*Figure 1 View of the Wolf Creek Drainage*

# FOREST RESILIENCY IN THE WOLF CREEK COMMUNITY PROJECT

## Phase Three Targeted Implementation Plan


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# Project Summary:

**Program**: Environmental Quality Incentives Program (EQIP)

**Land Use Eligible**: Forest

**Primary Resource Concern**: "Plant structure and composition"

**Secondary Resource Concerns**: "Plant pest pressure" and "wildfire hazard from biomass accumulation"

**Proposed Phase Three Dates**: Fiscal Year (September 30th) 2024-2026

**Phase Three TIP Funding Request**:

*Table 1 *Yearly obligation amount based on estimated contract acres per year being $1,000 - $1,100 per acre.*

| Phase Three Tip Obligation Request | | |
|---|---|---|
| **Year** | **Acres to be Contracted** | **Obligation Requested*** |
| 2024 | 600 | $660,000 |
| 2025 | 696 | $765,600 |
| 2026 | 696 | $765,600 |
| Three Year Total | 1993 | $2,192,300 |

**Project Description:**

The goal of this TIP is to improve forest health and resiliency in the community of Wolf Creek by assisting private landowners in improving forest structure and composition, mitigating the impacts of forest pests, and reducing the impact of wildfire. The resource concern category that will be addressed is "plants" with a focus on the primary resource concern "plant structure and composition". Secondary resource concerns addressed will be "plant pest pressure" and "wildfire hazard from biomass accumulation". Removal of dead, dying, and structurally compromised trees will improve forest structure and composition, reduce plant pest pressure, mitigate wildfire hazard, and increase plant productivity and health.

**Multi-Phased Approach:**

This Targeted Implementation Plan (TIP) proposal addresses phase three of the Forest Resiliency in the Wolf Creek Community Project. Phase one is in progress and phase two has been deemed investment ready with contract development under way. Phases four and five will be separate TIP proposals with independent write-ups expected in the next four years.

Due to geographic, time, financial, and outreach limitations, this project has been broken down into five phases (see figure 2). By breaking the project into multiple phases, the local field office can distribute resources and workload needed to achieve the goals of the project over a greater length of time. The dominant factor influencing this decision is the extraordinary amount of funds that would need to be obligated in a single round of funding to accomplish the project. Estimates show that over the life of the combined phases, over five million dollars of assistance are needed to adequately address the resource concerns identified.

The Helena field office recognizes that not all individuals like to pioneer new projects or management techniques. Some prefer to watch and learn from the success, and failures of others before initiating work of their own. A series of five phases is optimal for this situation as it provides four primary phases which capture early adopters and community influencers followed by a fifth phase which unites the whole project area and efficiently captures any late adopters bringing a positive wrap to the project. The intent of the final phase is to include individuals who were missed for any reason during the previous four phases. This allows the field office to incorporate landowners who are enticed into cooperation based on the work they see happening on their neighbor's properties.

**Success in Previous Phases:**

Thus far the project has experienced positive reception from the Wolf Creek Community putting phases one and two on a path towards success. Anecdotally, there have been several landowners who were initially skeptical of the program but have now submitted applications for assistance after having the opportunity to observe the implementation process on neighboring properties. This momentum has been widespread enough that the project has begun to develop a life of its own and awareness has spread widely through the community via word of mouth. Empirically, phase one has received eight applications constituting 40% of the goal for landowner cooperation in that phase, those applications represent 14% of the 1,172 acre objective for that phase. Phase two has received three applications constituting 33% of the goal for landowner cooperation in that phase, those applications represent 50% of the 995 acre objective for that phase.

# Geographic Focus Area:

**Full Project (All 5 Phases):**

This project focuses on part of the Wolf Creek community where interest has been expressed by landowners concerned with forest pest damage. The project area is a priority within the county because of the canyon like topography which limits ingress and egress. Additionally, tree density and propensity for wildfire are relatively high as evidenced in the current conditions section of this document and supported by the occurrence of the 2021 Rock Creek Fire occurring on similar terrain about 5 miles northeast of the project boundary.

The full project boundary (Figure 2) is I-15 to the east, Highway 434 and the 2019 Lewis & Clark-Jefferson Hazardous Fuels TIP boundary to the north, Forest Service to the west, and Lyon's creek to the south. This project is completely within Lewis & Clark County. There is some state of Montana, U.S. Forest Service (USFS), and U.S. Bureau of Land Management (BLM) properties within the boundary (tables 2 and 3). There is a total of 30,105 acres within the entire five phase project boundary. Of the privately owned land, about 17,200 acres are forested, representing 90% of the 19,179 acres of privately owned lands.

*Table 2 Landowners and Respective Acreage, within all five phases*

| Total Acres by Ownership Within All Five Phases | | |
|---|---|---|
| **Owner** | **Acres Within Whole Project Boundary** | **Percent of Whole Project Boundary** |
| Private | 19,179 ac | 64% |
| U.S. Bureau of Land Management | 398 ac | 1% |
| U.S. Forest Service | 640 ac | 2% |
| State of Montana | 9,888 ac | 33% |
| **Total** | **30,105 ac** | **-** |

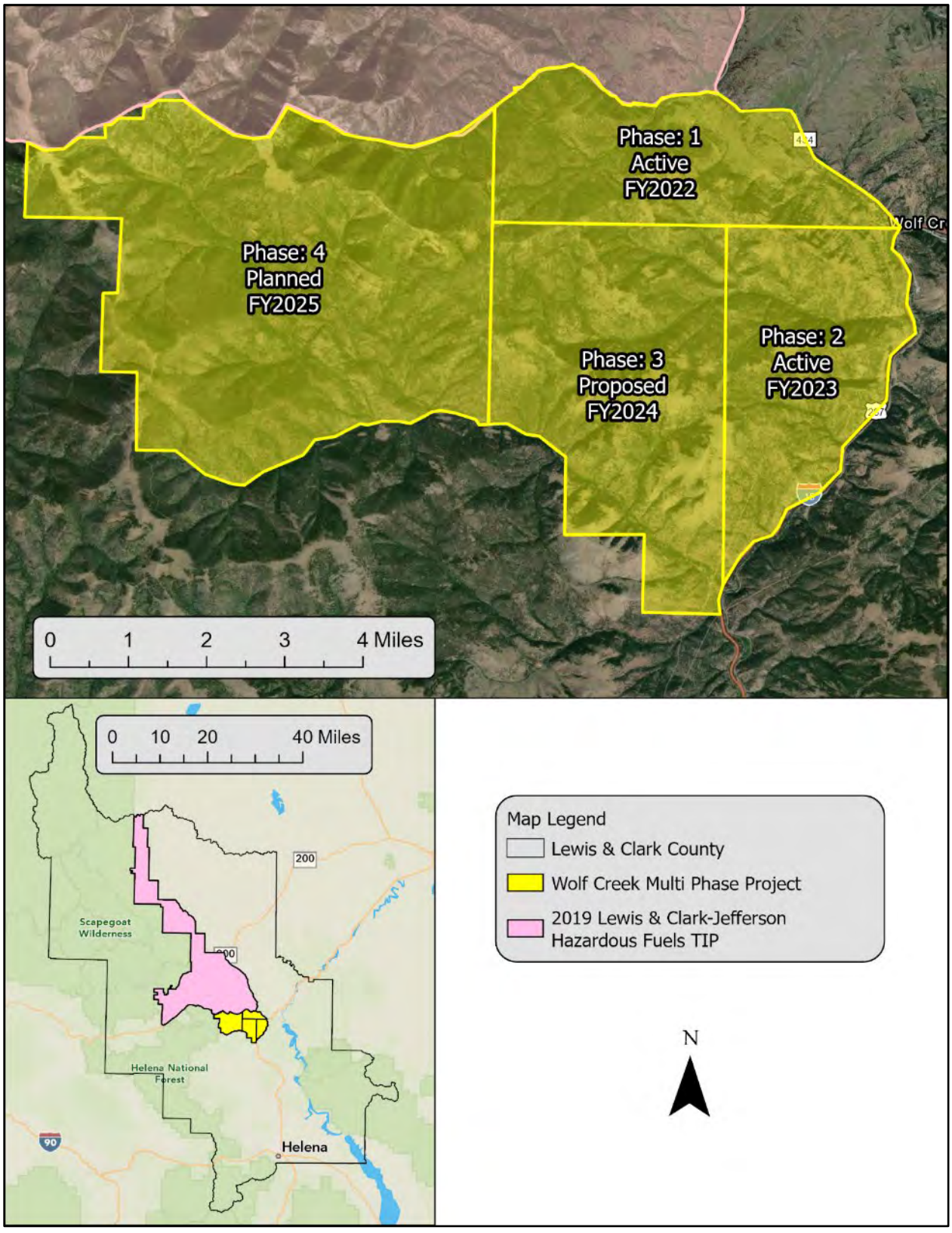


*Figure 2 Full Project Location Map (All Phases)*

**Phase Three TIP:**

Phase three forms the south-central portion of the full Forest Resiliency in the Wolf Creek Community project. The boundary is defined by phase one to the north, phase two to the east, phase four to the west and Lyon's Creek to the south (Figure 2).

The geographic area of phase three was selected as the next area for treatment because there are smaller parcels and more landowners compared to the other remaining phases. Which means phase three will take more time to complete, allowing the completion of the multi-phased project to occur around the same time.

**Number of Landowners and Acres**:

There are 38 private landowners in the phase three boundary. Of the privately owned land in phase three, approximately 4,983 acres are forested, making those the eligible acres in this TIP. Because participation in government programs within the community is historically low the Helena field office seeks to implement contracts with either 40% of the landowners or 40% of the eligible acres in phase three which is a total of 1993.5 treated acres or 15 landowners.

*Table 3 Landowners and Respective Acreage, in Phase 3*

| Acres Within Phase Three by Landowner | |
|---|---|
| **Owner** | **Acres Within Phase 3 Boundary** |
| Private | 5,360 acres |
| U.S. Bureau of Land Management | 8 acres |
| State of Montana | 2083 acres |
| **Total** | **7,451 acres** |

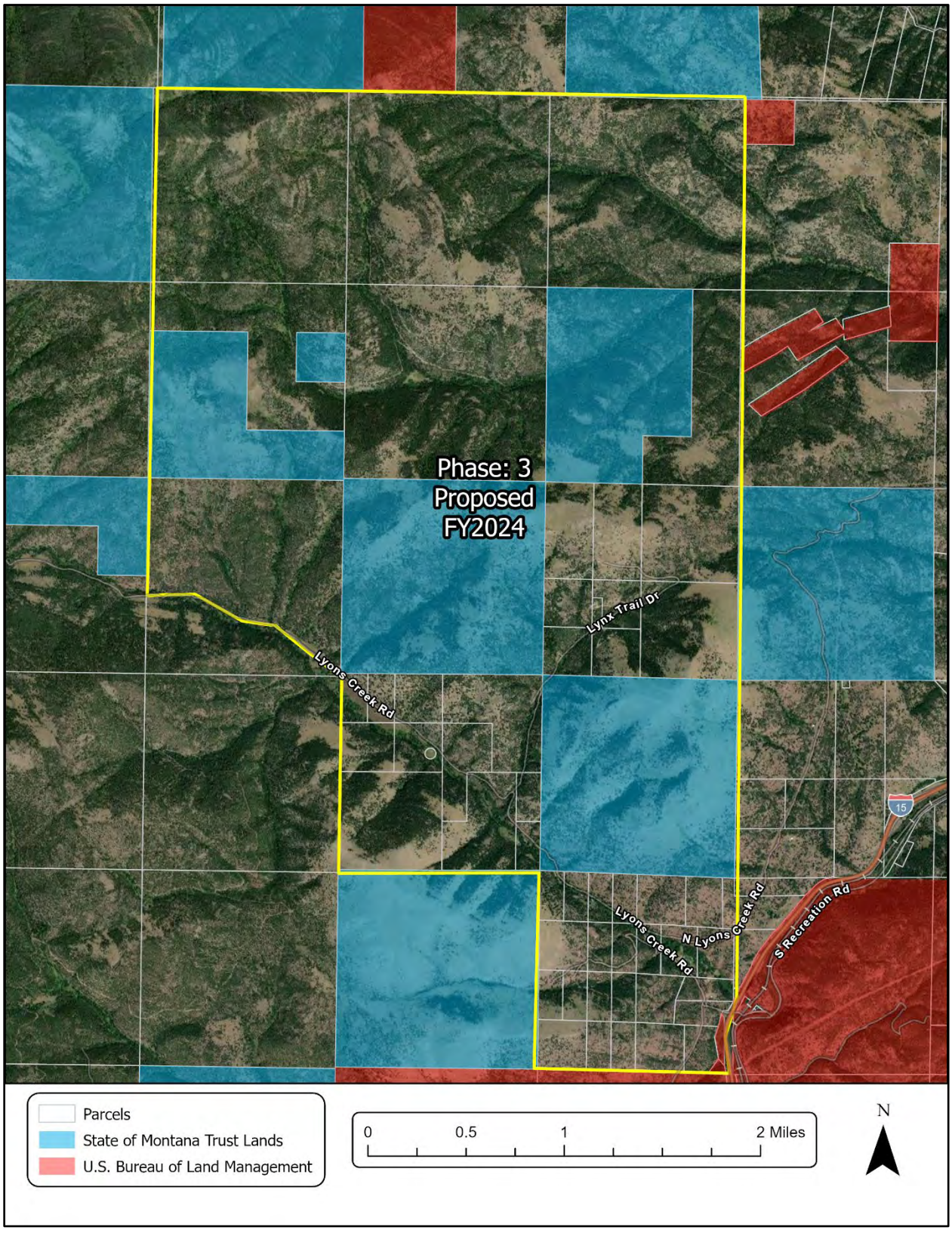


*Figure 3 Phase Three Location Map*

## Resource Concerns:

The primary resource concern to be addressed by this TIP is "Plant Structure and Composition". The secondary resource concerns are "Plant Pest Pressure" and "Wildfire Hazard from Biomass Accumulation". If left unaddressed, forest structure, composition, and fuel loading will continue to degrade putting the community at greater risk for widespread, severe, forest pest epidemics and high intensity, high severity wildfire.

**Lewis & Clark County Long Range Plan:**

A long-range plan identifying priority resource concerns for Lewis & Clark County was developed by field office staff and the Lewis & Clark Conservation District through a series of local work group meetings. During the planning process a list of nine natural resource concerns and desired outcomes were developed. Among these, "Forestry Concerns" (page 20 of the long-range plan) is the most pertinent to this proposed TIP. Specifically, the plan describes the various issues specific to beetle killed forests including fire hazard, danger of falling trees during high wind events, and the exclusion of livestock.

**Montana State Forest Action Plan**:

The resource concerns addressed through this TIP align with the 2020 State of Montana Forest Action Plan (MFAP), an all lands, all hands plan for addressing forest health and wildfire risk issues across the state of Montana. Of the seven priority concerns detailed in the MFAP, this project addresses six. These include "forest health, wildfire risk, working forests and communities, biodiversity and habitat conservation, human and community health, and sustainable cross-boundary work in Montana".

**Current Conditions:**

There are two generalized stand types within the targeted focus area each described below, the two types tend to correspond with aspect.

North facing slopes feature stands of predominantly Douglas-fir (*Pseudotsuga menziesii*) with densities as high as 1,980 trees per acre (TPA) and basal area (BA) nearly 180 $ft^2$/ac. Additionally, a high number of snags in these stands contribute to wildfire concerns. These stands are characterized by Fire Group Five, cool dry Douglas-fir types and Fire Group Six, moist Douglas-fir types (Fischer-Bradley 1987). Portions of the stands included in Group Five tend to have a dominant canopy of Douglas-fir with a co-dominant component of ponderosa pine (*Pinus ponderosa*) and lodgepole pine (*Pinus contorta*). The understory is dense, suppressed Douglas-fir regeneration in the seedling and sapling stages. In contrast, the stands represented by Fire Group Six tend to have a single-story canopy of mixed Douglas-fir and lodgepole pine. Both stand types feature ample fuel continuity through the overstory with multistory structure in Fire Group Five and dead branches and snags providing ladder fuels in Fire Group Six. Fire return intervals in these stands was historically between 35 and 45 years (Fischer-Bradley 1987).

Southerly stands have a dominant canopy comprised of ponderosa pine with stand density around 840 TPA and BA around 120 $ft^2$/ac. Woody materials tend to be downed by wind and other events creating a forest floor with continuity of ground fuels that are between 12 and 15 tons per acre (Logar 2008). These stands resemble Fire Group Four (Fischer-Bradley 1987) with fire return intervals expected to be 5 to 25 years but may be as high as 50 years. Based on conversations with landowners and analysis of

historical aerial photographs there has not been a significant fire event within the project boundary since 1992, which is 5 years longer than the average natural fire return interval.

Across all aspects, mountain pine beetle (*Dendroctonus ponderosae*) and western spruce budworm (*Choristoneura freemani*) activity has resulted in high rates of tree mortality in existing forest stands. Ips beetle (*Curculionidae*) activity is also present and increases the challenge and cost of managing forest stands because the species uses slash as forage and habitat.

*Figure 4 Photo showing densely stocked stands of Douglas-fir typical of northerly aspects in the project area.*

*Figure 5 Photo exhibits forest pest mortality, blowdown, and buildup of woody debris common on south slopes in the project area.*

## Goals and objectives:

**Desired Condition Goals:**

To achieve desired conditions which support a healthier and more resilient forest, tree densities should be around 200 - 800 TPA depending on the average size and species composition. Healthy stocking density basal area should be between 44 $ft^2$/ac - 107 $ft^2$/ac. Optimal woody residue loads range from 2 - 9 tons per acre. Considering fire return intervals may not be restored due to many factors, silvicultural treatments will take place to mimic natural processes.

Management should increase or maintain tree species diversity, which helps to decrease impacts of forest pests. Because most forest pests have a preferred host, richness in species composition limits the amount and suitability of forage and habitat available to pest species slowing their spread and reducing their ability to reproduce. Forest pest species including pine beetle, western spruce budworm, and ips beetle will remain present in forest stands but forest structure and composition will limit damage and reduce tree mortality.

*Figure 6 Photo of a forest thinning project in progress within the Wolf Creek drainage, note the contrast of stand density and woody debris loads relative to figures 4 and 5*

**Management Objectives:**

Proactive management helps to improve forest health while reducing wildfire risk from biomass accumulation. There are landowners who are currently working to improve their forest stands and reduce fuels but many lack the resources and knowledge to adequately address the issues on their own.

Investing in this TIP will enable landowners to improve the resiliency of forest stands on their property. Plant health and vigor will be improved in treated areas through forest thinning to reduce stand density and improve structure and composition. Lowering the stand density reduces competition for available sunlight, nutrients, and moisture allowing the remaining trees to devote more energy and resources to growth and defense mechanisms improving resiliency to pests.

Components of stand structure will be modified by reducing ladder fuels, breaking up fuel continuity and lowering fuel loads. Trees selected to remain on the landscape will be free of insect and disease infestation; have vigorous crowns and little physical defect such as crooked stems, or broken tops. Where available, seral species such as ponderosa pine will be favored over shade tolerant species like Douglas-fir which tend to regenerate prolifically and overrun forest stands, this will improve composition and species diversity.

The increased vigor and modified structure of treated stands will result in increased resiliency to forest pests such as western spruce budworm and bark beetles. Additionally, risk of high severity, high intensity wildfire will be reduced via lower fuel loads and disruption of fuel continuity.

# Alternatives:

**Alternative #1 (Not Selected)** Implement a targeted implementation plan with a reduced practice list consisting of just the Fuel Break practice and limiting focus to areas with development and infrastructure. This would aid landowners in creating defensible management areas in locations where wildfire hazard from biomass accumulation poses a direct threat to the community. However, this alternative would do little to address the plant structure and composition or plant pest pressure resource concerns at the landscape scale.

**Alternative #2 (Selected)** Execute a targeted implementation plan with a full suite of practices and broad focus across the landscape. This would bolster the ability of individuals to take the actions outlined in the practice code table (table 4) to address the "plants" resource concern category on their properties. More importantly, the project would unite individual efforts and address forest health concerns at a landscape scale.

**Alternative #3 (No Action)** The no action alternative consists of continuing the current paradigm of providing technical assistance without financial assistance. No action will result in a failure to address continued degradation of plant condition and buildup of fuels with correlating susceptibility to forest pest and wildfire. Resource concerns will continue to be addressed by individuals in a piecemeal approach providing some improvement over existing conditions but will do little to address the issues at a landscape scale.

# Implementation:

**Eligible Practices and Proposed Payment Schedule**:

| Eligible Practices and Corresponding Payment Schedule | | |
|---|---|---|
| **Practice Code** | **Practice Description** | **Payment Schedule Per Acre*** |
| 315 | Herbaceous Weed Treatment | $33.12 - $201.11 |
| 383 | Fuel Break | $858.02 - $1,492.61 |
| 384 | Woody Residue Treatment | $110.38 - $634.56 |
| 660 | Tree / Shrub Pruning | $235.05 - $378.94 |
| 666 | Forest Stand Improvement | $350.76 - $696.92 |

*Table 4 Eligible Practices and Payment Schedule *Payment schedule is based on FY2023 payment schedule and is subject to change.*

Herbaceous Weed Treatment (315) will be implemented to control weeds that are currently on site. Weed control is critical to the project to ensure disturbance from management does not result in the prolific spread of noxious weeds, further degrading plant condition.

Fuel Break (383) will be used to remove or reduce vegetation, debris, and detritus to slow the spread of wildfire near infrastructure. Fuel breaks will be emphasized around dwellings, structures, and roadways.

Woody Residue Treatment (384) is intended to treat the woody materials present due to pest activity in addition to any residual woody materials created during project implementation. Treatment of woody

materials will reduce hazardous fuels, reduce forest pest habitat, and improve access to forage for livestock. This practice is commonly used in conjunction with Forest Stand Improvement (666).

Tree / Shrub Pruning (660) has been included to offer a management tool to remove low hanging live branches that may act as ladder fuels decreasing the chance of crown fire occurring. Pruning also provides increased airflow and reducing the spread of some pests.

Forest Stand Improvement (666) will be used to manipulate species composition, stand structure, and stocking densities by cutting and removing trees. These techniques will reduce wildfire risk and improve stand vigor and defense against forest pests.

**Outreach**:

Outreach will be performed by Lewis and Clark Conservation District, Montana Department of Natural Resources and Conservation, and the Helena NRCS staff. Word of mouth has proven to be a valuable resource in the Wolf Creek community during past projects. Targeted mailing campaigns through partnership with DNRC have generated many applications in phases one and two of this project and will be used again in phase three. A series of field tours and workshops are being planned to showcase completed projects and garner additional interest.

## Partner Contributions:

**Lewis & Clark Conservation District (LCCD)** – The Lewis & Clark Conservation District has agreed to assist the field office with project planning and development. The primary form of assistance will come as help coordinating and hosting outreach and community engagement events. These events will be town hall and workshop style and used to generate interest in the project.

**Montana Department of Natural Resources & Conservation** – DNRC has and continues to do forestry work in and around the project boundary via local DNRC service foresters who provide landowners with technical assistance planning and managing their forest properties. Another DNRC project of note in the area is the Golden Crown Stewardship Initiative which has treated 190+ acres of forested lands from 2016 to 2020. More information on the Initiative can be found on the Golden Crown Stewardship Initiative website.

DNRC has entered a contract with MT NRCS to assist with the development of forest management plans as a required component of forestry EQIP contracts. The contract also provides for assistance with outreach for NRCS programs such as targeted mailings and outreach events.

**Lewis & Clark County Weed District** – The Weed District provides landowners with technical assistance in the form of: help developing noxious weed management plans; specific herbicide recommendations, something the NRCS cannot provide; and an herbicide cost share program. Weed district assistance works synergistically with the forest management activities in this project and helps reduce NRCS workload.

**Tri-County Firesafe Working Group (Tri-Co):** Tri-Co hosts a Community Assistance Program funded through the Bureau of Land Management. Most landowners within this TIP are eligible and the program provides technical and financial assistance for landowners undertaking wildfire preparedness

treatments. Discussions between Tri-Co and NRCS have identified this resource as a good fit for small acreage landowners in the project area as an alternative funding source while larger landowners will be encouraged to pursue NRCS programs.

## Outcomes:

1. Improved forest structure and composition resulting in improved pest resiliency, plant health, and wildfire resistance. Measured as the number of acres reduced to the suggested stocking densities outlined in MT NRCS Practice Specification, Forest Stand Improvement (code 666). The current specifications are located here but are currently under review with changes expected.
2. Increased fire resiliency of the Wolf Creek Community. Measured as the number of properties that have fuel breaks implemented on forest land.
3. Increased resiliency of landscape to forest pests. Measured as the difference in the number of acres managed with the forest stand improvement practice before and after TIP completion.
4. Increase in public awareness and knowledge of the identified resource concerns, measured as the number engagements with individuals through technical assistance and outreach events.
5. Project success, measured as treatment of at least 40% of eligible acres (1,993 acres) with NRCS Fuel Break, Woody Residue, or Forest Stand Improvement practices or contracts with 40% of landowners (15 landowners) in project boundary which include these practices.
6. Documentation of project implementation through before and after photographs.

## TIP Ranking Questions:

1. What are the existing average trees per acre (TPA) on the planned acreage?
    a. 1,601 TPA or more
    b. 801-1600 TPA
    c. 800 TPA or less
2. Does the application include stands that have identified western spruce budworm or mountain pine beetle problems in one or more tree species?
    a. Both pests are present
    b. One pest species is present
    c. No
3. What is the majority of the planned acreage according to the 2020 USFS Wildfire Hazard Potential Map?
    a. Very high
    b. High
    c. Moderate
    d. Low
    e. Very Low

## **Sources Cited**:


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