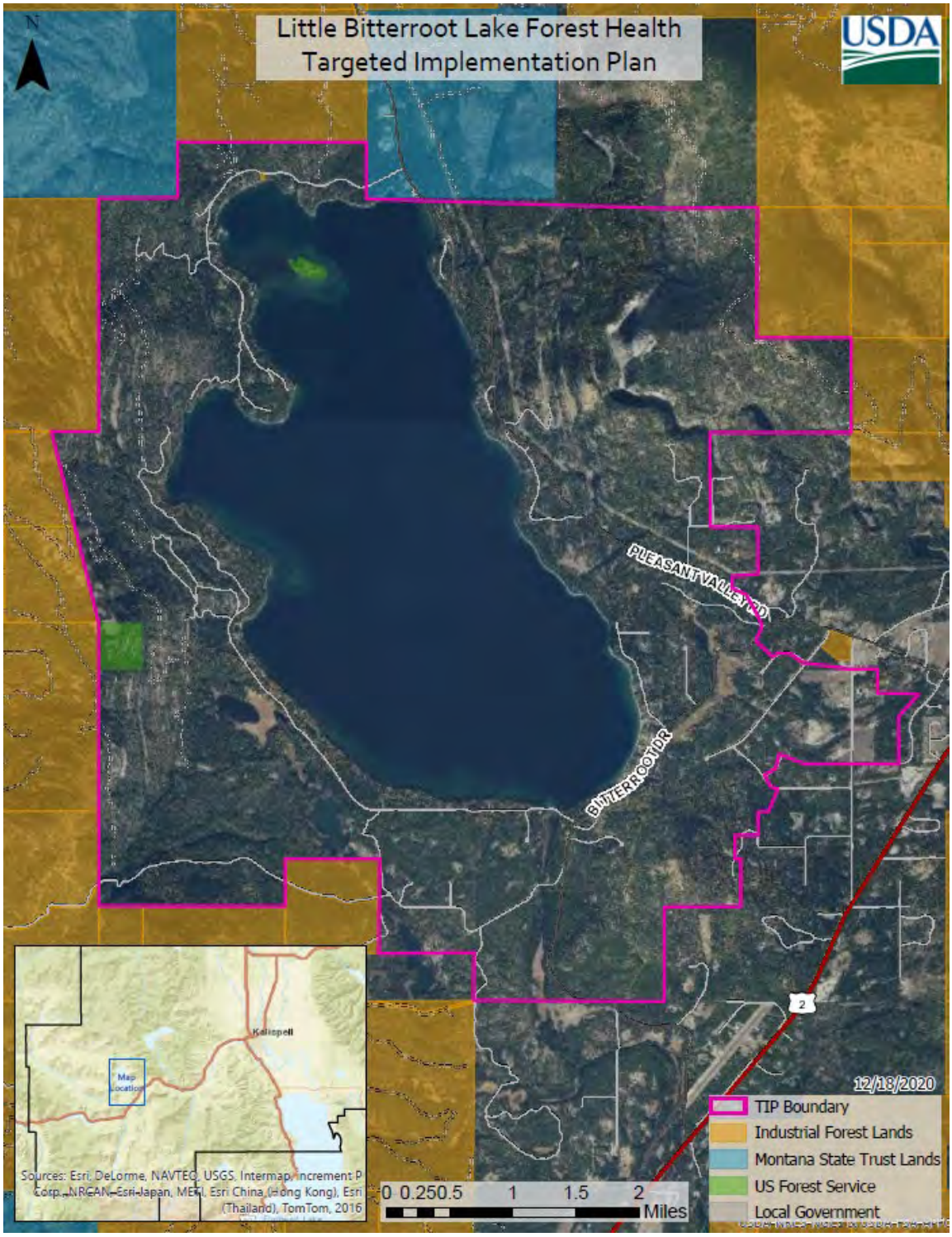
Little Bitterroot Lake Forest Health Targeted Implementation Plan

Flathead County

Promoting forest health and productivity by decreasing insect and disease issues, addressing present noxious weed populations, while also creating a more fire resilient forest within the Wildland Urban Interface.



Overview/Background Information

The Little Bitterroot Lake Forest Health Targeted Implementation Plan (TIP) includes 6,140 acres of mostly Nonindustrial Private Forest Land (NIPF). Adjacent to Little Bitterroot Lake parcels are generally smaller than 2 acres with parcels becoming larger the farther from the Little Bitterroot Lake shoreline. Private lands dominate the ownership directly surrounding Little Bitterroot Lake with a checkerboard of ownership between the industrial timber companies, State Lands, US Forest Service, and larger private lands in the area farther from the lake (shown on title page map).

The forest within the identified TIP area is primarily made up of dense stands of Douglas fir and western larch. Multiple tree species have been negatively impacted by recent disease and insects, resulting in reduced forest health and increased fire risks associated with accumulating dead and downed fuels. Many of the properties surrounding Little Bitterroot Lake have Douglas-fir dwarf mistletoe infections to the point of causing individual tree mortality or weakening trees to the point of attracting insects. Other insects affecting the area include the fir engraver and other wood boring beetles which can negatively impact Douglas fir and grand fir. To a lesser extent western larch dwarf mistletoe has been observed around Little Bitterroot Lake. In addition, a growing number of subalpine fir are dead and dying due to a myriad of problems that include up to 7 different causes per a Department of Natural Resources and Conservation (DRNC) Entomologist about the issues at hand. These disease and insect pressures will continue to spread, leading to additional tree mortality and, an increase of down fuels until more resistant species are managed for or the individual infected trees are removed from the landscape.

Figure 1. WUI Area defined in the Flathead County CWPP, planning area 2 (Flathead West). All areas in green are included in the WUI. Source: Flathead County CWPP.

The area in this project is included in the Wildland Urban Interface (WUI) defined by the Flathead Counties County Wildfire Protection Plan (CWPP). The project is located within Area 2, West Flathead, of the CWPP, which is a larger area encompassing most of the western part of the county (Figure 1). In the project area there are a total of 321 structures, 287 of which are homes (Table 1 & Figure 2). Past fires in this area have been large, stand replacement events driven by winds from the southwest. Flathead County is heavily forested making forest health and fire preparedness among some of the most prevalent concerns in the county. The Natural Resources Conservation Service (NRCS) Kalispell Field Office (FO) has been very active in planning and implementation of Environmental Quality Incentive Program (EQIP) forest management projects. This project area has been chosen because of the residents' interest in forest health and fire safe practices. Interest was gauged with a direct mailing sent out to the members of the Little Bitterroot Lake Association, from this letter interest has been expressed by many landowners. The Forest Service has also been working with commercial, precommercial, and other vegetation treatments on their lands just north of Little Bitterroot Lake.

Table 1. Structures in the project area.

Structures	Count
Dwelling, single-family	287
Mobile Home	4
Agriculture, food or livestock facility	14
Storage structure	6
Structure, abstract	10
Total Structures	**321**

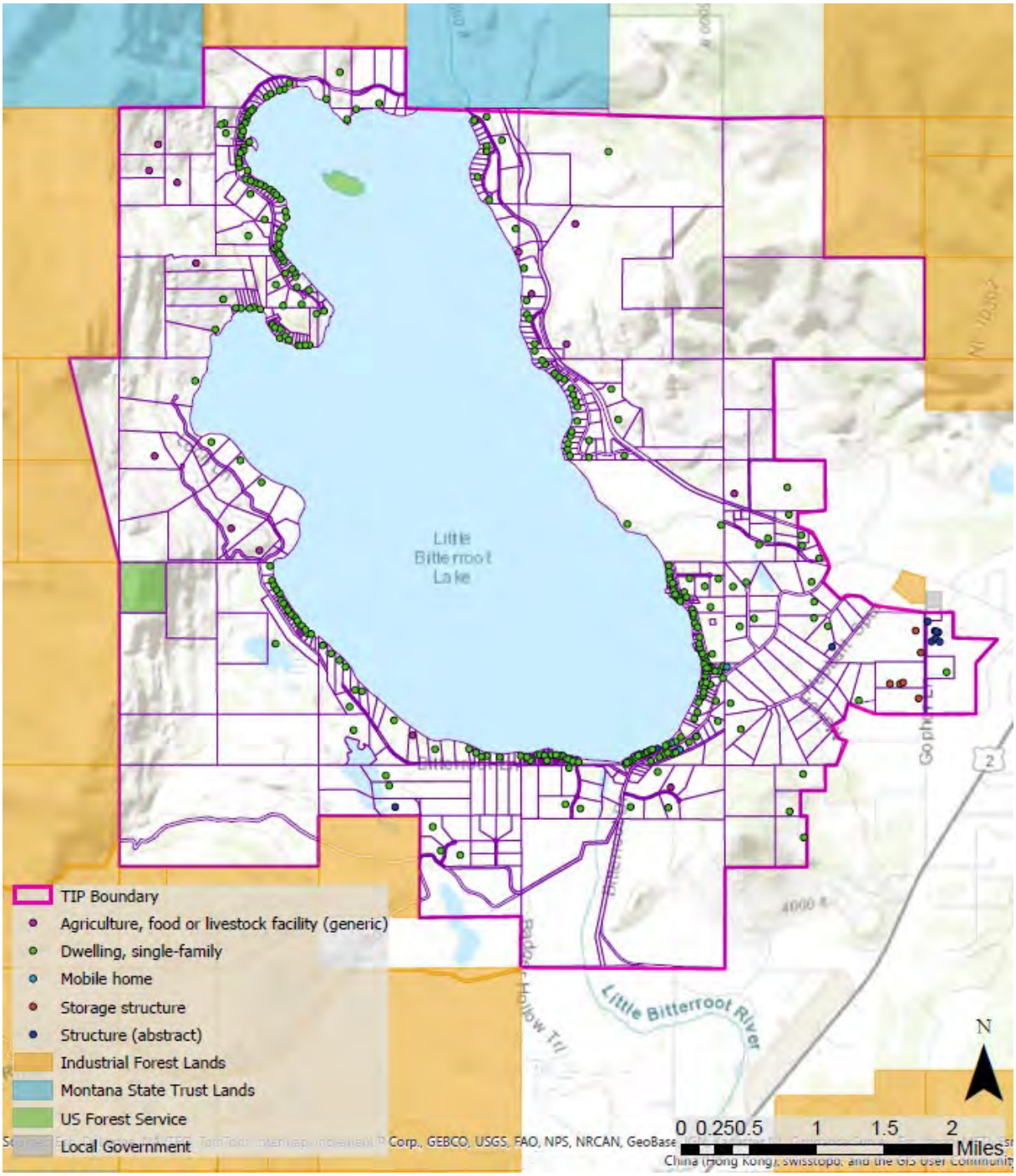


Figure 2. Map of structures in the project area. Created by Karli Becher from Montana State Library.

The Flathead County Local Working Group, along with other partner organizations, have identified forest health as the number one resource priority in the county and is described in the Flathead Long Range Plan (LRP) on page 29. The TIP recognizes several resource concerns, mentioned below, within the WUI area that have the potential to be devastating not only to forest resources, but also to life and property.

Problem Statement

The priority resource concern in the TIP area is plant health and vigor with other considerations being given to plant structure and composition and plant pest pressure. Timber stands in the project area can be characterized as overstocked, making them more susceptible to insect and disease outbreaks and potential mortality as described above. The health and vigor of forests decreases when trees are stressed from overcrowding. The overcrowding has been a result of previous poor forest management. Trees that are stressed grow slower and take longer to mature into a merchantable product. Overstocked stands have also contributed to a lack of species diversity with some site suited species struggling to naturally establish. Desired species composition will vary depending on site characteristics. If a site has disease or insect issues, those impacted species will be managed against to promote a healthier future stand. Additional factors such as slope aspect and landscape position will also play a role in determining which tree species would be most suited, and therefore would be promotes on those sites.

A secondary resource concern that this project will address is wildfire hazard and biomass accumulation. Wildfires, especially low to moderate severity fires, are natural in this forest ecosystem (Fischer & Bradley, 1987). These types of fires leave live trees and a forest that can recover and regenerate after the fire. Forest management in the past century has emphasized fire suppression, which has shifted the landscape from fire resilient forests to densely stocked forests that are more susceptible to stand replacing events. Shifting species composition and a buildup of hazardous fuels has caused Flathead County to see an increase in frequency and size of high intensity, high severity fires than it has in the past. Most of the TIP area has been poorly managed causing overstocked stands and dense understories, this coupled with the disease and insect issues discussed previously has caused hazardous fuel conditions. These current resource concerns have the potential to be magnified as the climate continues to change and NW MT is experiencing drier weather patterns with lower snowpack levels that are melting sooner. These changes will cause increased stress to over stocked stands by limiting available water resources, leading to increased stand mortality to unsuited species and increasing dead fuel loads.

With wildfires also comes the concern of people living within the WUI and their knowledge of wildfires and wildfire preparedness. It is important they know how they can decrease the likelihood of their homes and structures being damaged or destroyed in a wildfire by creating defensible spaces. This awareness is important for both the community members and firefighters who can better defend property and structures if the proper precautions are taken.

There are existing noxious weed populations scattered in the project area. Weeds are mostly found along roadways and trails and can easily spread due to frequent travel in these areas. Common weeds found in the project area include knapweed and houndstongue.

Goals and Objectives

1) Improve plant health and vigor, increasing stand resilience to insects and diseases.
    a. The Kalispell FO will work with landowners along with the DNRC to create forest management plans that emphasize overall forest health in addition to using NRCS practices to create healthy and resilient stands.
    b. Work with partners, primarily DNRC, to identify insect and disease outbreaks in the project area that may have damaging effects on forest health and cause an increase in hazardous fuels.
    c. Progress will be measured by overall acres treated while also looking at the reduction of pest and disease outbreaks.

2) Reduce wildfire hazard and biomass accumulation to minimize wildfire impacts and decrease the likelihood of stand replacing fire events.
    a. This objective will go hand in hand with the above objective as many NRCS practices can be used to make stand resilient to both wildfire and insects and disease. The Kalispell FO will use NRCS practices

to achieve this goal along with help from DNRC with creating forest management plans that emphasize forest wildfire resilience.
    b. Progress will be measured by overall acres treated while also looking at stand density.

3) Address existing populations of noxious weeds.
    a. To help prevent the further spread of noxious weeds both on the project site and to adjoining parcels, identified noxious weeds will be controlled through the application of herbicide where applicable.
    b. Progress will be evaluated on an acres treated basis and relying on the landowners to conduct follow-up applications where necessary to continue to reduce noxious weed presence.

4) Increase awareness of defensible spaces around homes and structures, decreasing hazardous fuels in the home ignition zone.
    a. Two partners on this project, DRNC and The Northwest Montana Hazardous Fuels Program, will be doing home assessments and outreach on defensible spaces around homes. The Northwest Montana Hazardous Fuels Program has a strong probability of also being able to provide funding for these actives.
    b. Progress will be measured by communicating with partners on how many community members they have contacted and have sign up for programs.
    c. The desired outcome is to increase awareness of fire safe practices while also increasing the number of community members who implement these practices around their homes and structures.

Alternatives

Alternative 1: No action. Financial and technical assistance will not be provided by the NRCS Kalispell FO for forest health and resilience practices within the project area. Partners may still work in the area in the future but will not be prioritizing the area. Forest health will likely continue to decrease with forest fuels likely to continue to increase which will increase the susceptibility to high severity fire events.

Alternative 2. (Selected) Use NRCS financial and technical assistance from the NRCS Kalispell FO along with partner assistance to address resources concerns. Practices will include Forest Stand Improvement (666), Woody Residue Treatment (348), and Herbaceous Weed Control (315).

Alternative 3 Use NRCS financial and technical assistance from the NRCS Kalispell FO along with partner assistance to address resources concerns. Practices will include Forest Stand Improvement (666), Woody Residue Treatment (348), Fuel Break (383), and Herbaceous Weed Control (315).

National Environmental Policy Act (NEPA) analysis has already been completed and alternatives chosen by the US Forest Service for the projects surround the Little Bitterroot Lake TIP project area. The project taking place near the Little Bitterroot TIP is the Ashley-Herrig Resource Management Project and is in the Tally Lake Ranger District of the Flathead National Forest.

Alternatives will be analyzed in compliance with the National Environmental Policy Act (NEPA) and Endangered Species Act (ESA). Special consideration will be given to avoid and/or mitigate for practices effecting T/E species, such as Canada Lynx, in order to meet all federal regulations and NRCS policy requirements. Planning will also consider the Bald and Golden Eagle Protection Act and Migratory Bird Treaty, avoiding known nesting sites. Any cultural resources present will be identified and avoided during planning and implementation of practices involving any federal action.

Proposed Solutions and Actions

The proposed solution is to use a suite of NRCS forestry practices to treat the resource concerns expressed above which will complement work being done in the area on both public lands and private industrial lands. All actions will take place in the WUI area surrounding Little Bitterroot Lake that is within the Flathead County CWPP (Figure 1). This project has already gained much interest in the community surrounding Little Bitterroot Lake which can be used to gain more engagement as this project continues for the proposed 5 years.

These practices will be used in the project:

Forest Stand Improvement (666) – can be used for several silvicultural treatments including pre-commercial thinning, sanitation harvests for stands with substantial insects and disease outbreaks, and others. Most of this work will be completed through NRCS contracts management plans mostly being written by the DNRC Service Forester in Kalispell.

Woody Residue Treatment (384) - can be used as a supporting practice after the above practices are implemented to aide with reduction or elimination of slash. Options will include piling and burning, chipping, shredding, and removal for utilization. Most of this work will be done through NRCS contracts.

Herbaceous Weed Control (315) – can be used to treat noxious weed infestation that can occur with forestry activities. Treatment can include chemical or biological application. This will be done through NRCS funding and technical assistance.

A combination of these practices may be used throughout the project area according to the goals and objectives of each participant and their forest management plan. Overall benefits from implementation of these practices will include a more healthy and productive forest that aligns with the participants forest management plan. The fuel break practice was not included in the selected alternative due to lack of historical acceptance of the practice due to the aesthetic impact of the practice. The impact of a fuel break of creating a removing fuels and creating crown spacing can still be achieved under the 666 practice. This practice allows a range of final spacing based on both the species composition along with an allowance of +/- 25% of the planned stand density. By utilizing these allowances, the 666 practice can still achieve the same end result of the 383 practice while remaining an easier practice for landowners to accept on the landscape in high traffic areas.

Participants may also benefit by working with partner organizations to meet management goals. Specifically creating defensible spaces around homes by using funding and technical assistance through the Northwest Montana Hazardous Fuels Program.

Partnerships

- Department of Natural Resources and Conservation – Flathead County Service Forester & Community Preparedness & Fire Prevention Specialist (Technical)
- Northwest Montana Hazardous Fuels Program (Technical & Financial)
- Flathead County FireSafe Council (FCFC) (Technical)
- US Forest Service (USFS)
- Flathead County Conservation District (Financial, Outreach)
- Little Bitterroot Lake Association (Outreach)
- Northwest Management (Outreach)

For this TIP to be successful the Kalispell FO will have help from partners that are experienced and competent. DNRC's Service Forester will work closely with the Kalispell FO staff. Initial site visits will be made with NRCS and DNRC staff together if the applicant wants both agencies to be present. The bulk of the work that the DNRC Service Forester will take on will be to assist with writing forest management plans with landowners so that they can be eligible to participate in the program. This will help decrease the upfront planning workload for the Kalispell FO. The Service Forester may also assist with laying out of thinning units and site visits during contract implementation if needed.

DNRC's Community Preparedness & Fire Prevention Specialist will assist with outreach in the project area. They will meet with landowners to discuss the Home Ignition Zone (HIZ) and how best to create defensible spaces around homes and structures. Another partner, the Northwest Montana Hazardous Fuels Program is applying for grant money to assist with addressing fuel loads in the HIZ as well as whole property management. Money from this program can best be used for specifically treating areas close to structures. If funded, NW Montana Hazardous Fuels Program would act as the grant manager and technical partner, meeting with landowners and writing plans for the landowners.

Additional committed partner involvement from Little Bitterroot Lake Association and FCFC will be crucial to the projects success by providing timely outreach to landowners about the project. These two groups have already help gather over 1,500 acres of interest within the TIP but more outreach may be needed in the future as well.

To monitor the success of the TIP, we will also be partnering with the USFS to utilize their fire modeling software, FlamMap, to be able to show what impact the completed projects may have on a future fire event. Their modeling

software takes variables such as fuel loads, slope, and aspect into account and run fire simulations to determine things like anticipated fire intensity and flame length. These modeling results will help us tell the story of what impact we are making for the area in the event that a fire does occur in the area.

To strengthen the forest stand improvement practices taking place through NRCS programs and overall TIP success, the FCD will also be pursuing tree plantings within the TIP area. These additional tree plantings will help establish site suited species in areas that have struggled with natural stand establishment or have been heavily impacted from disease and insect pressures in more susceptible species. The FCD has both a yearly cost share program and an annual tree seedling sale that will be utilized for landowners who desire to plant trees for stand diversification in conjunction with the Bitterroot Lake Forest Health TIP. These tree plantings will be coordinated jointly between NRCS and the FCD to ensure the correct species selection and stocking densities are achieved to achieve the desired results. In addition to their yearly cost-share program, the FCD has also expressed the potential for establishing a special pool of money for addressing additional resource concerns within the TIP area along with considering the hosting of an MCC crew to complete a larger scale tree planting if it is deemed necessary to the success of the project.

The USFS has one active project in progress in the areas surrounding the TIP called the Ashley-Herrig Resource Management Project (Figure 3). The project is focused on fuel reduction with a suite of silviculture practices taking place that will help reduce hazardous fuels and create healthy forests that are resilient to insect and disease outbreaks. The USFS plans to develop another proposed action in near the TIP area in 2022 or 2023.

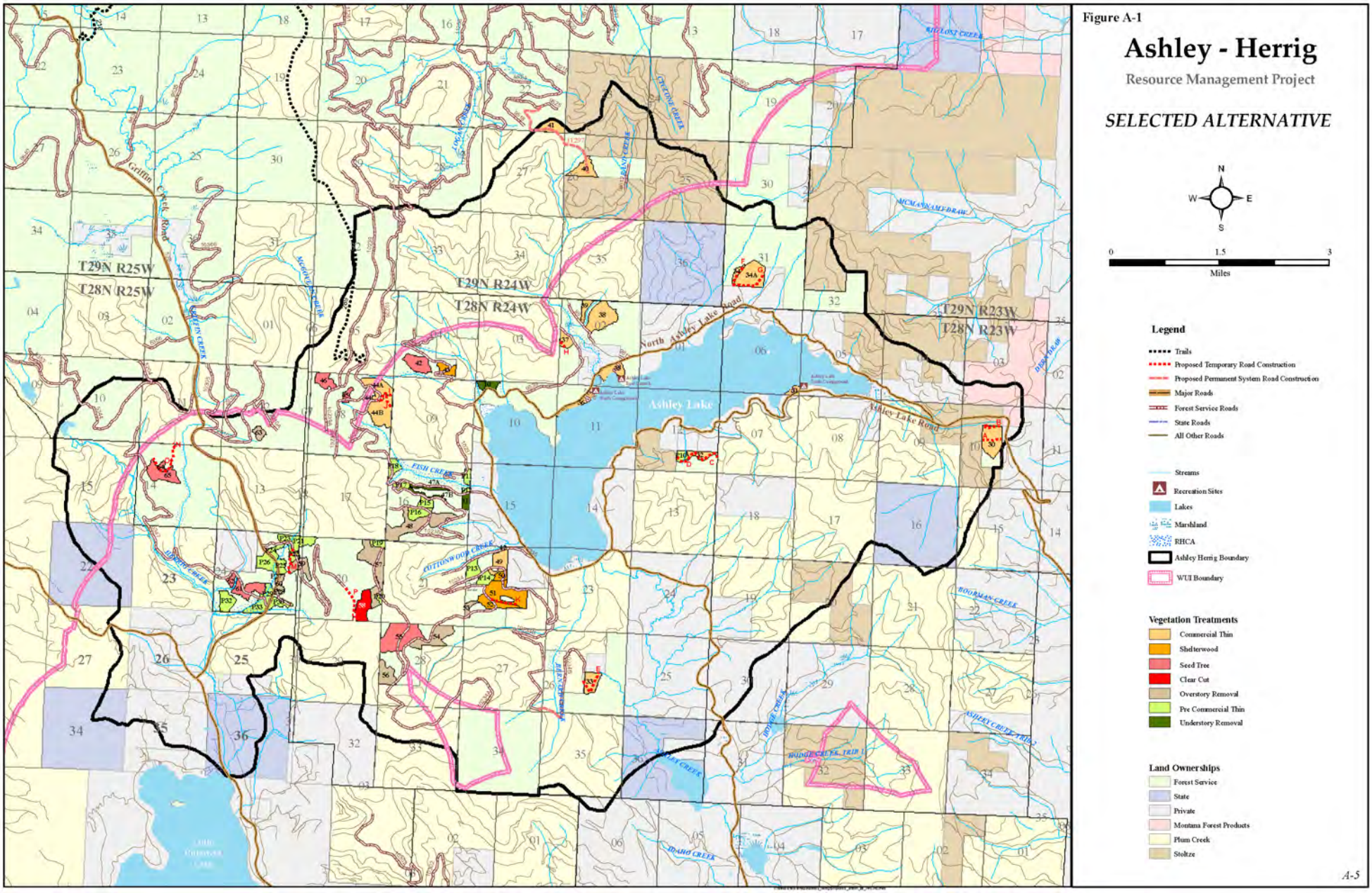


Figure 3. USFS work that is in the progress of being completed or already completed in the Ashley – Herrig Resource Management Project, Tally Ranger District. Sources: US Forest Service.

Implementation

This project is planned for a 5-year period as there has already been much interest expressed by landowners in the area and the Kalispell FO anticipates more interest as individual projects commence. Prior to TIP submission, NRCS heard interest from landowners representing approximately 1,500 acres. Not all acreage with expressed interest has the resource concerns this TIP proposed to address. Some of these lands have recently been logged or pre-commercially thinned to appropriate tree spacing. Of the 1,500 acres that have expressed interest it is estimated 600 of those acres may benefit from the EQIP practices proposed in this TIP. This 600-acre estimate constitutes 60% of the TIP goal to treat 1,000 acres at Little Bitterroot Lake. By NRCS addressing the planned acreage at Little Bitterroot Lake, it will allow for the continued cross boundary collaboration with critical partners that is crucial to being able to make that larger landscape impact and "move the needle". By being able to pool resources from state and federal agencies along with landowner cooperation, we can truly have a widespread positive impact on the forest resources to increase forest health that is more resilient to climate change while reducing future wildfire hazards.

Kalispell NRCS will have assistance from partners, mostly DNRC, to create forest management plans for landowners. All contracts with Kalispell NRCS will be written and managed by the Kalispell FO. Community members in the project areas may also have opportunities to apply for funding through partner organizations during the length of this project. The Kalispell NRCS will coordinate with partners on which landowners are best suited for either the NRCS program Environmental Quality Incentive Program (EQIP) or for a grant program through a partner to accomplish their goals. All partners working on this project will communicate regularly on progress and implementation.

Kalispell NRCS will work with partners, mainly DNRC, to prioritize areas to focus efforts on. Prioritization will consider current forest health, looking at insect and disease issues already affecting the stand along with stand density. Hazardous fuels will also be looked at as a secondary priority for the project area.

Cost estimates are based on the 2021 EQIP cost. Actual costs may vary from year to year based on changes to the cost list and individual practices selected. Future budget projections have been conservatively estimated using anticipated producer interest, average property sizes, and engagement with landowners to date.

NRCS Deliverables

Practice	2022	2023	2024	2025	2026	Totals
Forest Stand Improvement – CPS 666	200 ac	300	300	100	100	1000 ac
Wood Residue Treatment – CPS 384	200 ac	300	300	100	100	1000 ac
Herbaceous Weed Control – CPS 315	30 ac	40	50	20	10	150ac

Practice Cost Estimates Used for Calculations

Practice	Cost Estimate/Acre
Forest Stand Improvement – CPS 666	$660.00
Wood Residue Treatment – CPS 384	$480.00
Herbaceous Weed Control – CPS 315	$110.00

NRCS Financial Contributions

Contributions	2022	2023	2024	2025	2026	Totals
NRCS EQIP FA	**$231,300**	**$346,400**	**$347,500**	**$116,200**	**$115,100**	**$1,156,500**

Projected NRCS/Partner TA Contributions

	Avg. Time to Complete (hrs)	Estimated Total hours for TIP
Forest Management Plan Development	30	1,200
Plan Development	8	320
Contracting	6	240
Implementation/Certification	20	800
Totals	64	2,560

Projected staff time for NRCS/partners is approximately 320 days.

Currently outreach has been done by Little Bitterroot Lake Association and can continue through this organization. It is also anticipated that word of the project will spread via word of mouth with neighbors communicating throughout the

community. If there seems to be a lack of knowledge of the project in the area at any point during the 5 years, the Flathead County Conservation District has offered to fund a mailing to the landowners in the project area.

Successful implementation of this Little Bitterroot Lake TIP will lead to an increase in forest health by promoting site suite species in an appropriate stand density. This increase in stand health will have a positive impact on the landscape both on a project level along with a regional level as well by removing susceptible species. This targeted removal of select species will allow for a healthy stand to remain which will reduce the potential impact of disease and insects in the future. This increase in overall forest health will also lead to reduced wildfire hazard by removing excessive fuels that are currently on the landscape. Wildfire has a potentially extreme impact on the landscape both during the fire and beyond. Wildfire continues to be a massive expense to all taxpayers due to the fire suppression efforts that are required, especially in an area with so many homes and other structures that would be threatened. Little Bitterroot Lake holds 321 structures (Figure 2) within the proposed TIP boundary, with a large percentage of those structures being on the NW and SW sides of the lake. With most large fires in Flathead County moving in a SW to NE direction due to prevailing winds, the west side of Little Bitterroot is especially susceptible to a fire as the lands to the west are a combination of industrial forest lands and USFS. If a fire starts and runs through these lands and gains in size and momentum, stopping it will be tough given the current stand conditions on the private lands. Once properly treated, these private acres can provide a break in heavy fuels to manage fire size before it gets to the lake and concentration of structures. Fires, especially very large fires, produce millions of tons of CO2 and other green house gases along with degrading air quality due to smoke and ash that becomes airborne and can travel for hundreds if not thousands of miles. As recent as 2020, wildfires in California produced upwards of 91 million metric tons of CO2 (Global Fire Emissions Database) which is the equivalent of the emissions from an additional 19,668,691 cars (Environment Protection Agency).

Prioritization and Ranking

Appropriate state prioritization questions will be used to determine application priority.

These local ranking questions will be applied to all applications applying for the Little Bitterroot Lake Forest Health TIP to determine funding allocation priority.

1. Addressing disease and insect pressures negatively affecting overall forest health. Select either a or b.
    a. Does the application include stands that have identified disease or insect problems in 2 or more tree species?
    b. Does the application include stands that have identified disease or insect problems in 1 tree species?
2. Are the acres planned to be treated located adjacent to properties on which there is previously completed pre-commercial thinning (private, industrial, state, or federal lands all apply)?
3. Will the project result in the reduction of fuels along ingress/egress routes?
    a. Primary ingress/egress
    b. Secondary ingress/egress
4. Will the application include the treatment of existing populations of noxious weeds?

Progress Evaluation and Monitoring

There will be inventories that take place both before and after any practices are initiated to determine acres, stocking rates, stand conditions, and species composition. Data from these inventories can then be compared to inventories taken after a practice is completed to determine progress in the project area. This inventory information will be analyzed through the FlamMap modeling software in partnership with the USFS. This modeling software takes variables such as fuel loads, elevation, aspect, and slope to model out things such as projected fire intensity and flame length. With before and after information modeled, we can truly predict within reason what a fire might look like and the impact that this TIP will play in reducing future fire intensities. Each practice that is completed as part of an NRCS contract will be certified to meet NRCS standards and specifications by the Kalispell NRCS staff. Progress will be recorded through mapping and certifications in Conservation Desktop. The Kalispell NRCS will also communicate with partners on acres of progress on both writing forest management plans and creating defensible spaces around homes.

Sources

Fischer, William C. & Bradley, Anne F. April 1987. Fire Ecology of Western Montana Forest Habitat Types. United States Forest Service, Intermountain Research Station.

Global Fire Emissions Database

Environment Protection Agency