rearrangement, fireline construction, transportation, and prescribed burning could damage and destroy individual whitebark pine.

Direct effects would include activities that result in removal, damage, or mortality to whitebark pine individuals or at any stage of their life history, including tree parts (such as cones or seeds). This includes soil disturbance, crushing, bumping, and scraping whitebark pine, root damage, mycorrhizal damage, nicks, opening wounds on whitebark pine bark, and pruning of whitebark pine tree limbs. These effects may occur from proposed actions within the project area such as thinning of trees, prescribed burning, fuel rearrangement, fireline construction, and transportation. The effects of all proposed treatments would be modified by project design features that would apply wherever pre-implementation surveys detect whitebark pine trees.

Indirect effects include effects that are removed in time or space from the proposed action. These include 1) the indirect effects of fuels reduction treatments on resistance and resilience to high intensity fire; 2) the indirect effects of hand thinning on the reduction of competing shade-tolerant trees; 3) the indirect effects of fire damage to insect damage susceptibility; and 4) the indirect effects of prescribed fire to whitebark pine reproduction. Cumulative effects, including those considering non-Federal lands when combined with the temporary disturbance of the project, are anticipated to be insignificant.

Bull Trout, Westslope Cutthroat Trout and Western Pearlshell Mussel

Issues identified

- Water and aquatic habitat quality

Temporary (for example, a few hours to days) disturbance to individuals may occur due to near-stream activities such as hand-thinning, hand-line construction, and prescribed fire.

Short-term (less than 5 years) effects to water quality and aquatic habitat could occur in a minority of treatment areas. The primary effect of concern is increased sedimentation/turbidity from ground disturbance and vegetation removal from both pre-treatment activities (such as hand-line construction) and prescribed fire activities within the riparian management zones of streams.

Long-term (more than 5 years) benefits are expected as riparian conditions move toward desirable condition. The risk of high-intensity fire is expected to be reduced, which should result in a corresponding reduction in the magnitude of future effects, such as substantial sedimentation events.

Wildlife, including Species of Conservation Concern and Migratory Birds

Issues identified

- Thinning of small diameter trees (under 10 inches diameter-at-breast height), fuel rearrangement, fireline construction, transportation, and prescribed burning could disturb breeding individuals and reduce the quality or quantity of nesting and foraging habitat.

Prescribed fire and fuel reduction activities would adversely impact habitat for species of conservation concern, flammulated owl and Lewis' woodpecker, in the short term but would benefit habitat for these species in the long term. Specifically, project activities would reduce understory vegetation for about three years following treatment but would promote open forest stands with large trees and snags used for nesting and foraging for ten to 20 years or more following treatment.

Although some snags and downed wood may be lost in treatment areas, any reduction of snags or coarse woody debris would occur on a relatively small percentage of the project area. Retention guidelines for snags and coarse woody debris would also minimize the loss of these habitat features in the project area.

Project activities would reduce vegetation cover, which may result in less hiding cover, forage, or nesting substrate in localized areas in the short term (up to three to ten years). However, project activities would increase understory vigor and richness within a few years of treatment and would help to re-establish the forest structure and composition that historically defined these habitats, thus benefitting many species of migratory birds and bird species of concern in the short and long term (ten to 20 years or more).

Project activities, including the use of mechanical equipment and associated noise, would temporarily disturb individuals and potentially disrupt breeding or foraging activities during implementation, though project treatments will be scheduled to ensure undisturbed areas are available to wildlife to the extent practicable and project activities will minimize impacts to nesting birds and nest trees such as by consulting with a wildlife biologist if an active nest is found and avoiding active nests encountered during implementation with a 100-foot buffer until the young have fledged. Flammulated owl nests will be protected by a 30-acre no treatment buffer and treatments will avoid fledgling/roosting habitat. Prescribed fire treatments will retain unburned pockets within burn areas and will coordinate with the wildlife biologist prior to implementation to ensure that treatments will not overlap with areas recently burned in order to protect nesting birds during the breeding season and to ensure nesting habitat is available between treatments.

The effects from previous decisions including timber harvest, prescribed fire, invasive species control, grazing, mining, travel management, and recreational activities are not expected to contribute to loss of nesting or foraging habitat or result in adverse impacts to migratory bird populations at the scale of the project area. Nor are they likely to combine with the effects described above to reduce nesting or foraging habitat or result in adverse impacts to migratory bird populations at the scale of the project area. See the Wildlife Species At Risk Report in the project record for additional information.

Botany Resource

Plant species of conservation concern

Issues identified

- Thinning of trees, fuel rearrangement, fireline construction, transportation, and prescribed burning could damage and destroy individual species of conservation concern plants.

Direct impacts include the potential to crush, trample, uproot, or damage existing or undiscovered species of conservation concern as a result of equipment use, fireline construction or broadcast burning. The impacts to species of conservation concern plants would be mitigated by project design features in the project area. These design features include plant buffers, re-vegetation after disturbance, and surveys for plant species of conservation concern prior to implementation. Table 4 (page 5) of the Botany Report lists the seven design features that would be used to mitigate impacts of the project on plant species of conservation concern.

Indirect impacts would include alteration or degradation of occupied or unoccupied species of conservation concern plant habitat. Changing light conditions from thinning of trees and broadcast burning and rearrangement of fuels could impact habitat by making is less suitable for some species or more suitable for other species. In addition, project actions could alter the hydrologic regime which could impact species of conservation concern plants. Project design features are in place to mitigate negative impacts.

Noxious Weeds

Issues identified

- Ground disturbance associated with fire line construction and thinning create conditions for invasive plants.

- Opening of the overstory tree canopy, and nutrient releases after fire will alter habitat conditions in some areas.
- Equipment and vehicles entering the area could bring weed seeds and new invaders into the project area.

Increase in bare soil conditions from ground and fire disturbance promotes expansion of existing invasive populations and provides conditions for new invasive species to invade.

Invasive species introductions from equipment and gear used in project implementation could occur.

Invasive species populations are likely to be greater than present populations due to ground disturbance, bare soil, and nutrient releases.

Fisheries Resource

The effects of prescribed burning activities are expected to be like that of past prescribed burns on the forest. In most cases, effects to chemical (such as, nitrogen cycle), physical (large woody debris, sediment), and biological characteristics (*such as* macroinvertebrates, amphibians) are insignificant (Arkle and Pilliod 2010; Beche et. al., 2005) under similar conditions. To reduce the potential magnitude of effects, sub-watersheds with known bull trout occupancy or designated critical habitat would not be treated with prescribed fire covering more than 20 percent of a sub-watershed in a single year, with a 3-year recovery period between burns (Project Design Feature WTR-2). Indirect effects to bull trout such as large woody debris, sediment, and stream temperatures are expected to be reduced to levels considered negligible (at the sub-watershed scale) by mitigation measures (project design features) and any necessary rehabilitation actions.

Bull Trout

Some project activities that remove near-stream vegetation (such as fire and hand thinning within inner riparian zone) and disturb soil (for example, hand line) could produce minor sediment mobilization. Individual bull trout could be affected through small (sub-lethal) and short-term (an hour or less) potential increases in turbidity during and shortly after precipitation events, though any effects would likely be sub-lethal and spatially isolated.

Some project activities that remove near-stream vegetation (such as fire and hand thinning) and disturb soil (such as hand line) could cause potential impacts from fire management on the physical or biological factors of bull trout. They are stream temperature, sediment, chemical contaminants/nutrients, large woody debris, streambank stability, and riparian management zones (related physical or biological factors 3, 4, 5, 6, 7 and 8). The other physical or biological factors are unlikely to be meaningfully affected by the project. These potential impacts could affect the quality of critical habitat at site-specific scales (such as a short segment of individual stream). In most areas, impacts are considered insignificant, and would not be meaningfully detected, measured, or evaluated, the effects to critical habitat would be discountable and insignificant. Any measurable sediment effects would likely only occur at a small site scale (such as short reach of stream of less than 100 feet) and would likely be of short duration (such as a few hours during and after a large precipitation event). Though the baseline of some relevant bull trout sub-watersheds is currently estimated to be in undesirable condition (such as Functioning at Unacceptable Risk), the magnitude of project-related effects is estimated to be of a magnitude insufficient to produce meaningful impacts, with retention of functional category in the temporary and short-term timeframes. Measurable improvement of most PBFs could occur in the long-term due to expected improvement of overall riparian zone function.

Therefore, the following determinations apply:

Determinations

Bull Trout: May Affect, Likely to Adversely Affect

Bull Trout Critical Habitat: May Affect, Likely to Adversely Affect

The determination of effect for the species and designated critical habitat are "likely to adversely affect." This is a standard term that is used during Endangered Species Act consultation. However, using the term "adverse" in a determination under the Endangered Species Act does not necessarily rise to the level of significance under the National Environmental Policy Act. For the term adverse to be considered significant under the Endangered Species Act, those effects would need to be at the level of "jeopardy" to the continued existence of the species or "adverse ***modification***" of designated critical habitat. An example of adverse modification to critical habitat would be building a dam with no fish passage and inundating miles of spawning habitat with a reservoir and changing it into adult rearing habitat. That would be an adverse modification of designated critical habitat.

Adverse effects on individuals of a species or constituent elements or segments of critical habitat generally do not result in jeopardy or adverse modification determinations unless that loss, when added to the environmental baseline, is likely to result in significant adverse effects throughout the species' range, or appreciably diminish the capability of the critical habitat to satisfy essential requirements of the species (NMFS and USFWS 1998). As described above, the magnitude of project-related effects is estimated to be of a magnitude insufficient to produce meaningful impacts, with retention of functional category in the temporary (hours) and short-term (days) timeframes. That is, the impacts are not expected to be significant.

Westslope Cutthroat Trout

Due to substantial spatial overlap, and similarities of habitat requirements, the analysis above for bull trout is considered applicable to westslope cutthroat trout. Bull trout serve as a reasonable proxy for conditions favorable to westslope cutthroat trout. Therefore, the following analysis summarizes the findings from the preceding federally listed fish species analyses.

Species Impacts

Direct impacts to individual westslope cutthroat trout are unlikely to occur along most occupied stream reaches since little project activity is proposed in those areas. General foot traffic and tool use proximate to occupied waters may startle a small number of individuals, slightly disrupting normal behavior for a short period of time (such as a few hours). Injury to individuals is highly unlikely to occur from any proposed project activities.

Water drafting could potentially occur within waters occupied by westslope cutthroat trout though this would be avoided whenever feasible. USFWS requirements regarding screening and acceptable flow reduction would apply, limiting the chance for direct harm to individuals.

In summary, though disturbance to individuals could occur, this area represents a small fraction of occupied waters, likely no more than a few percent. Pre-planning and implementation of project design features are expected to eliminate or substantially reduce the risk of any mortality.

Habitat Impacts

As for the federally listed species, only minimal effects (such as temporary sediment) to habitat are anticipated. Most project activities would occur outside of riparian zones, and a sufficient distance from occupied waters to avoid effects. Those activities proposed near-stream are nearly all low-impact, such as hand thinning and lower-intensity fire. Isolated sites with potentially higher impact activities, such as mastication at stream crossings, are expected to be effectively mitigated by project design features. Due to substantial range overlap, requirements developed for bull trout their designated critical habitat are expected to similarly benefit westslope cutthroat trout in all, or nearly all, areas of the forest. See preceding analysis for additional details regarding specific habitat effects.

In further support of habitat analysis conclusions, past prescribed fires of similar type to those proposed by the project have shown that effects have been minimal. For example, on one stream Arkle and Pilliod (2010) found for 3 years after low-intensity prescribed fire (as compared to unburned reference streams) no detectable changes to multiple biotic and abiotic metrics, including: periphyton, macroinvertebrates, amphibians, fish, and riparian and stream habitats. Habitat-protecting measures incorporated into this project are estimated to be as protective, or more protective, than those for the projects reviewed in the past. In addition, any terms and conditions developed for bull trout during the consultation process with USFWS are likely to benefit westslope cutthroat trout due to range overlap (Blackfoot River and Upper Clark Fork River core areas) and similar habitat requirements. Outside of the overlapping areas, project design features are expected to minimize impacts in the temporary and short-term timeframes and improve habitat conditions in the long-term (such as greater than 5 years).

Based on the estimated low risk and magnitude of effects to westslope cutthroat trout occupied habitat, the following determination applies:

May impact individuals or habitat but will not likely result in a trend toward Federal listing or reduced viability for the population or species.

Western Pearlshell Mussel

Due to substantial spatial overlap, and similarities of habitat requirements, the analysis above for bull trout is considered applicable to western pearlshell mussel (WEPE) habitat. Bull trout habitat serves as a reasonable proxy for conditions favorable to western pearlshell mussel. In addition, both bull trout and westslope cutthroat trout serve as a host for western pearlshell mussel. Therefore, the following analysis summarizes the findings from the preceding federally listed fish species analyses.

Species Impacts

Direct impacts to individual western pearlshell mussel are unlikely to occur along most occupied stream reaches since little project activity is proposed in those areas. General foot traffic and tool use proximate to occupied waters are unlikely to produce detectable disruption of normal behavior. Injury to individuals is highly unlikely to occur from any proposed project activities since the vast majority would occur outside of streams.

Water drafting could potentially occur within streams occupied by western pearlshell mussel, though this would be avoided whenever feasible, and is not expected to occur in the immediate vicinity of individuals.

Populations effects to host fish species (such as westslope cutthroat trout) of western pearlshell mussel are not expected to occur. Host fish species (such as westslope cutthroat trout) populations are not expected to be measurable reduced by project activities.

In summary, brief disturbance to individuals could occur in a small percentage (likely less than 10 percent) of occupied waters during a given year. Pre-planning and implementation of project design features are expected to reduce the risk of mortality. In the long-term, project activities are expected to improve riparian conditions, which may benefit host species.

Habitat Impacts

As for the federally listed species, only minimal effects (such as temporary sediment) to habitat are anticipated. Most project activities would occur outside of riparian zones, and a sufficient distance from occupied waters to avoid effects. Those activities proposed near-stream are nearly all low-impact, such as hand thinning and lower-intensity fire. Isolated sites with potentially higher impact activities, such as mastication at stream crossings, are expected to be effectively mitigated by project design features. Due to substantial range overlap, requirements developed for bull trout their designated critical habitat are expected to similarly benefit westslope cutthroat trout in all, or nearly all, areas of the forest. See preceding analysis for additional details regarding specific habitat effects.

In further support of habitat analysis conclusions, past prescribed fires of similar type to those proposed by the project have shown that effects have been minimal (Arkle and Pilliod 2010). Habitat-protecting measures incorporated into this project are estimated to be as protective, or more protective, than those for the projects reviewed in the past. In addition, any terms and conditions developed for bull trout during the consultation process with USFWS are likely to benefit western pearlshell mussel due to range overlap (Blackfoot River and Upper Clark Fork River core areas) and similar habitat requirements. Outside of the overlapping areas, project design features are expected to minimize impacts in the temporary and short-term timeframes and improve habitat conditions in the long-term (such as greater than 5 years). Based on the estimated low risk and magnitude of effects to western pearlshell mussel occupied habitat, the following determination applies:

May impact individuals or habitat but will not likely result in a trend toward Federal listing or reduced viability for the population or species.

Water Resources

Issues identified

Prescribed burning and associated activities could cause increased runoff, erosion, and sediment delivery to water features, affecting water quality.

Water quality concerns related to prescribed burning activities include potential increases in runoff, erosion, and sediment; and associated effects that may result in changes to riparian, wetland, and aquatic ecosystems and overall water quality. The Forest Service Watershed Erosion Prediction Project (FSWEPP[4]) model results indicate that there is no significant increase in potential for upland runoff, erosion, and sediment delivery to downslope and downstream water features above existing un-burned conditions, for any of the modeled prescribed fire scenarios. None of the model scenarios resulted in significant runoff, erosion, or sediment delivery above natural, background levels from typical precipitation events. This also correlates with observations of past prescribed burn projects on the forest.

[4]The Watershed Erosion Prediction Project modeling tool, developed by the Forest Service and U.S. Department of Agriculture, is a physically-based soil erosion prediction technology, and has a number of customized interfaces developed for common applications such as roads, managed forests, forests following wildfire, and rangelands.

Erosion rates from prescribed burning are anticipated to mimic natural processes and impacts to water quantity and quality will not approach a threshold of significance.

The effects to water quantity and quality due to increased runoff, erosion, and sediment delivery would be limited by use of project design features and Forest Service best management practices. Prescribed burning would be accomplished when conditions are favorable, and risk of fire escape is low. High soil burn severity as defined in Parsons et al. (2010) would be avoided. Maintaining effective ground cover post-burn is expected to minimize potential impacts to water quality and prevent increases in post-fire runoff and erosion that are typically associated with wildland fires. This would lead to negligible amounts of erosion and downstream sedimentation.

Prescribed burning is not expected to cause adverse impacts to water quality, or total water yield increases or peak flows because project design features and Forest Plan standards and guidelines would be used during and following implementation of burns. Project design features have been included to reduce the risks of negative impacts to riparian, wetland, and aquatic resources, and water quality (see appendix B for project design features for watershed (WTR); riparian management zones (RMZ); soils (SOIL); and fisheries and aquatic habitats (FAH). Water quality parameters are expected to be maintained in accordance with Clean Water Act requirements and state water quality thresholds.

It is unlikely that project activities will adversely affect water temperature and by association dissolved oxygen, pH, and sediment. Increases in stream water temperatures resulting from proposed management activities are not anticipated. Project design features (appendix B), Forest Plan standards and guidelines, and Forest Service Best Management Practices (USDA Forest Service, 2012) are required as part of project implementation and minimize management activities within and surrounding riparian and wetland features. Riparian and wetland vegetation within the Riparian Management Zones would be protected during project implementation and would continue to provide shading to water features (project design feature RMZ-1, RMZ-4, and RMZ-6).

Implementation of measures to maintain favorable water temperatures will also serve to maintain dissolved oxygen levels, which change as water temperature changes. Incidental delivery of ash to water features is not expected to affect pH based on erosion modeling results and the inclusion of project design features, Forest Plan Standards and Guidelines, and Forest Service Best Management Practices that are designed to minimize project-generated runoff, erosion, and delivery of sediment and ash to water features.

In general, any direct or indirect effects resulting from project burn activities will typically diminish within 3 to 5 years post-burn, when recovery of ground cover vegetation has occurred (Debano et al. 1998; Neary et al. 2005; Robichaud et al. 2010). This can occur as quickly as the next growing season with adequate precipitation. Generally, the post-project mosaic pattern of low and moderate burn severity would be a net positive to water resources and watershed processes by reducing the potential for severe wildfire and the associated effects described in the current management alternative. Immediately post-burn there may be a small, short-term localized increase in sediment to streams and wetlands, particularly if high-intensity, short-duration thunderstorms occur shortly after prescribed burns. This is typically localized and minimal, mimicking the natural episodic pulse of sediment and nutrient delivery that historically occurred. This is expected to be insufficient to cause measurable impact to water quality and aquatic life down slope or downstream of burned units. Appropriate localized post-treatment actions using weed free materials (weed free seeding, silt fences, contour felling, mulching, localized sediment basins, contour waddles, etcetera) would be implemented where needed upon assessment of post implementation monitoring (project design feature WTR-4).

Riparian and Wetland Ecosystems

Issues Identified

- Prescribed burning and associated activities could cause adverse impacts to riparian and wetland ecosystems, including groundwater dependent ecosystems and peat-forming wetlands (fens and bogs).

Riparian and Wetland Ecosystems

No long-term adverse effects to riparian and wetland ecosystems are anticipated to result from proposed project activities. The net result is expected to be an overall improvement in or maintenance of wetland and riparian conditions. Project design features (appendix B) have been included to protect riparian and wetland areas during management activities. Riparian Management Zones (RMZ) are required around all water features as part of Forest Plan requirements and USFS Best Management Practices. Project design features RMZ-1 through RMZ-6 provide project-specific protection measures for riparian and wetland ecosystems.

These measures specify the types of management activities that can occur within Riparian Management Zones surrounding each water feature. RMZs are not “no management zones” because treatment may be necessary to achieve desired conditions. Riparian areas and wetlands can benefit from some types of proposed treatments that would lessen the risk of long-term damage from high severity wildfires, such as removing encroaching upland species from wetland edges to improve water tables.

Any additional wetlands and riparian areas discovered during the project design phase would also be protected as part of the interdisciplinary implementation process outlined in appendix C. Thus, no adverse effects to riparian areas and wetlands are anticipated as these features would be mapped and provided to project planning and implementation personnel.

Implementation of prescribed burning within Riparian Management Zones (RMZ) is expected to result in short-term (less than 3 years) and minor, if any, negative effects to isolated riparian and wetland ecosystems. Project design feature SOIL-9 is included to ensure that low intensity fire occurs within RMZs to achieve a mosaic of low and unburned soil burn severity and maintain the vegetative buffers surrounding riparian and wetland ecosystems. Pre-treatment activities prior to burning would further minimize potential effects to riparian and wetland features.

The net result is expected to be an overall improvement in riparian and wetland conditions once encroaching upland vegetation is thinned or removed as part of pre-treatment activities; and surrounding upland areas are treated with prescribed fire, reducing the potential negative impacts to these ecosystems described for the current management alternative. Prescribed burning is expected to result in short-term (less than 3 years) and minor, if any, negative effects. Prescribed fire may enter riparian and wetland ecosystems, but low-intensity fire is anticipated due to the naturally moist conditions of these areas. This is expected to result in a mosaic of unburned and low soil burn severity.

Mechanical treatments would not be conducted within the inner RMZ (project design feature RMZ-1), and construction of mechanized fire line would generally be avoided except to cross streams (project design feature RMZ-2). Aerial or direct ignition of prescribed fire is not allowed within the inner Riparian Management Zones unless site-specifically determined by watershed personnel to maintain the riparian or wetland ecosystem integrity and functions. Prescribed fires would be allowed to occur within RMZs (except for surrounding peat-forming wetlands) to achieve site-specific maintenance or improvement of

RMZ ecosystems in alignment with Forest Plan desired conditions (refer to project design features RMZ-1 through RMZ-6 in appendix B).

Peat-forming Wetlands (Fens and Bogs)

No loss of peat-forming wetlands or their organic soils (peat) are expected to result from the implementation of the proposed action. Project design features are expected to maintain vegetation; protect the highly combustible peat from burning during project implementation; and maintain their associated groundwater sources.

Forest watershed personnel would review each prescribed burn project for the presence of peat-forming wetlands, conduct field verification surveys as necessary, and provide peatland locations to prescribed burn planners as part of the interdisciplinary project implementation checklist process outlined in appendix C. Peatlands would be specifically protected through project design feature RMZ-6 (appendix B), which prevents the use of prescribed fire (back-burning) within peatlands due to the presence of organic soils (peat) that are highly combustible, even when water is present at the surface.

Soil Resource

Issues identified

- Prescribed burning and the associated activities could cause loss of soil physical, biological, and chemical functions.
- Prescribed burning and associated ground disturbing activities cause compaction, erosion, mixing of surface horizons, and removal of organic matter, and soil heating.

The main concern areas for the soil resource are 1) conducting both mechanical fuels reduction and prescribed burning on sensitive soils, 2) burning in areas with legacy effects from past timber harvest and wildfire, and 3) maintaining treatments with multiple entries where there may be issues with maintaining organic matter and therefore soil productivity.

Prescribed burning objectives typically are planned to result in a mosaic of low-to-moderate fire intensity which can result in a low to moderate soil burn severity. These objectives can be met because prescribed fires are implemented during favorable climate conditions such as seasons with higher humidity levels, lower temperatures, and moist vegetation and soil conditions. Low severity fire typically has minimal impact on the soil surface and can leave forest floor and live vegetation intact.

While most prescribed burning is expected to result in low-to-moderate soil burn severity, there would be areas of high soil burn severity, such as, large slash piles that are burned and where organic matter on the forest floor smolders. In addition, fuels' objectives may need higher severity fire to meet desired conditions or that are more in line with historical fire. These scenarios have the potential to create severely burned soils due to the length of time heat occurs in a concentrated area, causing a localized loss of soil physical, biological, and chemical functions and a decrease in organic matter needed for future soil nutrient stores. To minimize effects to the soil resource design features have been developed. SOIL-1 states pile burning would occur when soils are moist, frozen, or snow covered which minimizes heat transfer into the soil. SOIL-10 states avoid or minimize complete removal of organic layer.

The temporary removal of vegetation and forest floor ground cover increases erosion potential where soil is bare, especially if it is already at a high risk for movement. Soils derived from certain parent materials are more vulnerable to erosion when ground cover is removed. These parent materials include volcanic ash and loess, granitic rocks, shale, and coarse grained sedimentary/metasedimentary rocks such as

quartzite and sandstone. Ash deposits are common in the Upper Blackfoot geographic area. Widespread areas of granitic soils exist within the Divide, Upper Blackfoot, and Big Belt geographic areas. Rocky outcrops and soils developed from certain shales are common along the Rocky Mountain Range, Upper Blackfoot, Big Belts, Little Belts, and the Crazies. Quartzite and sandstone are prevalent in the Little Belts. Soil particle size and often a lack of organic matter in the soil surface horizons make these soils highly erosive if the soil surface is exposed even on gentler slopes. Refer to SOIL-2, SOIL-4, SOIL-6, and SOIL-8 and also the implementation checklist.

Prescribed fire has direct and indirect impacts on soil microbes. SOIL-10 minimizes effect to soil microbes.

Prescribed fire along with the associated activities may introduce or increase invasive plant communities which can alter soil functions. SOIL-2 helps to minimize invasive plant introduction or increases. PLANT-4-7 also provides direction to minimize invasive plant's introduction or increase.

Ground disturbing activities associated with prescribed fire treatments such as mechanical thinning, mastication, fire line construction, and cross-country travel have the potential to create areas of increased soil disturbance (compaction and rutting), soil displacement (erosion and topsoil mixing), and surface organic matter removal. This occurs where equipment pivots, with equipment use on wet soils, with multiple passes over the same location, and where vegetation is removed down to mineral soil. SOIL-2 and SOIL-4 minimizes effects due to ground-disturbing equipment. The forest plan soil guideline FW-SOIL-GDL-01 also limits the slope equipment may operate on.

Heritage Resources

Issues identified

- Heritage resources are not associated with any identified project issues.

The archaeological sites within the area of potential effect will benefit in the long-term from the proposed action to return the forest to a natural fire regime by reducing the overgrowth of fuels within and surrounding the site boundaries. By controlling the removal of the excess hazardous fuels, the sites will be less susceptible to catastrophic or uncharacteristically severe wildfires.

To avoid any adverse effects or effects to archaeological sites by the proposed activities, Section 106 compliance will be completed prior to initiation of work as outlined in the Heritage Implementation Plan signed December 5, 2024. If an archaeological site is known to be or suspected to be in the area of proposed activities, then the site would be evaluated for protection guidelines or avoidance, or both. If artifacts or archaeological features are discovered during the application of mechanical or cultural methods, work would stop in that location and a Forest Service archaeologist would be notified. Guidelines to protect archaeological sites from adverse effects are available in the project design features (appendix B). Because the design features listed will be followed, no adverse effects are anticipated from the proposed activities.

Recreation and Roadless

Recreation

The direct impacts to recreation from the prescribed fire activities during project implementation would be the sights and sounds of people and equipment, including chainsaws, vehicles, and smoke in the air. Smoke in the air during the prescribed burns may have a direct affect to the quality of the recreation

experience within the project area and to adjacent dispersed camping areas by temporarily reducing air quality and visibility. Following the Montana Airshed Group guidelines to ensure compliance with Federal, state and local requirements would minimize this impact. Indirect effects to recreation would result from changes to the scenery following the prescribed burning activities.

The proposed prescribed fire activity would include construction of firelines. The firelines may open access for off highway vehicles where vegetation previously prevented access. Design criteria are in place to minimize the appearance of firelines where they intersect with existing trails to reduce the likelihood of unauthorized use. The proposed action would have short-term direct effects to recreation resources during project implementation, such as limited access to specific areas and increased presence of people and noise within the project area resulting in displacement of users throughout the term of implementation. Other cumulative considerations include visual long-term effects which would be seen until vegetation growth obscures the prescribed fire activities and visible stumps from the cutting small diameter trees approximately 3-8 years. Some users may not return to the area until vegetative recovery and tree regrowth has become established which more resembled what they were accustomed to from previous visits to the area.

Recreational activities such as hunting, camping, hiking, off highway vehicles travel on roads, snowmobiling and cross-country skiing may continue within the project area however it is expected that short term loss of recreational opportunities would occur if prescribed fire implementation activities occurred during a specific recreational time period. Other ongoing and reasonably foreseeable activities that could be occurring within the analysis area include, continued use of grazing allotments, ongoing uses and maintenance activities associated with special use permits such as irrigation ditches, water lines, and road use; fuels reduction projects, road and trail maintenance, and firewood cutting. All of these activities, when added to the activities proposed in the Forestwide Prescribed Project area have the potential to cumulatively affect the recreation experience within the project area. The primary impacts would be due to the increased presence of people, equipment, vehicles, and the associated noise which would directly affect the ability of recreational visitors to enjoy their desired experience and may lead to short-term displacement of visitors who choose to avoid the area during implementation of the prescribed fire activities.

Recreation character and recreational opportunity spectrum could potentially be impacted in the short term from prescribed fire activities by the change in the landscape character. However, in the long term these recreational settings and ROS would remain stable to improving once treatments are completed. The long-term benefits of the proposed action, including a more diverse, resilient, and sustainable forest ecosystem and reduction in the risk of negative impacts from severe wildfire, have the potential to indirectly benefit recreation by helping to maintain the settings and opportunities currently valued by the public for recreation within the project area.

Forest Plan desired conditions and guidelines would be considered and evaluated by resources before and during prescribed fire implementation for designated areas identified in the 2021 Helena- Lewis and Clark Forest Plan. Plan guidance and desired conditions would be met during implementation for the Lewis and Clark National Historic Trail and Continental Divide National Scenic Trail. These concerns will be considered to mitigate any potential impacts to desired conditions to these areas.

The proposed action would improve firefighter and public safety by reducing wildfire fuels, improve the health and resiliency of the forest ecosystem through prescribed fire forest management activities, improve livestock and wildlife grazing by improving rangeland habitat conditions, maintain and improve water quality and aquatic habitat through watershed restoration activities, The proposed action would

have direct effects during implementation, causing potential user displacement when project activities are occurring. Impacts would be most substantive during high-use recreational seasons such as hunting.

Recreational activities such as hunting, camping, hiking, off-highway vehicles riding, pleasure driving, would continue within the project area; however, it is expected that short-term disruptions in access to hunting and dispersed camping sites, displacement of users, and loss of hunting opportunities would occur if implementation coincided with those recreational seasons.

Long term (3-8 years following implementation), the proposed action would have a positive impact on recreation opportunities by improving the recreation setting. Providing for ecosystem resiliency, diversity and restoration of grasslands and high mortality stands would have a positive effect on the accessibility of off-trail recreation opportunities. The proposed action would improve the recreation opportunities within the project area.

Roadless

The proposed action includes activities that are not prohibited under the 2001 Inventoried Roadless Rule such as prescribed fire or activities falling under one or more exceptions allowing the cutting, sale, or removal of "generally small diameter tree cutting." Under the 2001 Rule, timber may not be cut, sold, or removed from inventoried roadless areas except under specified circumstances. "Generally small diameter timber" may be cut, sold, or removed if doing so will restore ecosystem structure and function, such as reducing the likelihood of uncharacteristic wildfire. The primary need for the Proposed Action is to restore ecosystem structure and function and "small diameter trees" are defined as less than 10 inches diameter-at-breast height in the Forest Plan. No temporary roads are being proposed in inventoried roadless areas.

The inventoried roadless area treatments would be designed to guide the landscape into the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period, along with prescribed fire, a non-prohibited activity under the Roadless Area Conservation Rule, as published 66 Fed. Reg. 3243 (January 12, 2001). The 2001 Roadless Rule exceptions CFR 294.13 (b)(1)(ii) and CFR 294.13 (b)(2) (described above) would be utilized to fulfill all the project objectives. Prescribed fire is a non-prohibited activity in roadless areas. Prescribed fire treatments in Douglas-fir and lodgepole pine stands would restore ecosystem composition and structure by reducing existing fuel loading, stimulating vegetation that is adapted to periodic burning, and creating patches of natural regeneration. Treatments would re-establish fire to mimic natural disturbance on the landscape and maintain/enhance ecological communities that have been in decline.

The treatment units are designed to create a mosaic of vegetation and fuel structure that would be more resilient to future disturbances from fire and potential effects from changes in climate conditions. The treatments within the project boundary will be designed to buffer surrounding wildland-urban interface and to maintain ecosystem function within the roadless area. The units within the roadless areas would reflect a disturbance function of a resilient landscape. Proposed treatments within the project boundary would include but not limited to prescribed fire activities and the rearrangement of fuels by hand and mechanized equipment. Refer to the forest vegetation report in the project record. In both the Vegetation Report and Fuels Report, the total acres within the inventoried roadless areas and roadless expanses are used to place into context the vegetation conditions and magnitude of proposed treatments.

Silviculture Resource

Issues identified

- Prescribed burning and associated activities can be anticipated in promoting and maintaining desired vegetation conditions.
- Prescribed burning and associated activities may have an impact on old growth.

It can be anticipated that the application of prescribed fire reduces resource-based competition among residual trees, and would kill seedlings, saplings, and potentially small trees with less resistance to fire, and would effectively lift the canopy height of the treated area. The implementation of pretreatment activities, such as thinning up to 10 inches diameter-at-breast height, can be anticipated to have similar effects while also reducing risk of any potential torching from prescribed fire by eliminating ladder fuels.

While a low severity, nonlethal fire can be effective at reducing surface fuel loads and ladder fuels, it generally lacks effectiveness at reducing canopy fuels as a stand-alone treatment and may need to be implemented in conjunction with a thinning treatment in order to modify canopy cover and density. The restoration of natural fire regimes in the warm dry and cool moist broad potential vegetation types can be anticipated to support the desired conditions in the forest plan. In terms of structure, this would facilitate patch size that is more characteristic of the natural range of variability, that is smaller patches. Additionally, species compositions and dominant cover types can be expected to shift to a more fire tolerant mix typical of more fire adapted systems as natural fire is reestablished as a natural component of the ecosystem.

The implementation of the proposed action would not, reasonably, be anticipated to adversely affect old growth within the warm dry and cool moist broad potential vegetation type. Application of prescribed fire within warm dry and cool moist old growth conditions can be anticipated to promote fire tolerant species mix, reducing fuel ladders, reducing stocking, and reducing tree-based competition for resources. While the application of low severity fire, generally, can be anticipated to remove seedlings, saplings, and small trees, these tree sizes do not play a role in the Helena-Lewis and Clark National Forest's determination of old growth (large tree ages, basal area, and trees per acre of a minimum size class), but may be considered a component of the qualitative attributes (smaller trees and canopy layers) of old growth (see FW-VEGF-GDL-04).

With respect to forest insects and disease, it can reasonably be anticipated that interactions may occur between the proposed action activities and disturbance agents, such as bark beetle, dwarf mistletoes, and defoliators. In general, treatments which reduce resource competition and density, and improve vigor are also anticipated to reduce the risk of mortality from bark beetles such as mountain pine beetle, western pine beetle, and Douglas-fir beetle (Gibson et al. 2009, Furniss and Kegley 2014, Randall 2010). However, damage from fire related injuries, such as crown scorching and basal damages, can cause tree stress, remove tree that are less susceptible to beetle attack (small trees), and can increase the risk of beetle attack and mortality (Gibson et al. 2009, Hood et al. 2003, Kegley 2011, Randall 2010). Defoliation from western spruce budworm may reduce risk from crown scorch and crown fire on affected trees (Gavin et al. 2017), however, cumulative stress from repeated defoliation combined with stress from fire damage may promote mortality. Surface fire within stands with dwarf mistletoe infections can be beneficial as this fire can scorch prune infected branches and reduce dwarf mistletoe infections of affected trees and stands (Conklin and Geils 2007).

There is a risk of the application of mixed severity fire killing larger trees, given that mixed severity fire is anticipated to create gaps and openings. During the pre-implementation phase of any potential

treatment, old growth areas would be identified and, if appropriate, measures would be employed to reduce the risk of torching, crowning, and indirect mortality due to long fire residence time in surface and ground fuels.

Range Resource

Issues identified

- Prescribed fire management activities and implementation could lead to a temporary loss of grazing opportunities.

Under the Proposed action, temporary short-term displacement of livestock during treatment may occur and potential closure of some areas to grazing until treatment objectives are met. This is typically two growing seasons or as determined by ecologist, range specialists, and approved by the district ranger. The majority of the Proposed Action Alternative treatments would increase herbaceous and shrub production over the Current Management Alternative since these activities create canopy openings with less needle cast. As the canopy cover is removed, these treatments would allow more sunlight to reach the ground and increase production of grasses and browse for cattle and wildlife use. The initial quantity of this vegetation usually increases distribution of cattle throughout the project area (Ursek and Severson, 1988), into primary and secondary rangelands.

There would likely be no change in permanent carrying capacity (Animal Unit Months) as currently allocated since vegetative openings from treatments would only temporarily increase available forage for livestock. Any changes would be site specific to the allotment and situation and would be made in communication with the permittee. In the majority of the treatment area, we would expect grazing patterns to change during this increase in forage (Ursek and Severson, 1988). Range structures would be maintained and improved as necessary to continue cattle management at its current scope and intensity, subject to forest-wide standards and guidelines. Fences would still need to be cleared of trees and brush and remain open and accessible for repairs and maintenance. Fencing and water developments that exist throughout the Project Area would need to be identified through the implementation checklist process. Large areas would be opened up to sunlight, and a variety of plants would generally appear, including forbs, grasses, trees, shrubs and invasive species. Aspen suckering may occur with the opening of the canopy and may need protection for a time to establish. Down trees can afford this protection if they are thick enough. If protection is critical and/or conifers are not sufficient to provide adequate cover, temporary fencing could be used. Exclosure fences and downed trees can impede cattle access and movement. These activities should be coordinated with the district range program manager to ensure that cattle distribution is not negatively impacted.

The cumulative effects analysis area for range resources is the area of all grazing allotments that are at least partially within the project area. This area is selected because activities in one part of an allotment may affect management of the entire allotment. The timespan for cumulative effects analysis is 10 years after the probable completion of proposed activities. By this time, it is estimated that the project's effects on increased forage in treated areas would begin to diminish.

There are no anticipated cumulative effects that would impair or unduly influence short-term range management of the allotments within the Project Area if the Proposed Action Alternative were selected. Increased forage production would promote wider distribution of livestock and may lessen utilization levels in historically preferred grazing areas. Eventually temporary increases in forage production would subside as pine regeneration grows and shades out understory vegetation. The decision documents associated with the respective allotments would indicate direction to be followed to improve or sustain

range condition and capacity. However, there are still threats to cattle grazing such as the risk of large-scale wildfire. Any large acreage ignition may disrupt grazing use and damage or destroy range improvements. A large scale wildfire can also cause dead trees, which would decay, to fall over and restrict access to vegetation by cattle and wildlife.

Geology, Energy, and Minerals Resource

Adherence to the suggested Geology, Energy and Mineral design features and implementation plan steps would result in no significant direct or indirect effects to minerals resources and activities from implementation of the proposed action.

Conclusion

After considering the environmental effects described in the environmental assessment and specialist reports, I have determined that the proposed action will not have significant effects on the quality of the human environment considering:

- Both short- and long-term effects
- Both beneficial and adverse effects
- Effects on public health and safety
- Effects that would violate Federal, State, or local law protecting the environment

Thus, an environmental impact statement will not be prepared.

Findings Required by Other Laws and Regulations

National Forest Management Act (NFMA)

This decision to implement the project is consistent with the intent of the forest plan's long-term goals and objectives. The project was designed in conformance with land and resource management plan standards and incorporates appropriate land and resource management plan guidelines for the Proposed Action.

Clean Air Act (as amended in 1970, 1977, and 1990)

This act requires Federal agencies to ensure that actions they undertake in nonattainment and maintenance areas are consistent with federally enforceable air quality management plans for those areas. It provides for the protection and improvement of the nation’s air resources and applies to the effects of prescribed fire and can help inform wildfire response. The act is a legal mandate designed to protect public health and welfare from air pollution. Although this policy creates the foundation for air quality regulation, states and counties are often responsible for implementation of the air quality standards.

The task of identifying National Ambient Air Quality Standards is assigned by the Clean Air Act to the Environmental Protection Agency. The Environmental Protection Agency evaluates and updates these standards every 5 years. Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants. The National Ambient Air Quality Standards must be met by State and Federal agencies, including the Forest Service.

Implementation of this project would be in compliance with Forest Plan goals and objectives to comply with air quality standards by using Best Available Control Technology techniques as defined in the

Administrative Rules of Montana for Open Burning (ARM 17.8.601), and by not causing or contributing to any exceedances or violations of Federal or State ambient air quality standards.

The prescribed fire plan would identify what permits, if any, are needed. It would also identify potential smoke receptors, non-attainment areas, Class I areas, and restricted areas that may be impacted. It would include modeling outputs and mitigation strategies and techniques to reduce the impacts of smoke production.

Clean Water Act, Safe Drinking Water Act, and State Water Quality Regulations

The proposed action is consistent with the requirements of the Clean Water Act (1972 as amended), the Safe Drinking Water Act (1974, as amended), and State of Montana water quality regulations because measures are included to protect surface and groundwater features, public drinking water supplies, and contributing source water areas through implementation of project specific design features, Forest Service Best Management Practices, Region 1 Soil and Water Conservation Practices, and Forest Plan Standards and Guidelines. These measures also ensure that the project is consistent with the State of Montana non-point source pollution control plan (Montana Department of Environmental Quality, 2017) to protect the Waters of the State and maintain water quality associated with assigned beneficial uses. The Forest Service would implement these measures as required by agreement between the Forest Service and State of Montana Department of Environmental Quality (USDA Forest Service 2016) and Department of Natural Resources and Conservation (USDA Forest Service 2020) and meets the intent of the Montana Non-Point Source Management Plan to protect the Waters of the State and maintain water quality associated with assigned beneficial uses.

As project burn plans are developed following the implementation process in appendix C, watershed personnel would ensure that applicable requirements from drinking water source protection plans and total maximum daily load plans are included in project planning and implementation.

The proposed action is consistent with Section 404 of the Clean Water Act because no discharge of dredged or fill material will occur in wetlands or other Waters of the United States. The proposed action is also consistent with U.S. Army Corps of Engineers and EPA regulatory authority under Section 404 to avoid and preserve rare, peat-forming wetlands (fens and bogs) (U.S. Army Corps of Engineers and EPA 2008) because no loss of peat-forming wetlands or their organic soils (peat) are expected to result from the implementation of the proposed action.

Any required permits that are unforeseen at this time will be obtained in coordination with the U.S. Army Corps of Engineers, Omaha District, Montana Regulatory Office, as applicable, prior to project implementation. Refer also to the discussion of compliance with Executive Order 11990 – Protection of Wetlands.

National Cohesive Wildland Fire Management Strategy – 2014

In response to requirements of the Federal Land Assistance, Management, and Enhancement (FLAME) Act of 2009, the Wildland Fire Leadership Council directed the development of the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy). The Cohesive Strategy is a collaborative process with active involvement of all levels of government and non-governmental organizations, including the public, to seek national, all-lands solutions to wildland fire management issues. The Cohesive Strategy addresses the Nation’s wildfire problems by focusing on three key areas: Restore and maintain landscapes, fire-adapted communities, and response to fire.

National Wildfire Coordinating Group Standards for Prescribed Fire Planning and Implementation (PMS 484)

Federal prescribed fire programs are guided by the principles of the 1995 Federal Wildland Fire Management: Policy and Program Review (USDI, USDA, 1995) and the 2001 update (USDA, USDI, et al, 2001). Federal wildland fire policy is guided by the 2009 Guidance for Implementation of Federal Wildland Fire Management Policy (USDA, USDI, et al, 2009)

All prescribed fire activities would be in accordance with Federal, State, and local requirements.

Prescribed Fire Plans (PMS 484)

The National Wildfire Coordinating Group (NWCG) establishes national interagency standards for planning and implementation of prescribed fire. A site-specific prescribed fire plan is legally required prior to implementing burns. Prescribed Fire Plans must address twenty-one required elements, including a complexity analysis, technical review and approval of an Agency Administrator, ignition authorization, a "Go/No-Go" checklist, smoke management and air quality compliance through permits and notifications, and a monitoring plan. Specific burn conditions and each burn unit size would be determined and explained prior to approval, in accordance with policy and direction for using prescribed fire treatments. The type of prescribed fire being applied and the acres to be burned would be determined during the development of the project-specific prescribed fire plan.

Montana Air Quality

The Montana Ambient Air Quality Standards: The Administrative Rules of the State of Montana, Chapter 17.8, Subchapter 2, Ambient Air Quality, state air quality requirements. Montana's standards are as stringent as, or more stringent than, the national ambient air quality standards.

Montana State Implementation Plan: The collection of Environmental Protection Agency-approved programs, policies, and rules that the State of Montana uses to attain and maintain the primary and secondary National Ambient Air Quality Standards.

Other documents that guide specific actions in the planning area:

- Montana/Idaho Airshed Group Operations Guide (Montana/Idaho Airshed Group 2010)

All prescribed fire activities would be in accordance with Federal, State, and local requirements.

Endangered Species Act

The Endangered Species Act (ESA) of 1973 requires all Federal agencies to review any project authorized, funded, or carried out to determine whether or not the action is likely to jeopardize the continued existence of species listed as threatened or endangered or species proposed for listing. On the Helena-Lewis and Clark National Forest, this requirement applies to five species listed as threatened (bull trout, Canada lynx and its critical habitat, grizzly bear, wolverine, and whitebark pine) and two species proposed for listing as threatened or endangered (monarch butterfly and Suckley's cuckoo bumble bee). The review is accomplished via preparation of a biological assessment that looks at the potential impact of a proposed action (but not all of its alternatives) on listed or proposed species that may be present in or around the project area.

National Historic Preservation Act of 1966

See "Heritage Resources" above for a brief description how this project is in compliance.

Administrative Review and Objection Rights

This decision is subject to objection pursuant to 36 CFR 218 and must meet all of the requirements of 36 CFR 218.8. A written objection, including attachments, must be postmarked or received within 45 days after the date that notice of this draft decision is published in the Helena Independent Record. Electronic objections are preferred and must be submitted to the objection reviewing officer online at https://www.fs.usda.gov/project/hlcnf/?project=63783, with "Helena-Lewis and Clark Forestwide Prescribed Fire Project Objection" in the subject line. Electronic submissions must be submitted in a format that is readable with optical character recognition software (e.g., Word, PDF, Rich Text) and be searchable. An automated response should confirm your electronic objection has been received. If the sender does not receive an automated acknowledgement of receipt, it is the sender's responsibility to ensure timely receipt by other means.

Written objections may be submitted via regular mail to: Reviewing Officer, Northern Regional Office, Attn: Helena-Lewis and Clark Forestwide Prescribed Fire Project Objection, 26 Fort Missoula Road, Missoula, MT 59804. Objections sent by private carrier or hand delivery must be addressed to: Reviewing Officer, Northern Regional Office, 26 Fort Missoula Road, Missoula, MT 59804. Office hours are Monday through Friday, 8 a.m. to 4:30 p.m., excluding Federal holidays, for hand delivery.

If an objection is received, notice of an objection resolution meeting open to the public will be posted on the Helena-Lewis and Clark National Forest website.

Implementation

If no objections are filed within the 45-day time period, implementation of the decision may occur on, but not before, September 12, 2025. When objections are filed, implementation may only occur after the reviewing officer has provided responses to all pending objections and all concerns and instructions of the reviewing officer have been addressed.

For further information concerning the Helena-Lewis and Clark Forestwide Prescribed Fire Project, contact Emily Platt (Emily.Platt@usda.gov, 406-449-5201) during normal business hours.

Approved by:

Emily Platt, Ph.D. Forest Supervisor Helena-Lewis and Clark National Forest	Date