FY2023 Kirby Area Forestry Management Targeted Implementation Plan (TIP)

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Figure 1.1 – Timber stand improvement project (Photo courtesy USDA-NRCS).

TIP Summary

Promoting timber stand management on up to 6,000 acres of rangeland and grazed forest will address degraded plant condition and fire management resource concerns to increase plant productivity and health and decrease wildfire hazard. The project would improve plant structure and composition resulting in fire danger mitigation and grazing resource improvements in the Kirby Area of Big Horn County. Implementation would occur during Fiscal Years 2023-2027 at the estimated cost of $3,700,000.00.

Resource Concern & Problem Statement:

This TIP proposal ties directly to the Big Horn County Long Range Plan (pages 16, 19, and 20) that references forest management as a resource concern for both plants and animals. The Kirby Area Forestry Management TIP also ties directly to the FY2021 and 2022 priority resource concern that the Big Horn County Local Working Group identified, which is Plant Productivity and Health on rangeland. The primary resource concern being addressed through this TIP proposal would be: Degraded Plant Condition – Plant Productivity and Health. Secondary resource concerns being addressed would include: Fire Management – Wildfire Hazard from Biomass Accumulation; and Degraded Plant Condition – Plant Structure and Composition.

Wildfires are a natural part of the forest ecological cycle in a fire dependent ecosystem such as Ponderosa Pine woodlands. However, the century long effort to suppress all fires has effectively taken it off the landscape resulting in a dramatic change in the composition of our forests and rangelands. This TIP would reduce fire danger and increase rangeland health across an 89,000 acre area. Lack of consistent timber markets and local lumber mills within a reasonable driving distance of the Kirby Area Forestry Management TIP has prevented landowners from effectively managing their trees through commercial timber harvest or thinning. (Parks 2018, Woodall 2021, Shakleton 2007, and Burkinshaw 2009).

Figure 1.2 - Grazed forest and open meadows in the project area (Photo courtesy of USDA-NRCS).

Figures 2.1, 2.2, and 2.3 provide a visual representation of how the Kirby Tip Area specifically exhibits the general effects of unmanaged forests and extreme fuel loading (see Background information section) and is therefore subject to threats posed by not addressing the resource concerns changes.

Figure 2.1 – Range Analysis Platform (RAP) Tree Cover comparison to 2005 (left) and 2019 (right) information. Darker orange indicates an increase in tree cover. TIP boundary lines are in light orange.

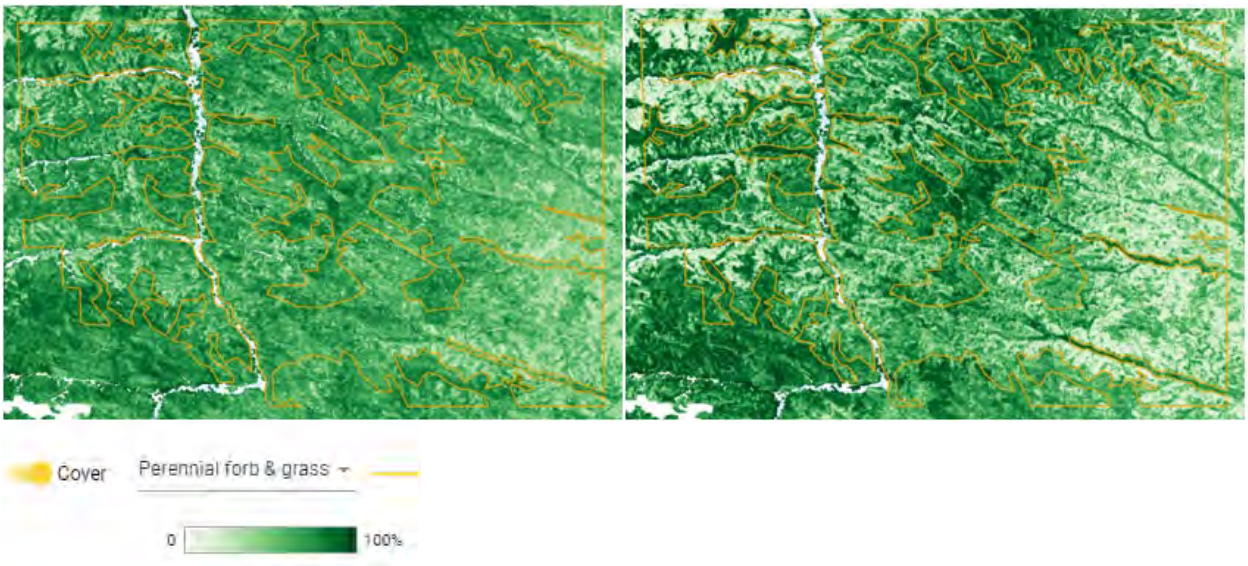

Figure 2.2 - Range Analysis Platform (RAP) Perennial Forb and Grass Cover comparison to 2005 (left) and 2019 (right) information. The lighter green on the right indicates a decrease in perennial vegetative cover. TIP boundary lines are in light orange.

Figure 2.1 shows the change in tree cover from 2005 to 2019, which highlights the need for increased forest management in this project area. Figure 2.2 shows a change in perennial forb and grass cover from 2005 to 2019, which corresponds to change in tree cover. What these images show is there has been a significant change from previous perennial grass and forb cover to timber. Over time, this has resulted in a decrease in vegetative production for livestock; timber growth has also affected how rangeland can be managed with cattle when ponderosa pine is present. A Cornell University Veterinary article states, "Grazing of ponderosa pine needles by pregnant cows may cause abortion. The abortions are frequently accompanied by retained placenta. Death is not uncommon in cows that abort." (L D Stuart 1, L F James, K E Panter, J W Call, R E Short, Jan 1989)

In late summer 2021, Big Horn County experienced the Poverty Flats Fire (PF) Fire, which encompassed approximately 66,000 acres in just two and half days. This fire burned a mix of grassland/sagebrush and timbered grassland and overstocked timbered stands. Where the overstocked timber areas burned, the PF Fire ended up being a stand-replacing fire due to extreme fire behavior. Many areas experienced long term damage to the soil from the extreme heat. Much of the forest and timber that burned in this fire had not previously been fire managed and thinned. The resulting loss, damage, and costs were destructive and devastating to the ranches and ecosystem impacted.

It's only a matter of time before wildfire strikes the TIP Proposal area, and the sooner we can provide management of the forested acres the better landowners can mitigate the fire danger. Also, the more resilient we can make the rangeland in this project area, the better the landscape can handle a wildfire when it does come.

Figures 1.3 & 1.4- Photos showing the aftermath of the PF-Fire (photos courtesy of USDA-NRCS)

Geographic Focus

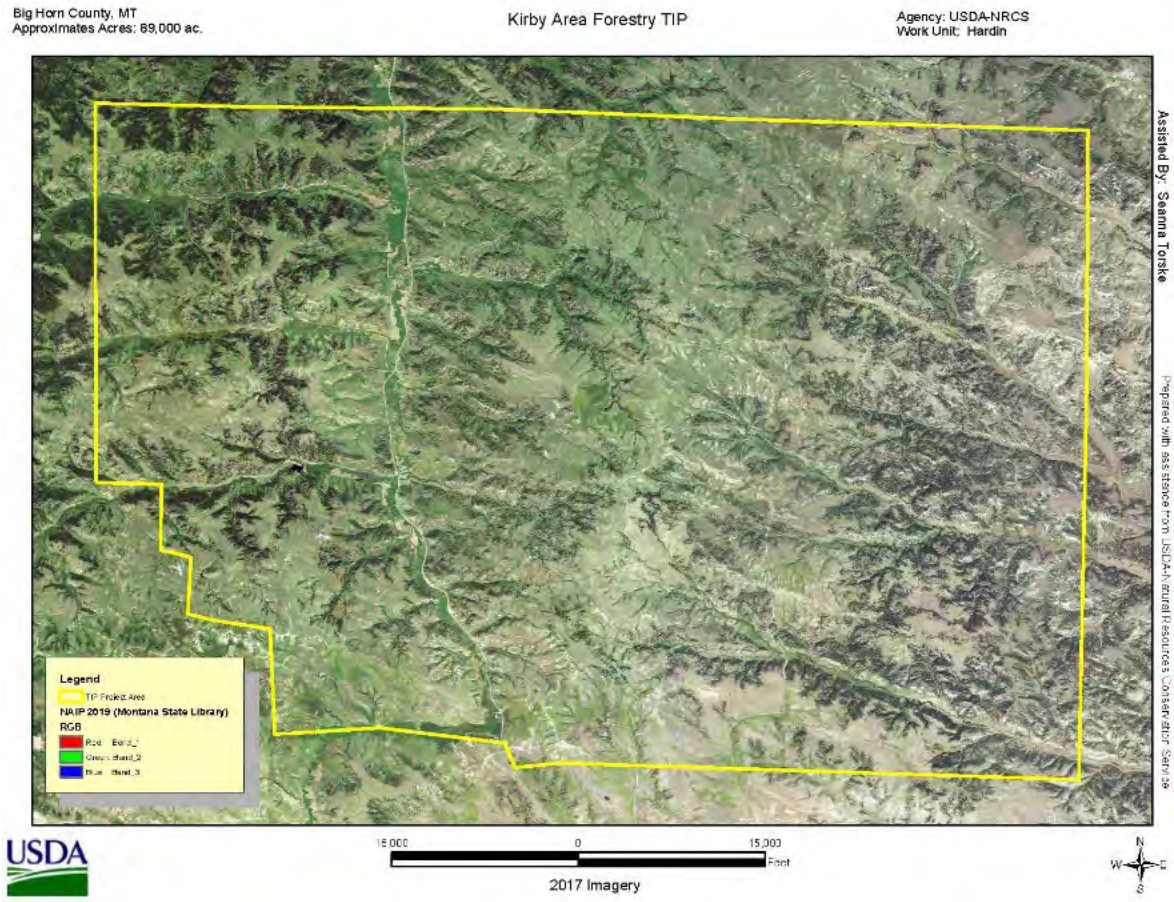

Figure 2.1- TIP project area map.

The 89,000 acre project area encompasses a range of land ownership including private, state, federal, and tribal. There are currently no forest management programs in this project area. According to Landuse Land Cover data from the Montana State Library ArcGIS, the tree and shrub designations total approximately 44,916.3 acres, or 50% of the project area. Some of these acres will be too steep to treat (DNRC typically will not treat acres with slopes greater than 35 percent); according to elevation data approximately 4523 acres show slopes greater than 35 percent. Within this project area, there are also several landowners/operators who do not participate or are ineligible to participate in USDA programs (although partners in this TIP can still provide assistance to them), which brings the actual treatable eligible acres within this project area to about 35,000 acres. The western edge of this project area is directly adjacent to the Crow Indian Reservation, and the northern edge of the area lines up to the Northern Cheyenne Indian Reservation.

In June 2021, NRCS and DNRC held a joint teleconference to discuss the contribution agreement NRCS and DNRC have entered regarding Forest Stewardship. The DNRC Southern Land Office Area Forester had mentioned current work being done in the Kirby area regarding interest in forestland management from landowners. The Hardin NRCS Work Unit met with this forester to determine the potential for TIP EQIP funding in this area. In July 2021, the Hardin NRCS Field Office sent out an interest letter to landowners and operators in the project area to gauge interest and willingness for landowners and

operators to participate in forest stand improvement projects. So far, Field Office staff have received positive responses from six landowners and operators in the project area, with more participation expected.

Figure 2.5 - Ponderosa Pine timber stand (Photo courtesy USDA-NRCS). Note the various age classes of trees in the project area, and areas that would benefit from thinning.

Background Information

The area usually experiences 90-110 frost free days a year, and precipitation ranges from about 16-18 inches per year. Forested areas consist largely of ponderosa pine, and shrubs such as boxelder and choke cherry in the wetter draws. Ponderosa pine are adapted well to lower elevation and precipitation levels due to a deep tap root system and moderate to good drought tolerance. Trees grown in fifty percent shade or greater will decrease the growth rate significantly. According to previous timber inventories performed in this area, there is little to no understory vegetation in the higher density areas of regeneration due to a lack of sunlight and available soil nutrients. There is a mature overstory present that in some areas could be commercially thinned but in general the overstory is light. Managing the timber within the project area will also help to mitigate the fire danger to the adjacent Indian Reservations.

Historical management of timber in this area of Montana has been difficult due in part to distance to the nearest active lumber mills. Mills in Sheridan, WY and Ashland, MT (both approximately 50-60 miles from the project area) have closed, and the other closest lumber mills are 144-186 miles away, which has prevented commercial timber harvest in the area. Fortunately, there are timber management

contractors who reside in or nearby the project area and are highlighted as potential contractors who can provide assistance on the planned practices for this proposal.

Noxious weed infestations including Sulfur Cinquefoil, Spotted Knapweed, and Dalmatian Toadflax have been noted previously in this project area. There is currently a TIP project in this area for Sulfur Cinquefoil control. Knowing that timber management can result in disruption of soil, and in effect exacerbate weed infestations, this TIP will ensure any noxious weeds are identified and controlled.

General effects of an unmanaged, overcrowded forest:

- Reduced grazing for cattle and wildlife – The tree canopies have completely closed in, significantly reducing and or eliminating food and grazing for cattle and wildlife throughout much of the forested stands.
- Conifer encroachment and loss of open meadows – The forest has marched into the meadows and open grasslands; this has been dramatic with a significant reduction ingrazing capacity for cattle, reducing important meadow and open area habitat for wildlife from turkeys, sage grouse, elk and deer.
- Loss of Water - The direct link between an overcrowded forest with a heavy tree canopy and a reduction in ground water and flowing springs is well documented (for example, see: Journal of Hydrology Volume 528, September 2015, Pages 435-448). Springs and groundwater are vital to effective range management and all wildlife. By effectively managing the forest and significantly reducing the number of trees to the nature state will have a direct positive affect on the return flow of water from the springs.

General effects of current extreme fuel loading and resulting extreme fire behavior:

- Overstocked forest - High to extreme fuel loading often results in extreme fire behavior. By returning the forest to its more natural stocking, the extreme fuel loading is eliminated, returning the fire to the ground with a low to moderate fire intensity. These low intensity fires restore the forest and the resiliency of the forest to catastrophic wildfire. Low or moderate fire behaviors are highly beneficial to the range and forest versus highly destructive stand replacement fires.
- Positive carbon sequestration – Managing the forested land, opening the plant canopy and encouraging greater plant growth will encourage a positive carbon sequestration in the forested range land instead of a complete loss of all carbon to the complete stand replacement fire. According to the Sage Grouse Initiative Work Lands for Wildlife website, "*Rangelands are critical carbon storage ecosystems, storing 12% of global terrestrial carbon stocks. Keeping rangelands intact and health is a key mission of Working Lands for Wildlife.*" Improving timbered grasslands in this project area will address concerns with carbon storage and thus minimizing climate change risk.
    - The Sage Grouse Initiative website also states: "*The expansion of woody plants is causing rangeland loss at a rate equivalent to that of cultivation. The USDA-NRCS is tackling this threat head-on through preventative management and targeted restoration. These actions improve climate adaptation by increasing the resiliency of rangelands, reducing wildfire danger to rural communities, and preventing loss of*

livestock forage. In addition to preserving soil carbon stores, these efforts maintain and improve imperiled grassland songbird populations."

- Reduced biodiversity - The prolonged buildup of fuels can lead to extreme fire behavior resulting in 100% mortality of all living vegetation and less mobile wildlife.
- Long term damage to the soil – Soil damage often results from extreme fire behavior and stand-replacing fires. This damage often lasts years and even decades for the recovery of the soil. Often erosion happens on grand scales with these fires also.
- Extensive damage to ag infrastructure – Damage to rural and ranch infrastructure, including fences, buildings, wells, utilities, roads and homes.

Goals and Objectives:

What this TIP will accomplish includes the following:

- Reduce stand density and improve stand productivity.

• Complete 6,000 acres of forest management practices over a 5-year period, which accomplishes the following items:

- Grass and forb productivity is expected to greatly improve, which increases the value of the grazed forestland when more forage biomass is produced.
- Remaining trees can thrive when competition for soil moisture is reduced.
- If a wildfire occurs in the project area, fire intensity will be reduced; both decreasing the possibility of significant fire damage as well as improving the ability to control wildfire spread.

As people sign up for program funding, NRCS will complete rangeland inventories of the entire operation, and DNRC will perform timber stand inventories, with assistance from NRCS Field Office staff as needed. Baseline data will be collected for the following operations, including the following:

- Plant populations and estimated production.
  - Following the planned suite of practices, we are expecting to see a general increase in grass/forb production.
- Rangeland similarity indexes – comparing the current vegetation to what the site is capable of producing at the reference state for that ecological site.
  - Following the forest management practices, we expect to see a gradual change in this similarity index, with a general increase in similarity index, or a gradual change towards the reference state.
- Rangeland apparent trend – comparing the direction of change in an existing plant community relative to the Historic Climax Plant Community (HCPC) for that ecological site.
  - Following the forest management practices, we expect to see the rangeland and grazed forest gradually moving towards the HCPC.
- Forest stand inventory – Including age classes, average sizes, and condition of the stands.

Following the completion of the forest management practices, NRCS field office staff will monitor the rangeland and forest stands, and will compare the baseline inventory data in order to observe any changes.

Alternatives:

- Alternative 3- No Action – No action would simply be leaving the timber as it is. Grazing quality will continue to be impacted and will decline over time. Fire danger will continue to steadily

increase over time as trees and undergrowth die and add to fuels. It is only a matter of time when conditions create the perfect storm for a severe stand replacement wildfire that will leave this landscape with its destructive result for decades.

- Alternative 1 – The first alternative would involve targeted Prescribed Burning in areas that would benefit from it, as determined by completed ranch and forest inventories. While this could be a highly effective practice that maximizes cost and labor efficiency, the risk of liability is extremely high, and very few Montana NRCS personnel have Job Approval Authority to design this practice.
- Alternative 2 (Chosen) – Alternative 2 would incorporate pre-commercial and commercial timber stand thinning and treatments; this would also include addressing slash waste and controlling any potential noxious weed flushes that may occur after trees are removed and the canopy is opened up. During planning and inventory, NRCS and MT DNRC would work with the landowner to prioritize work on the areas that would result in the greatest increase in improving grazing potential. Eligible Practices would include:
    - (666) Forest Stand Improvement
        - There is also expected to be a Silvopasture practice to be added to the Montana FY2023 EQIP cost list, and we would like that practice be listed as an eligible practice when it becomes available.
    - (384) Woody Residue Treatment
    - (314) Brush Management
    - (315) Herbaceous Weed Treatment

Implementation

Our goal for this project is to complete (666) Forest Stand Improvement and (314) Brush Management on 6000 acres. This TIP would cover Fiscal Years 2023-2027, with program funding occurring in FY 2023-2026, and FY 2027 would be considered a year for monitoring and determining additional needs for this project area (for example, if a stockwater TIP would be a beneficial second phase in this project area).

Year	Acres	Project Cost	Estimated Number of EQIP Contracts
1	500	$ 375,000.00	2
2	1500	$ 825,000.00	5
3	3000	$ 1,750,000.00	6
4	1000	$ 650,000.00	3
5	0	$ -	0
Total	**6000**	**$ 3,700,000.00**	**16**

Figure 3.1- Proposed TIP EQIP Budget and Timeline

Practice Code	Practice Name	Component	Unit Cost	Unit	Extent	Total Cost
666	Forest Stand Improvement	Pre-Commercial Thinning	$592.10	ac	50	$29,605
384	Woody Residue Treatment	Chipping	$414.24	ac	4	$1,656.96

315	Herbaceous Weed Treatment	Chemical Application, Spot Treatment	$93.57	ac	3	$280.71
					Total Payment Rate	$31,542.67

Figure 3.2 – Typical project estimate for a smaller contract/property.

Practice Code	Practice Name	Component	Unit Cost	Unit	Extent	Total Cost
666	Forest Stand Improvement	Pre-Commercial Thinning	$592.10	ac	300	$177,630.00
314	Brush Management	Mechanical, Large Woody Vegetation, High Density	$357.50	ac	15	$5,362.50
314	Brush Management	Mechanical, Large Woody Vegetation, Medium Density	$185.49	ac	10	$1,854.90
384	Woody Residue Treatment	Pile and Burn	$387.41	ac	20	$7748.20
					Total Payment Rate	$188,161.32

Figure 3.3 – Typical project estimate for a medium contract/property.

Partners:

- Montana Department of Natural Resources and Conservation (MT DNRC) – NRCS has worked with the DNRC Southern Land Office's (SLO) Area Forester on developing the proposal and will assist a partner in the following:
    - Complete the bulk of the timber stand inventory for landowners.
    - Provide technical assistance for inspecting completed work for NRCS.
    - Assist landowners to identify suitable projects and assist with project layout on the ground including all mapping,
    - Assist landowners find and managing reputable contractors with the logging and forestry work from beginning to end.
    - Assist in the safe burning of large amounts of slash from timber operations, the rehabilitation of the burn sites.
    - MT DNRC will also be able to assist with any future prescribed burning projects or burning of slash piles for woody residue treatment.
    - Assist in follow up monitoring of completed projects.
    - Work in obtaining other funding sources - Montana Landscape Grant – Forest Action Management Plan - The State of Montana has begun a new grant program to fund landscape scale grants around the state. The SLO Area Forester plans to develop and request funding through this program for a project in the TIP area that directly ties to the goals and objectives of the proposed TIP program. The two projects would complete large amounts of work over the proposed landscape.

    - Currently the SLO Area Forester is actively filling this roll with FSA Emergency Forest Restoration Grants in a couple of counties. He currently works with many state and federal agencies and landowners on many different projects.
- Big Horn Conservation District (BHCD)– The BHCD can provide outreach to the public about TIP results and program signups via their newsletter. BHCD has been regularly apprised of the progress of this TIP proposal throughout the entire planning process.
- Big Horn County Weed District (BHCWD) – The BHCWD has spray equipment that can be rented out to people who live in Big Horn County, which can be helpful for people to implement Herbaceous Weed Treatment on their acres. Certain herbicides are also provided at a lower cost to Big Horn County residents. The BHCD board oversees the duties of the BHCWD and have also been regularly apprised of the progress of this TIP proposal throughout the planning process.

Outcomes:

NRCS will work with MT DNRC to develop a forest management plan for each landowner and prescribe treatments to meet the desired outcomes. The forest management plan will provide the baseline data that will be used to measure the outcomes of each project. Potential goals of each plan: reduced stand densities; decrease susceptibility to disease and insect outbreaks; inventory of any existing noxious or invasive weed species infestations and control recommendations for each specie; increase tree spacing for improved production of trees and forage; and provide financial assistance to defer associated costs. This approach gives NRCS the best chance to achieve a measurable outcome.

NRCS will utilize program participants who have expressed interest in the TIP to help communicate with community members. Already, some landowners have requested an EQIP application with the intent of improving their forest resources in response to this TIP's request for information.

Measurable outcomes will be determined by acres treated. Treated acres will be mapped using GPS for extent of treatment. Photo plots are planned as a visual determination of treatment success and to support future TIP projects. Over the longer-term (5 years), an evaluation of changes to stocking rates will be reviewed in treatment areas. Acres of woody residue treated will be measured and evaluated towards the end of the project contracts.

As forest stand improvement is implemented in the project area, NRCS expects to see an increase in forage production on these acres. For example, if forest stand management is completed on 6000 acres, and an average increase of 200 pounds for forage biomass per acre is observed, this could result in 1.2 million additional pounds of biomass in the project area. According to the Montana Animal Unit Guide from the National Range and Pasture Handbook, a 1200-lb cow with a calf to 4 months consumes about 12,960 pounds of forage per year, which equates to roughly 92 additional head of cattle that can be supported in this project area.

Ranking Questions:

1.) Does the project include (315) Herbaceous Weed Treatment?
2.) Is the project planned within ¼ mile of a farmstead?

3.) How far is the proposed project from a public road?
Adjacent
Not adjacent but less than ¼ mile
¼ mile or greater
4.) Does this application address conifer encroachment on rangeland?
5.) Does the application have a homesite on the property, and will the defensibility of that site be improved by treatment?
Directly adjacent
Less than ¼ mile
¼ mile or greater
6.) Are the planned land units adjacent to current/planned conifer reduction projects?

Workload:

The local NRCS Field Office staff and MT DNRC Area Forester are expected to be able to handle at least 80% of the inventory and planning work of initial program applications. The MT DNRC Area Forester should be able to provide about 70% of as-built certification work, with the Bozeman NRCS Area Office technical staff providing the remaining 30%. It's quite possible DNRC may be able to provide all the as-built assistance, but in case wildfire seasons encompass more of their workload we would like to also plan for NRCS to provide some assistance.

Eventually, we hope this TIP will result in a "phase two" TIP for this project area that would address other livestock production resource concerns, such as stockwater and crossfencing projects.

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References

- Range Analysis Platform, https://rangelands.app/rap/
- Montana State Library, ArcGIS Imagery.
- USDA-NRCS Big Horn County Long Range Plan, August 2021.*Pine needle abortion in cattle: pathological observations.* L D Stuart 1, L F James, K E Panter, J W Call, R E Short, Jan 1989
- Healthy Rangelands Store Critical Carbon Above and Below the Surface - Sage Grouse Initiative
- Parks, S.A., Holsinger L.M., Panunto, M.H., Jolly, W.M., Dobrowski, S.Z., and Dillon, G.K. (2018). High-severity fire: evaluating its key drivers and mapping its probability across western U.S. forests*. Environmental Research Letters*.
- Woodall, C.W. and Weiskittel, A.R. (2021). Relative density of United States forests has shifted to higher levels over last two decades with important implications for future dynamics. *Scientific Reports*.
- Shackleton, S., Shanley, P., and Ndoye, O. (2007). Invisible but viable: recognizing local markets for non-timber forest products. *International Forestry Review*.
- Burkinshaw, A.M. and Bork, E.W. (2009). Shrub encroachment impacts the potential for multiple use conflicts on public land. *Environmental Management*.
- USDA-NRCS National Range and Pasture Handbook (NRPH), MT9, Apr. 2006.

Additional Information:

Land Use	Cover Type	Acres	Percent of Area
Ponderosa Pine	Conifer Forest	18531.52	29.85%
Tree Grassland Associates	Tree/Grassland	9744.29	15.70%
Low Cover\Grasslands	Upland Grasslands	6170.89	9.94%
Low/Moderate Cover\Grasslands	Upland Grasslands	6060.81	9.76%
Mixed Mesic Shrubs	Moist Shrubland	5821.59	9.38%
Forest Savannah	Tree/Grassland	5636.66	9.08%
Moderate/High\Cover Grasslands	Upland Grasslands	2286.64	3.68%
Shrub Dominated Riparian	Mixed Riparian	1753.05	2.82%
Mesic Shrub Grassland	Moist Shrub/Grassland	1463.69	2.36%
Mixed Broadleaf\Conifer Forest	Mixed Deciduous-Conifer Forest	870.69	1.40%
Graminoid and Forb\Riparian	Mixed Riparian	798.74	1.29%
Very Low Cover Forest	Tree/Grassland	560.16	0.90%
Wyoming Big Sage\Steppe	Dry Shrubland	529.36	0.85%
Mixed Barren Land	Barren Land	359.51	0.58%
Mixed Broadleaf Forest	Mixed Deciduous	331.85	0.53%
Broadleaf Dominated Riparian	Mixed Riparian	298.38	0.47%
Irrigated Agriculture	Agricultural	219.63	0.35%
Shrub Badlands	Badlands	188.25	0.30%
Mixed Tree Riparian	Mixed Riparian	158.17	0.25%
Big Sage Steppe	Dry Shrubland	79.14	0.13%
Very Low Cover\Grasslands	Upland Grasslands	69.56	0.11%
Dryland Agriculture	Agricultural	62.56	0.10%
Mixed Shrub\Herbaceous Riparian	Mixed Riparian	44.62	0.07%
Water	Water	31.14	0.05%
Badlands	Badlands	15.23	0.02%

Total Acres: 62077.15

Figure 4.0 – Landuse Land Cover data (Montana State Library ArcGIS) highlights the total landuse landcover acres in the project area. Tree and shrub designations total approximately 44,916.3 acres, or 72% of the project area

Additional Maps:

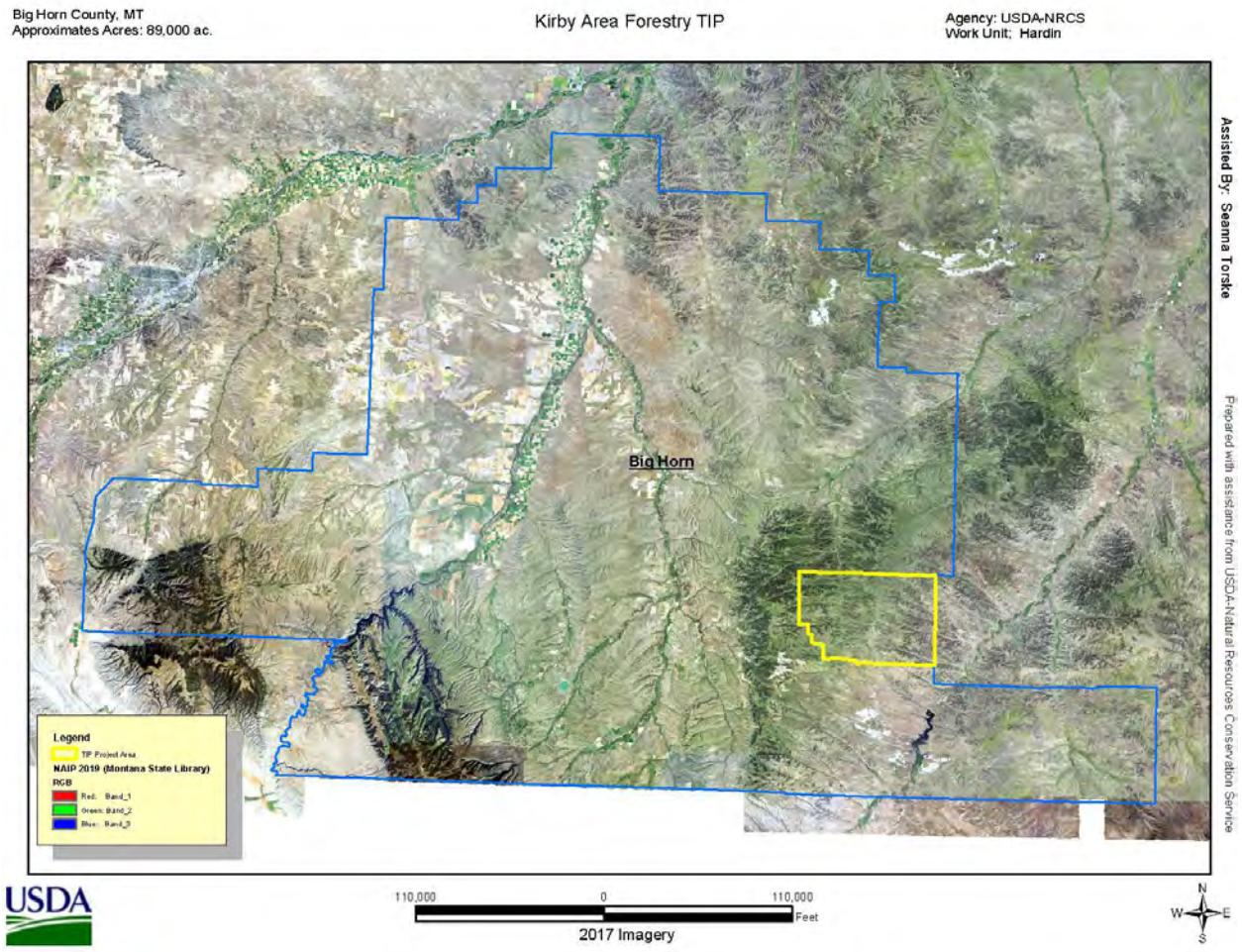

Figure 4.1 - Project area location within Big Horn County

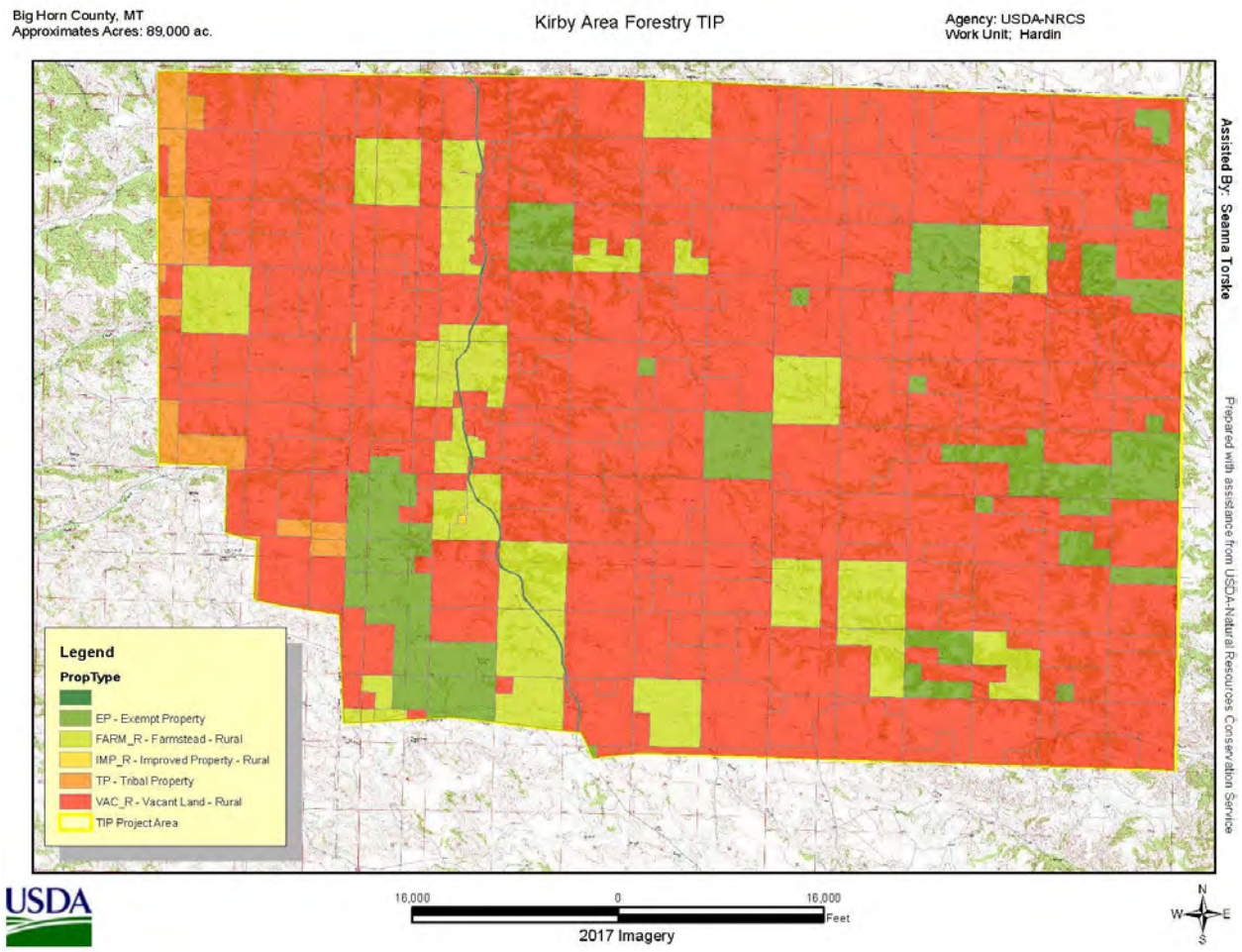

Figure 4.2- Land ownership map. Red and Light Green indicates private ag land; Orange is tribal property; and Darker Green is state or federal land.

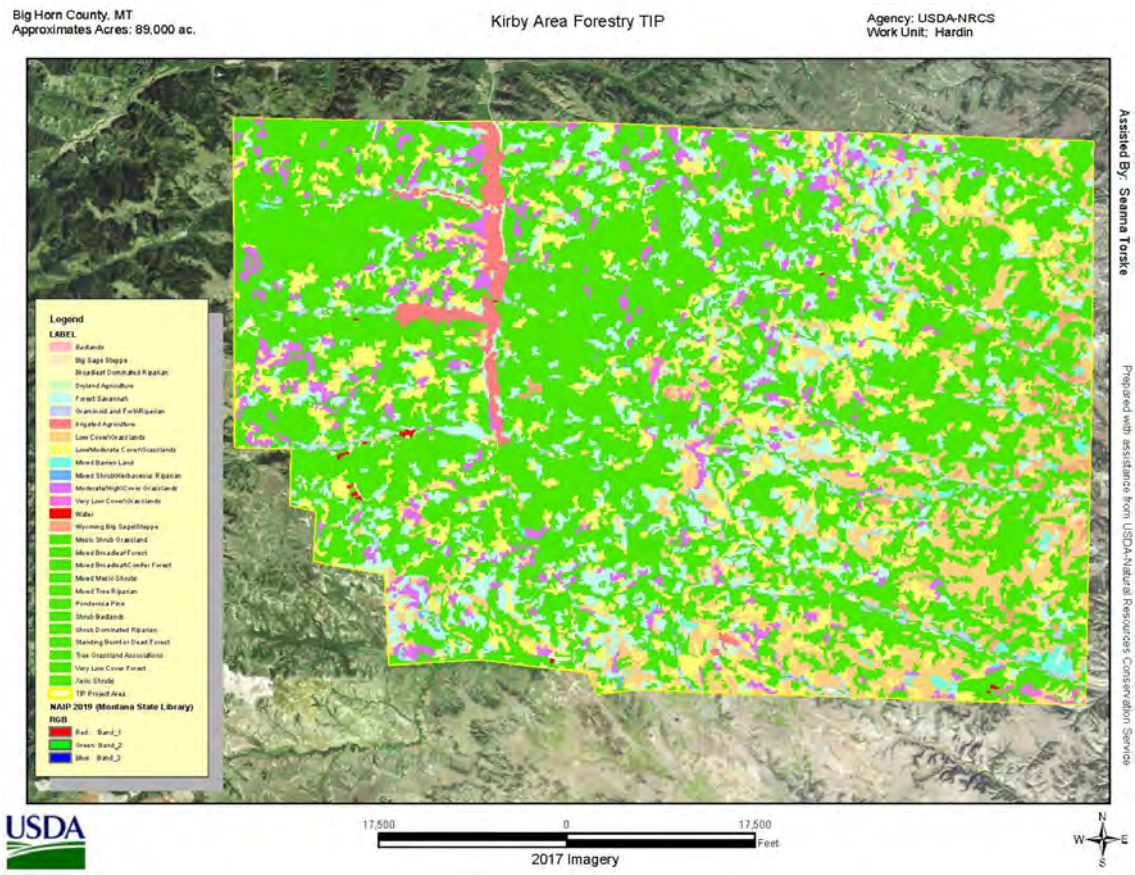

Figure 4.3 - Landuse Land Cover Map; green color indicates tree/shrub designations within the project area.

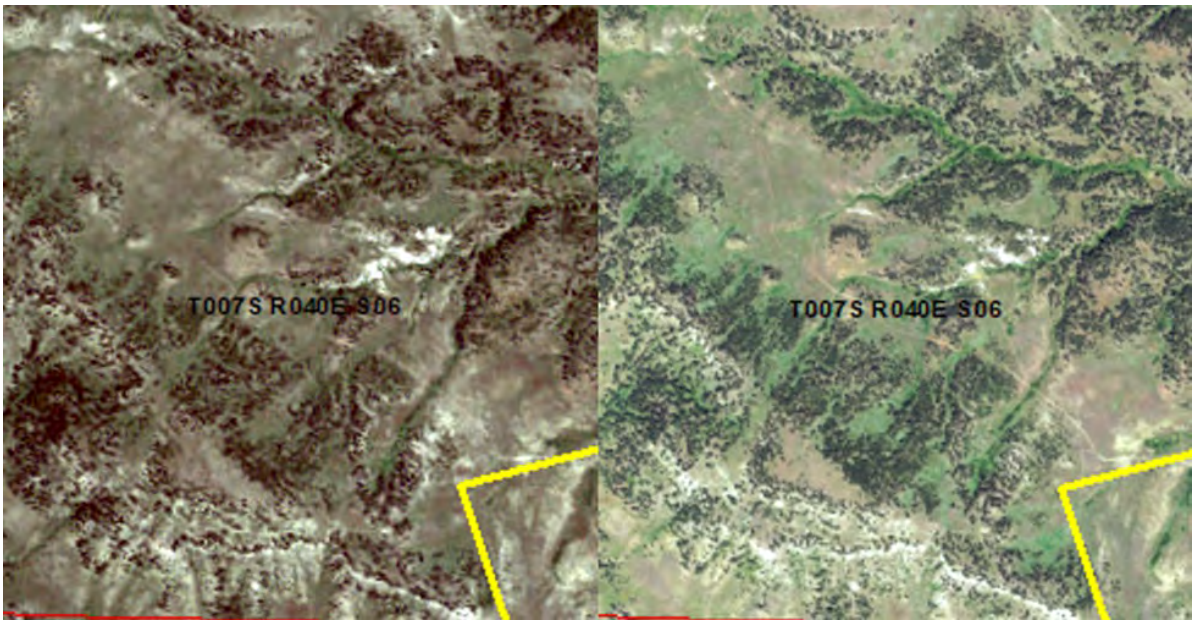

Figure 4.4 - 2005 NAIP Imagery (right), and 2019 NAIP Imagery (left) shows the extent that timber has increased over the years on a section located in the project area. (Montana State Library)