Hilger Valley Conifer Encroachment Targeted Implementation Plan

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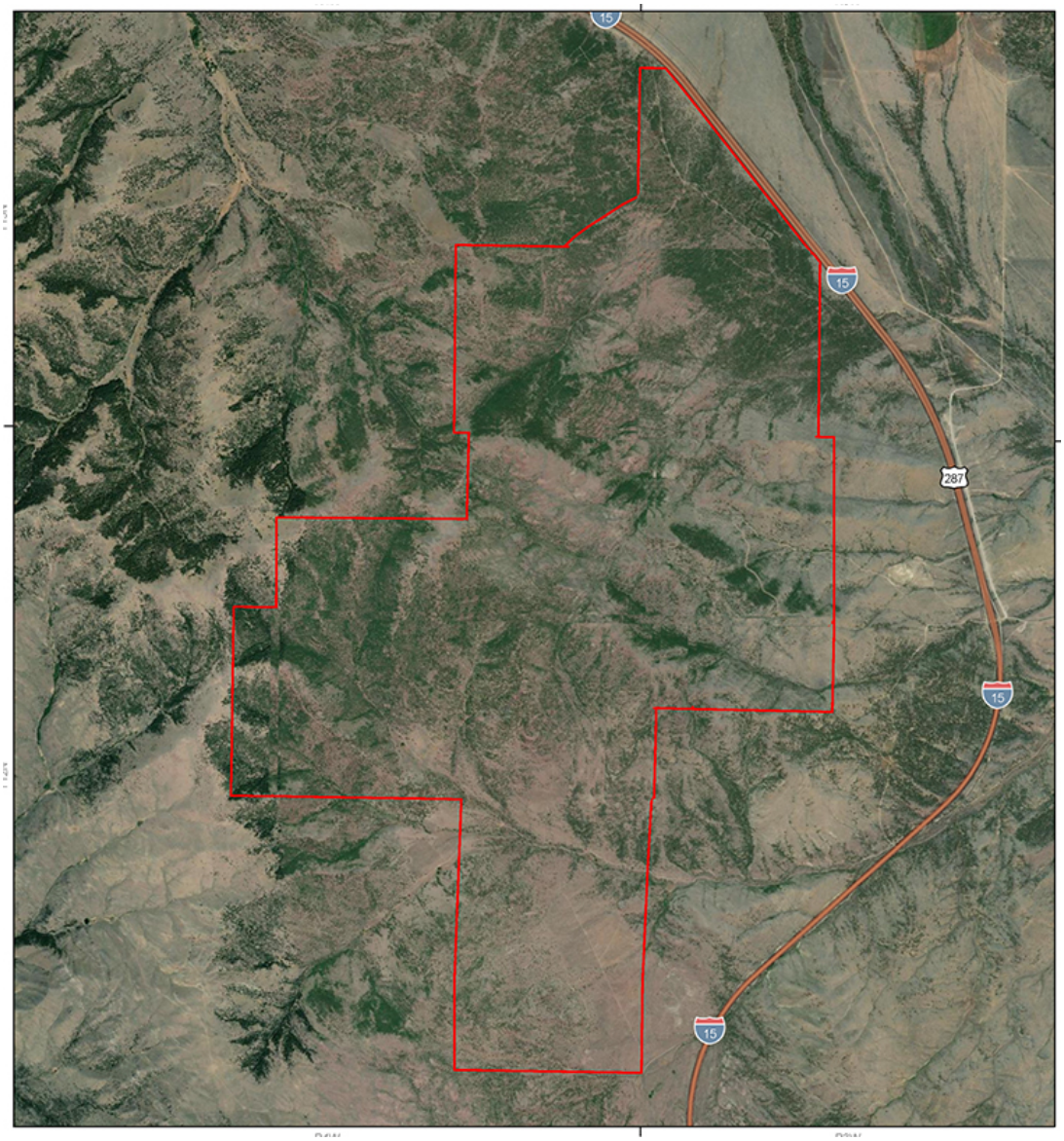


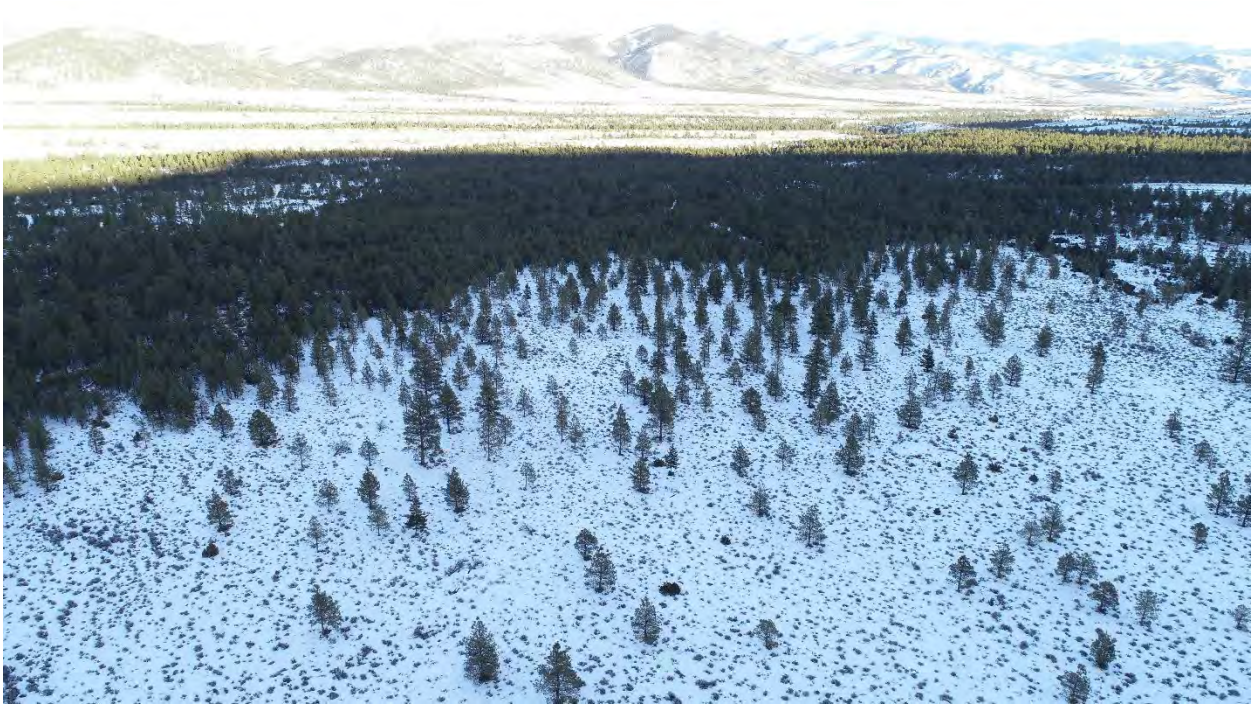
Goal Statement:

The goal of this Targeted Implementation Plan (TIP) is to restore intermountain grasslands by assisting private landowners in the Hilger Valley with the removal of conifer trees including Rocky Mountain juniper (*Juniperus scopulorum*), ponderosa pine (*Pinus ponderosa*), and Douglas-fir (*Pseudotsuga menziesii*), which are encroaching upon native rangeland. The primary resource concern we will address is plant pest

pressure. Conifer encroachment due to fire suppression has resulted in a decrease in high quality grassland and sagebrush habitat. Conifer removal will also increase desirable plant productivity and health, provide additional forage for livestock and wildlife, and improve upland hydrologic functions in the project area.

TIP Summary:

The Hilger Valley Conifer Encroachment TIP will treat the priority resource concern of Plant Pest Pressure by removing encroaching conifers from intermountain grasslands. Secondary resource concerns that will also be addressed with the implementation of this TIP are water quantity and quality and wildfire hazard. This will be accomplished by implementing the conservation practices Brush Management (314) & Forest Stand Improvement (666) with the supporting practice of Woody Residue Treatment (384) and Prescribed Grazing (528). This TIP is needed because conifer encroachment has increased in this high priority conservation area over time due to fire suppression. NRCS will help private landowners to treat approximately 500 acres of conifer encroachment. This will treat encroachment on approximately 20% of the private rangeland along with some forestland in the TIP area with encroachment resource concerns. We are requesting $120,000 each year for 3 years. This TIP will not only physically restore intermountain grassland but will strengthen the concept and emerging local culture of actively managing conifer encroachment.

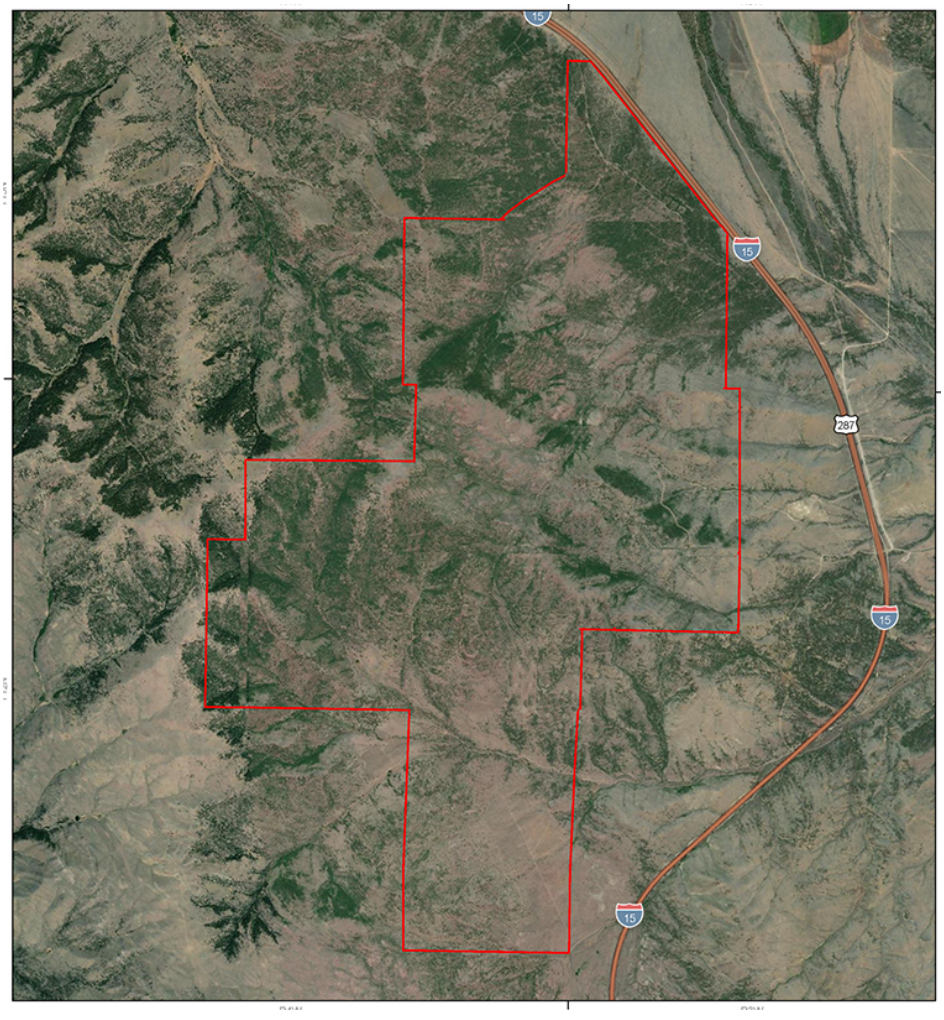


Location:

The Hilger Valley consists of the lower elevation areas 17 miles north of Helena, MT, along both sides of Interstate 15. More specifically, the valley is bound on the north by the Wolf Creek Canyon, on the east by Upper Holter Lake and surrounding foothills, and on the south and west by the Baldy Mountain

foothills. This geographic area lies in Lewis and Clark County, within the Lewis and Clark Conservation District (LCCD). The entirety of the proposed TIP area consists of private land, except for a few sections of Montana State Trust Land. Although the boundary of the TIP area encompasses over 5,600 total acres, aerial photography interpretation and ground truthing suggests about 47% of these acres are affected by conifer encroachment. This area was delineated based on the following factors: ecological connectivy of portions of Agate Springs drainage and the surrounding foothills; location of ready, willing, and able landowners; and workload management.

Map 2: Hilger Valley TIP Location



Resource Concern:

The encroachment of conifers on rangeland has been a problem in the Hilger Valley for generations. Decades of wildfire suppression and absence of anthropogenic fire has resulted in conifer encroachment and is causing multiple resource concerns on rangeland throughout the western United States. Scientific evidence suggests that intentional fires set by native peoples in the West were used as an important tool to deter the encroachment of conifer species and improve the growth of grass and beneficial shrubs. The absence of present day wildland fire and modern livestock grazing have contributed to a large-scale change in Western grassland landscapes.

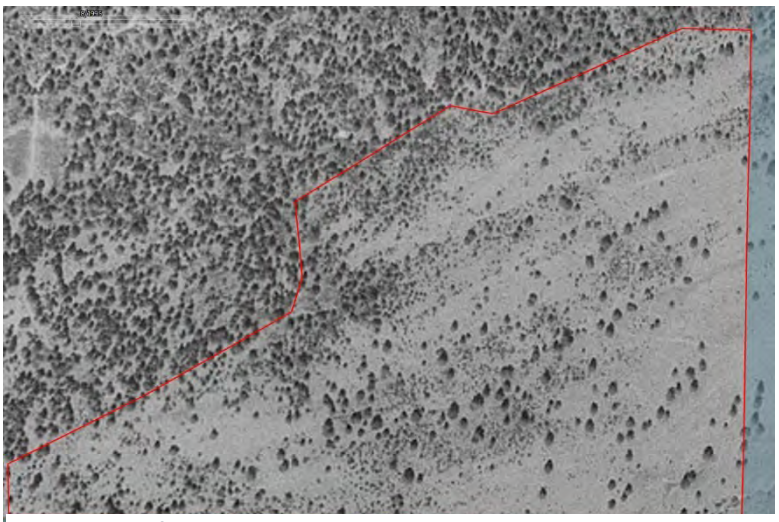


Figure 1: Conifer encroachment 1995

Conifer encroachment decreases necessary water quantity for grasses and forbs on rangeland, leading to degraded ecosystems and changing plant communities. Conifers also out-compete desirable perennial grasses and shrubs, resulting in less available forage for livestock and wildlife.

A reduction in perennial grass cover also contributes to increased soil erosion issues. Soil erosion can lead to noxious weed infestations and competition from undesirable grasses.

Figure 2: Conifer encroachment 2020

In addition to the concerns mentioned above, the continued expansion of conifers onto rangeland can directly decrease favorable forage production. This loss of forage production not only affects livestock, but also negatively affects local wildlife populations ranging from large ungulates to grassland birds and rodents.

Conifer encroachment has recently been identified by the LCCD as a resource concern of high importance within the Hilger Valley watersheds. Both landowners and agencies are beginning to realize that the time for restoring native grassland vegetation is now. Delaying effective conservation measures could result in ecosystems becoming degraded beyond repair due to permanent vegetation and seed bank alterations. There is also emerging interest among landowners in the area for employing mechanical removal of conifers and prescribed fire as a management technique. We believe that this TIP is likely to foster a culture of encroachment management.

Conifer encroachment in the Hilger Valley has contributed to an increase in plant pest pressure. Due to the lack of disturbance and counter to landowner objectives, conifers are limiting plant productivity, vigor, health, and quality. NRCS staff has conducted ocular estimates of conifer canopy cover and vegetative composition in the proposed TIP area. The estimates revealed conifer canopy cover up to 70% on what was once native rangeland. Increased conifer cover has had a large reduction in the propagation of native grasses. This concern is widespread in Montana and occurs primarily near the rangeland/forest interface. Conifer encroachment has specifically been identified as a resource concern for Lewis and Clark Conservation District in the NRCS Long Range Plan.

This landscape-scale ecosystem change has negatively affected native rangeland in several ways:

- The increase of conifer density affects water quantity. A reduction in water availability can decrease perennial grasses and forbs, leading to an increase in surface water runoff, a main contributor of soil erosion. This reduction in available forage will affect livestock as well as wildlife.

- Wildlife habitat is affected by conifer encroachment. Many grassland-obligate species avoid areas with trees. Conifer encroachment on historical grassland leads to habitat avoidance as well as increased predation and nest parasitism of birds that have evolved in a grassland ecosystem. Conifer encroachment was identified as one of the primary threats to this habitat.

- As an invasive species on rangeland, conifers shade out native perennial grasses and forbs. Encroachment can create favorable conditions for noxious weed invasions as well as cheatgrass, leading to native ecosystem degradation. The resulting vegetation change would lead to eventual soil erosion as well as increased fuel loads.

- Increased fuel loads increase the potential for severe wildfires. This, in turn increases the destructive capabilities of a wildfire. As mentioned above, noxious weeds and cheatgrass can easily invade an ecosystem after wildfire. This continues to add to the fuel load and increases the risk of fire to the area, which affects the entire valley.

- Conifer encroachment leads to income loss. According to the Helena Field Office Long Range Plan, rangeland is the dominant agricultural land use in Lewis and Clark County and most farm income is derived from livestock, predominantly cattle and sheep. A loss of rangeland, which provides valuable forage for livestock, equates to a loss in farm income.

Goals & Objectives:

The objective of this TIP is to restore intermountain grassland by addressing the primary resource concern of plant pest pressure. Secondary resource concerns include: water quantity and quality, and wildfire hazard. Implementation of planned practices will strive to restore 500 acres of intermountain grassland habitat by removing widespread conifer encroachment in the Hilger Valley. We believe that

implementing this TIP will not only physically restore intermountain grassland but will strengthen the concept and emerging local culture of actively managing conifer encroachment.

Primary Goal:

- Decrease plant pest pressure while increasing plant productivity, composition, and health of intermountain grasslands by removing encroaching conifers.

The cumulative effects of reducing conifer encroachment will also:

- Increase available water quantity and quality / Restore hydrologic function
- Improve terrestrial habitat for wildlife & invertebrates
- Decrease wildfire hazard from biomass accumulation

Objectives:

- Remove 500 acres of conifer encroachment on private land within the Hilger Valley to decrease plant pest pressure and increase plant productivity, composition, and health of intermountain grasslands
- Treat proposed TIP acres with Brush Management (Practice 314), Woody Residue Treatment (Practice 384), Forest Stand Improvement (Practice 666) and Prescribed Grazing (Practice 528) by obligating 3-year contracts during 3 consecutive sign-up years.

The desired future outcomes within the contract obligation and implementation time frame include: a reduction in conifer encroachment in the Hilger Valley TIP proposal area, an increase in perennial grasses, forbs, and shrubs, and a reduced wildfire risk.

The primary measurable outcome of the Hilger Valley TIP proposal will be the restoration of intermountain grasslands. This will be accomplished by implementing NRCS practices 314, 666, 384, and 528. A second measurable outcome will be the increase in forage production for livestock and wildlife. This increase will be measured with line transects in predetermined locations, before and after treatment. A third associated outcome will be a reduction in fuel load and decreased fire risk associated with the removal of conifers from rangeland areas.

Alternatives:

1. **No Action**
   The "No Action" alternative will allow for the continued advancement of conifer encroachment and an overall decrease in intermountain grassland and sagebrush steppe. Grasses and forbs preferred by livestock and wildlife will decrease over time. This trend will directly contribute to an increase in fuels and an increase in catastrophic wildfire risk. As a result of continuing encroachment, conifer water-use will increase. Choosing this alternative will save landowners money in the short-term but may reduce long-term agricultural profitability. This alternative

does not meet the objectives of the Hilger Valley landowners or the Lewis and Clark Conservation District.

2. **Treat conifer encroachment using Prescribed Fire (338).**
   Evidence suggests that controlled fire is mainly effective on early successional stage conifers but is much less effective at removing trees beyond the seedling stage. Prescribed burning also brings the inherent risk of a controlled fire escaping the proposed practice area and threatening the surrounding landowners. Additionally, the temporary loss of forage due to burning is unacceptable to many landowners. Prescribed fire also removes sagebrush which is not an objective of this TIP.

3. **Removal of conifers using Brush Management (314), Woody Residue Treatment (384), Forest Stand Improvement (666), and Prescribed Grazing (528)**
   This alternative will remove the conifer encroachment through mechanical means. The encroaching conifers will be cut, and the resulting slash will either be scattered, masticated, or piled and burned. Rangeland areas with canopy tree cover over 25% will be address using the 666 practice as per the Brush Mgmt. specification. Each project area will be evaluated for possible deferment of grazing based on method of conifer removal. Landowners in the TIP boundary have Forest Management Plans. These FMP's will be updated if required.

   This approach has been applied successfully on many thinning and brush management projects throughout the Western United States and locally. Although this alternative is a higher cost than Alternative 2, it has lower risk to the landowner and NRCS and higher probability of success on older encroachment. This alternative is acceptable to most potential program participants and will more thoroughly address the resource concern.

Selected Alternative:

Alternative #3 is the preferred action alternative. Conifer encroachment will be controlled mechanically by applying practices 314, 384, and/or 666 and 528 to qualifying areas. Brush Management using chainsaws and machinery with hot saws will be the most used practice and will treat areas with up to 25% conifer cover. Forest Stand Improvement, intermediate silvicultural treatment, will be used on areas where canopy cover exceed 25% cover and 13' in height. Woody Residue Treatment will be used where it is necessary to treat the slash to meet specifications and reduce wildfire hazards. An additional component of deferred grazing (528) will be implemented in the treatment areas, post practice completion. This will ensure freshly treated areas have a chance to recover and new grasses/forbs to establish before livestock is reintroduced into the area. These methods have been used successfully on many treatment projects in Montana and can be completed quickly and effectively with very little risk to the landowner or to neighboring properties.

Implementation:

Implementation of the Hilger Valley TIP is ready to begin in 2024 with additional contract obligations in 2025 and 2026. Approximately 500 acres of private land within the treatment area have been identified as potential conifer encroachment problem areas by local landowners. The Helena NRCS estimates full

implementation of the plan over a three-year period. Properties of landowners that are ready, willing, and able to begin implementing conservation practices to treat conifer encroachment are currently being inventoried and are represented in Table 2. Several meetings have been held with landowners in the Hilger Valley resulting in interest from multiple landowners. These interested landowners have started the removal of conifer encroachment in nearby areas in recent years. Implementation of NRCS practices will embolden them to continue these efforts. A large surge in conifer removal is expected once this TIP becomes active.

The sequencing of the practice implementation will begin with committed landowners who are ready to begin work immediately and continue with other landowners over the three-year obligation period as they are ready. During this time the Helena Field Office staff, in coordination with partners, will continue to conduct outreach in the area to identify additional interested landowners for TIP sign-up periods in years 2 and 3.

Table 1: NRCS payment estimates for Year 1 of the Hilger Valley Conifer Encroachment TIP based on 2022 field inventories of 2 producers. We anticipate adding additional acres prior to the 2024 obligation.

Projected Contract Obligations - Year 1				
Practice	**Extent**	**Type**	**Payment Rate**	**Total**
Brush Management (314)				
Mechanical, Large Woody Vegetation, High Density	80	ac.	$407.02	$32,561.60
Mechanical, Large Woody Vegetation, Medium Density	0	ac.	$238.86	
Mechanical, Large Woody Vegetation, Light Density	20	ac.	$149.31	$2,986.20
Forest Stand Improvement (666)				
Intermediate Silvicultural Treatment	50	ac.	$577.16	$28,858.00
Woody Residue Treatment (384)				
Pile and Burn Scenario #6	120	ac.	$455.33	$54,639.60
Chipping	0	ac.	$486.60	
Prescribed Grazing (528)				
Range Deferment	150	Ac.	$6.88	$1,032.00
Total				$120,077.40

Table 2: Requested financial assistance obligation for the Hilger Conifer Encroachment TIP2024-2027.

TIP Obligation Request		
Year	**Acres Contracted**	**Obligation Requested**
2024	167	$120,077
2025	167	$120,077
2026	167	$120,077
Total	**500**	**$360,231**

The Helena NRCS office is currently staffed by a District Conservationist and two Soil Conservationists. This staff will be able to accomplish implementing this TIP without assistance from additional NRCS staff. Partner entities have already contributed to outreach activities and will continue to assist. Based on the estimates in Table 4, we anticipate full annual implementation time associated with TIP planning and contracting to require approximately 250 hours of work. We also expect to require 80 additional hours per year conducting outreach for the TIP with partners and potential participants.

Table 3: Expected NRCS Technical Assistance Hours per 50 contracted acres.

Expected NRCS Technical Assistance Hours per 50 contracted acres			
Task	**Hours Travel**	**Hours Work**	**Hours/Activity/Contract**
I&E	2	3	5
Plan Development		4	4
Contract Development		4	4
Implementation	2	4	6
Certification	5	8	13
Contract Maintenance		8	8
Total	9	31	40

Partnerships and Other Funding Sources:

Existing partners include the Lewis and Clark Conservation District (LCCD) & Montana Department of Natural Resources (DNRC). The Montana State Department of Natural Resources is planning on treating 250 acres of conifer encroachment inside of the established TIP boundary along with adjacent state lands outside of the TIP boundary. The DNRC will also assist the local landowners with the pile and burn practice of Woody Residue Treatment on their property. Established partners and their TIP contributions can be found in Table 1. The Helena Field Office will work with private landowners and operators to plan Environmental Quality Incentive Program (EQIP) contracts for financial assistance. We estimate that NRCS financial assistance for the Hilger Valley Conifer Encroachment Targeted Implementation Plan will total $360,000. The annual breakdown of financial assistance requested to implement this project can be found in Table 2.

Table 4: Established partners contributions to the Hilger Valley Conifer Encroachment TIP

Partner Contributions to Hilger Valley TIP		
Partner Organization or Agency	**Acres Treated**	**Assistance Provided**
LCCD	(In kind)	Outreach/Field Assistance
Montana DNRC	500	Pile & Burn/Outreach
Total	500	

Outcomes:

The outcome of this project can be measured by the number of acres of conifer encroachment treated. Acres treated is the most effective measure of success because it translates to acres of restored grassland ecosystem. The project will be considered successful if all the 500 acres targeted receive treatment within the TIP implementation timeframe. We anticipate three obligation years of three-year contracts. Treated acres will be recorded in NRCS's Conservation Desktop program and will be included in the annual report. Monitoring of grassland species composition will consist of photo-monitoring and vegetative transect at an identified location on each property and will be conducted by NRCS staff prior to or at the time of conifer removal and at minimum 1 growing season post treatment. Planners may choose to add monitoring sites of differing treatment types, if site conditions warrant.

For example, a contract with 314 Brush Management is completed with mastication/ heavy machinery and chain-saw hand felling. The planner may monitor each treatment type. With the goal of conifer removal, monitoring goals should be to demonstrate the treatments have effectively removed trees from the landscape. Monitoring will include a 100' transect. Photos of ground cover will be taken at 10', 30', 50', 70', 90' of the transect. A landscape photo will be taken at 0' facing towards 100', and from 100' facing towards 0'. Ecological Site Descriptions will be used to compare rangeland sites.

The Helena field office staff will compile a yearly report to outline acres treated, monitoring efforts that may be conducted, and any adjustments or changes will be made in the future for implementation. This report will be provided to the Assistant State Conservationist – Field Operations and their review and input will be requested for further streamlining the planning process.

Follow-up treatments by landowners are encouraged to maintain long-term favorable rangeland conditions for livestock. Landowners will be strongly encouraged to maintain the restored acres by removing new encroachment through mechanical methods or controlled burning as well as controlling infestations of invasive weeds through biocontrol, chemical or mechanical methods.

Hilger Valley Conifer Encroachment TIP Ranking Questions

Local Ranking Questions:

1. Will the acres of conifer encroachment be treated according to the ecological site description?

2. Are the proposed treatment acres located on property where a conifer encroachment project has been completed on nearby acres (< 5 miles) within the previous 5 years?

3. Are the proposed treatment acres adjacent to a perennial or intermittent stream?

4. Will the majority of the acres contracted contain a canopy cover of 25% or less?