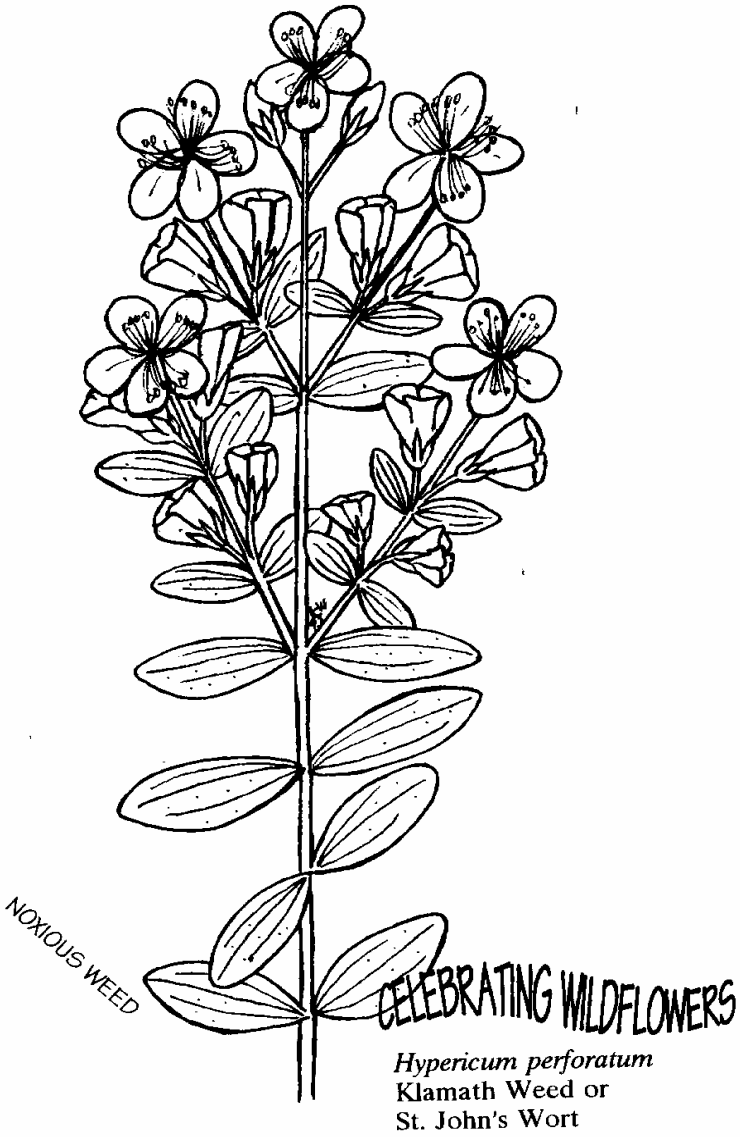
NOXIOUS WEED REPORT
For The
FALLEN BEAR PROJECT

Idaho Panhandle National Forest

St. Joe Ranger District



Kim Frymire, Botanist **Date**

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Introduction

Noxious weeds are invasive plants that out-compete and displace native plants, interfere with native plant germination and survival, change soil functions, and contribute to a host of other factors that can dramatically alter vegetation composition and structure.
The National Invasive Species Council defines “invasive species” as a species that is: (1) nonnative (or alien) to the ecosystem under consideration; and (2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112). Noxious weeds here after are those specifically legally designated by the US Forest Service and the State of Idaho as non-native invasive plant species. When any ground-disturbing activity is proposed, the Forest Service must determine the risk of introducing or spreading noxious weeds associated with the proposed action. Soils disturbed by skidding logs, controlled burning, and constructing roads can provide ideal habitat for invasive plants. Many invasive plants take advantage of disturbance situations to enter and invade plant communities. Seeds can be carried in soil clinging to machinery or vehicles and be deposited in weed-free areas. Roads can also facilitate invasion and spread by altering habitat conditions, stressing or removing native species, and allowing easier movement of wild or human vectors. In contrast, some invasive plant species may not require any soil disturbance to invade native ecosystems and can thrive if seeds are simply introduced; in these situations, prevention and monitoring become especially important.

REGULATORY FRAMEWORK

Noxious weeds are plant species that have been officially designated by federal, state or county officials. Direction regarding the development and coordination of programs for the control of noxious weeds and evaluation of noxious weeds in the planning process is found in federal legislation, regulations, and policy. The Federal Noxious Weed Act of 1974 defines a noxious weed as "a plant which is of foreign origin, is new to, or is not widely prevalent in the United States, and can directly or indirectly injure crops or other useful plants, livestock or the fish and wildlife resources of the United States, or the public health" (P.L. 93-629). The Idaho Noxious Weed Law definition of “noxious weed” is any exotic plant species that is established or that may be introduced in the State, which may render land unsuitable for agriculture, forestry, livestock, wildlife, or other beneficial uses and is further designated as either a State wide or County wide noxious weed (Idaho Code 24 Chapter 22). Both federal and state definitions pertain primarily to competition with commodity land uses, although, weeds also impact non-commodity resources such as water quality (Lacey et al. 1989), wildlife (Rice et. al. 1997) and natural diversity (Forcella and Harvey 1983; Tyser and Key 1988; Williams 1997).

The National Forest Management Act (1976) has a goal of providing of a diversity of plant and animal communities and established the disclosure requirements for proposed noxious weed control activities on NFS lands. The Idaho Panhandle National Forests (IPNF), Forest Plan (1987) and Forest Service Manual (Chapter 2080, as amended, 1995) prioritize weed treatments and state that noxious weeds will be controlled with an integrated pest management approach. In addition, the Idaho Panhandle Forest Plan and the Federal Noxious Weed Act of 1974 as amended require cooperation with State, local, and other federal agencies in managing and controlling noxious weeds. The state of

Idaho also requires landowners to control weeds on their property under the Noxious Weed Act, Title 22, Chapter 24 Idaho Code. Furthermore, the Northern Region Environmental Management System (EMS) adopted by the IPNF states that an environmental objective is the reduction of "invasive weed introduction or spread through improved and more effective control and management" (IPNF, EMS Briefing Document 5/2008, project file B-6).

ANALYSIS AREA

The geographic scope of analysis of direct, indirect, and cumulative effects for noxious weeds for this project is the Fallen Bear Project Area. This is the largest area upon which a meaningful analysis can be done. The project area consists of 10,514 acres. This area is approximately 22 miles southeast of Avery, Idaho in Shoshone County in portions of Township 45 and 44 North; Range 7 and 8 East, Boise Meridian. Noxious weed populations may expand beyond the project area boundary. However much of the area outside of the project that would be suitable for noxious weeds to colonize already has established non-native invasive plant species.

ANALYSIS METHODS

To assess effects of project activities on potential weed establishment and spread the amount, duration and severity of ground disturbance, and the risk of weed colonization (includes proximity to existing weed populations, spread vectors, and susceptibility of the habitat) are examined. Analysis also consisted of reviews of inventories completed for the St. Joe Weed FEIS (USDA 1999a), surveys and monitoring 2005-2008, and queries of the Timber Stand Management Record System (TSMRS).

AFFECTED ENVIRONMENT

The St. Joe Noxious Weed Project FEIS (USDA Forest Service, 1999a) lists 34 undesirable species (PF B-4) that can be targeted for treatment and their level of infestation on the St. Joe Ranger District. Listed noxious weeds are known in the proposed project area primarily along roads. Noxious weeds spread quickly along travel routes, such as roads and trails. Additionally invasive species are adept at colonizing recently disturbed areas particularly if light levels increase. Once established, species can grow and spread quickly and effectively exclude native vegetation from the site. Timber harvesting can impact large areas of land, making them suitable for weed establishment.

The St. Joe Noxious Weed Project FEIS (USDA 1999, Appendix D) lists 34 undesirable species that can be targeted for treatment and their level of infestation on the St. Joe Ranger District. Weeds may also be treated in areas not specified in the St. Joe Noxious Weed Control Project EIS by following an adaptive management strategy allowing for newly identified species to be treated in hopes of eradicating the noxious weeds. Disturbed areas often translate into potential weed habitat. Weed species are adept at colonizing recently disturbed areas particularly if light levels increase. Once established, species can grow and spread quickly and effectively exclude native vegetation from the site. Project activities would result in varying disturbance levels. Timber harvesting can impact large areas of land, making them suitable for weed establishment. Burning may

also promote weed spread under certain conditions for some species by reducing the density and competitiveness of native species and allowing for weed establishment (Hobbs and Huenneke 1992). Road construction results in a major disturbance that can be long-term.

HISTORIC CONDITION

Past and ongoing activities have led to habitat modification and fragmentation. Road construction, timber sales, recreational use, vehicular traffic, mining, and natural events have all contributed to vectors for encroachment of weeds into the area and the reduction of native species diversity.

Historically, it can be assumed that there were no noxious weeds within the project area. The noxious weeds included in the St. Joe Noxious Weed Project FEIS (USDA 1999a) and new invasive plant species to the IPNF originate in Europe and Asia. There fore seed sources of invasive plants were not available before widespread human disturbance, travel and commerce. The first recorded sightings in Shoshone County, of several currently established weed species such as St. John's wort, Canada thistle, common tansy, and sulphur cinquefoil, date from the 1940s (PF B-5) . However, when noxious weeds first appeared in the project area is unknown. Introduction of noxious weeds likely began after the first large-scale disturbance where a non-native species seed source was present. For example, fires burned approximately 800 acres in the western portion of the Fallen Bear Project Area in 1910. These fires most likely lead to an increase of native species over time. However, these large intense fires and the associated activities may have contributed to the first establishment of weeds in the area. Data from 1940 to present (no data available for 1971-1973) show 25 fires of less than 10 acres. These fires due to suppression activities and size did little to increase species diversity for native species. One 300+ acre fire occurred in the same time period. It, like the 1910 fire, would have improved native species diversity over time, but likely increased invasive weed species encroachment. Human disturbance in the Fallen Bear Project Area likely began in earnest with the start of large-scale timber harvests and associated activities in the 1950s.

EXISTING CONDITION

Noxious weeds primarily exist along travel corridors, dispersed use areas, and other disturbed areas. Inventories completed for the St. Joe Weed FEIS (USDA 1999a) indicate populations of spotted knapweed (*Centaurea biebersteinii*), meadow hawkweed (*Hieracium pratense*), and St. John's wort (*Hypericum perforatum*). Additional surveys for the Fallen Bear project development were completed in 2007. Additional species present at that time include: oxeye daisy (*Leucanthemum vulgare*), and Canada thistle (*Circium arvense*). Noxious weeds can expand rapidly, therefore the extent of weed infestations within any area, at a given time, would be unknown.

Weeds were treated in portions of the project area manually and with herbicides prior to September of 1999. Weeds along Forest Highway 50 to Gold Summit are treated by Shoshone County. Re-evaluation of the area in 2005 lead to herbicide treatments in 2006 and 2007. Monitoring of sites treated in 2006/2007 was done in 2008. Spot herbicide and

manual treatments where done in 2008. Biological control agents for spotted knapweed and St. John's wort were previously released in the project area.

The St. Joe Geographic Area priority matrix (USDA 1996) identifies the Quartz Gold area, of which the Fallen Bear project is a portion of, as having weeds present in recently disturbed areas, roads, and the river face. Spot treatments and seeding were recommended to limit spread after disturbance. The current condition matrix also states that the area is "moderately altered from the historic range of variability and/or has moderate risk of further undesirable change without management". Management of noxious weeds focuses on eradication of new invaders, prevention, detection, and eradication of potential invaders, containment and reducing population sizes of established invaders.

Susceptibility parameters provided by Rice and Toney (1997) allow the calculation of acres susceptible to invasion by five aggressive noxious weeds following disturbance. Queries of the Timber Stand Management Record System (TSMRS) were conducted using the habitat parameters for each of five species provided by Rice and Toney. The results provide a coarse filter of stands that would be susceptible to weed invasion following disturbance (Table 1). Many of the stands within the project area are susceptible to at least one of the five weed species. Of these five species, only meadow hawkweed has previously been reported in the project area. Meadow hawkweed is the most aggressive, but the impacted areas would be susceptible to a host of other weed species also.

Table 1: Fallen Bear Coarse Filter Areas Susceptible to Weed Invasion After Disturbance

WEED SPECIES	ACRES	% OF PROJECT AREA
Tansy ragwort (*Senecio jacobaea)*	9,927	94
Meadow hawkweed (*Hieracium pretense*)	9,927	94
Orange hawkweed (*Hieracium aurantiacum*)	9,927	94
Rush skeleton weed (*Chondrilla juncea*)	9,927	94
Yellow starthistle (*Centaurea solstitialis*)	1,101	10

Design Features

The following preventative measures would be taken to reduce the risk of noxious weed introduction and spread in accordance with the St. Joe Weed Control EIS (ROD 10/12/99).

A. All off-road logging and construction equipment (including machinery used in restoration projects) would be cleaned prior to entering the project area to remove dirt, plant parts, and material that may carry weed seeds. A provision would be included in contracts.

B. Mulching agents brought into the project area, such as straw, would be certified weed-free prior to use. On-site slash could be used where roads are recontoured.

C. All seed used for re-vegetation and erosion-control purposes would be certified weed-free and be from a native seed mix set by the IPNF.

D. After implementation, project areas would be reviewed for new populations of noxious weeds. If new populations are found more intensive surveys would be conducted, sites would be mapped, and treatment would be scheduled.

E. If new populations of noxious weeds are found, treatment would be implemented in accordance with priorities set by the noxious weed program. New invader species would be slated for eradication immediately upon discovery. Other weed infestations would be treated according to the direction in the St. Joe Noxious Weed Project EIS and district priorities.

F. All weed treatments would be monitored for effectiveness.

G. To the degree practicable road gravel would be certified from weed free-sources. Gravel sources will be inspected for the presence/absence of noxious weeds prior to utilization of gravel in the project area as appropriate.

Alternatives

Alternative A: No-Action Alternative

This alternative proposes to maintain the existing level of management within the Fallen Bear Project Area. Fire suppression, road maintenance, installation of a bat gate at the Eureka mine, and recreation use would continue. It does not propose any new management.

Direct and Indirect Effects

Under this alternative, weed populations may have a small decline in some areas as canopy cover increases. Populations would persist longer along roads and trails due to more frequent disturbances and higher light levels for longer periods than in surrounding forest stands. Here they could provide a seedbank that would provide a means for additional seed spread. Without disturbance, established weed species in the project area are not expected to rapidly expand since many of the suitable areas for weed colonization have already been infested. The greatest threat from noxious weeds under this alternative is from the introduction of new and potential invader species by way of existing roads and trails. The No-Action Alternative would not directly or indirectly increase or decrease the spread of noxious weeds in the project or surrounding area.

Cumulative Effects

Past and ongoing activities within the project area and on adjacent public and private lands have led to habitat modification and fragmentation. Road construction, timber sales, recreational use, vehicular traffic, mining, and natural events have all contributed to introduction and encroachment of weeds into the area. As well as the habitat fragmentation and reduction of native species diversity in the area. Current and reasonably foreseeable activities within the project area include firewood collection;

recreational use of roads, trails, and dispersed sites; road maintenance, installation of bat gates, and fire suppression. These types of activities could result in new disturbed sites available for colonization by weeds, and they do offer the possibility of introduction of new species of weeds to the watershed. Overall, the effect of the No-Action Alternative is expected to result in a static trend or in a slight increase in weed numbers within the area over time if control methods are not employed. Weed control activities within the project area would be scheduled as funding and other priorities allow.

Alternative B

Direct and Indirect Effects

The direct effect of ground-disturbing activities on noxious weeds is to increase the area available for colonization. The greatest potential for the establishment of noxious weeds comes from activities that disturb the soil and open the canopy to the greatest extent. In this respect new road construction, skid trails, log landings, and timber harvests have the highest potential to create suitable weed habitat. Road reconstruction, reconditioning, and storage impact areas that are already disturbed; and would create a smaller amount of new potential habitat. Some previously disturbed areas have existing native vegetation, this areas would also be susceptible to invasion by non-native weed species.

Timber Harvest

Alternative B proposes 483 acres timber harvest, 190 more acres to be harvested than in Alternative C (see table 2). Prescription types and harvest methods are not significantly different between action alternatives (see tables 2 and 3).

Silvicultural prescriptions and logging methods differ in the extent to which they might promote noxious weed colonization. In general, the smaller the openings created and the least amount of work done in the stand, the smaller the opportunities for colonization. In this respect, commercial thinning would pose the lowest risk of spreading weeds, while clearcutting would pose the highest. Ground-based log skidding may promote the spread of weeds more than any other yarding method due to the greater extent of ground disturbance and use of machinery. Design features such as cleaning road construction and logging equipment prior to entering the project area (Design Feature A) would help to minimize these effects. Cable yarding would have an intermediate effect, and skyline yarding the least effect due to the overall level of ground disturbance of the methods. Skyline yarding, depending on the distance between the line and the ground may have little to no ground disturbance. Table 2 shows the methods for each prescription and Table 3 displays the differences between alternatives in harvest prescription.

Table 2: Approximate Acres by Harvest Method

Harvest Method	Acres	% of Harvest
Prescription B:	**483 total**	
Skyline system	392	81
Tractor	91	19
Prescription C:	**293 total**	
Skyline system	248	85
Tractor	45	15

Table 3: Approximate Acres by Harvest Prescription

Treatment Type	Acres	% of Harvest
Alternative B:		
Shelterwood	72	15
Seed tree	24	5
Clearcut with reserve	99	20
Commercial Thin	288	60
TOTAL	**483**	**100**
Alternative C:		
Shelterwood	44	15
Seed tree	24	8
Clearcut with reserve	44	15
Commercial Thin	181	62
TOTAL	**293**	**100**

Indirect effects of harvest-related activities could be the possible establishment of new weed populations or the expansion of existing populations. Established weed populations along right-of-ways and water courses on National Forest System lands may provide a source of seeds for infestation. Effects associated with weed population enlargement may include declines in native plant diversity (Forcella and Harvey 1983, Tyser and Key 1988, Williams 1997), reductions in the aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion (Lacey and others1989), and an overall decline of ecosystem health.

Alternative B would have 81% of the harvest done by skyline yarding, which results in less ground disturbance than ground-lead cable methods. In addition indirect negative effects from further ground disturbance by recreational uses would be less with skyline yarding than in traditional harvest methods as no skid trails would be created. Skid trails are often used by recreationalists for repeated access into areas, thus creating more disturbance and vectors for weed spread. Design features and mitigation can be expected to reduce the threat of weed expansion. However even with associated weed control methods, weed species may colonize disturbed areas. The potential for the spread of existing noxious weeds and the introduction of new species exists for all alternatives.

Timber Stand Improvement (TSI)

Timber Stand Improvement (TSI) activities include pre-commercial thinning 775 acres to improve the growing conditions of the selected trees by eliminating competition for light and nutrients, and 777 acres of white pine pruning. Timber stand improvements may have direct effects through physical disturbance. Noxious weeds are particularly adept at colonizing disturbed areas where light levels have increased. Pruning and thinning may have indirect effects through changes to light and moisture regimes; however, pre-commercial thinning and pruning increase canopy openings only slightly. Pre-commercial thinning and pruning would be done by hand and would have a low amount of further disturbance. Therefore, TSI has a low risk for the spread of noxious weeds.

Mistletoe Units
Approximately 161 acres of trees infected with dwarf mistletoe (*Arceuthobium* sp.) would be girdled in order to slow the spread of dwarf mistletoe on the acres treated. Some of the western larch seed-trees (less than 100 trees), best suited for producing future cavity habitat, would be inoculated with heartrot decay fungus to improve wildlife habitat. As this treatment would be done by hand work, little to no ground disturbance would occur. Treating mistletoe and inoculating trees is highly unlikely to affect the spread of noxious weeds and therefore has a very low risk for weed spread and establishment.

Tree Planting
Conifer seedlings would be planted on approximately 195 acres in areas proposed for regeneration harvest. Plantings would be done by hand with minimal ground disturbance. Re-planting with native tree species assists in the stabilization of soils. Tree planting also reduces the available habitat for noxious weeds. Due to the low amount of ground disturbance and the reduction, over time, of habitat available for colonization by noxious weeds tree planting is a very low risk for weed spread and establishment.

Biomass Removal
Biomass removal for the St. Maries School District Fuels to Schools Project would be a by-product of the proposed fuel treatment. There is a low potential for the spread of existing noxious weeds and the introduction of new species with this activity.

Pocket Gopher Control
Baiting may be done to control pocket gophers on up to 195 acres in areas proposed for regeneration harvests if needed to protect regeneration. Baiting would include placing either 0.5% strychnine treated oats or 2.0% zinc phosphide oats into pocket gopher tunnels by hand. This treatment would protect both natural and artificial regeneration from pocket gopher damage during establishment. An initial treatment would be followed by additional treatments, if needed, to minimize losses in the regeneration and meet stocking objectives. There would be no potential for the spread of existing noxious weeds and the introduction of new species with this activity.

Fuel Treatments
Fuels on approximately 468 acres within the Fallen Bear Project Ares would be treated post harvest. Fuel treatments may have direct effects through physical disturbance. Lop and scatter, and yarding tops within 200 feet of roads would have a low risk for noxious weeds spread and establishment. These treatments result in a low amount of ground disturbance. Due to ground disturbance, grapple piling with slash burn would have a moderate risk for noxious weeds spread and infestation. Underburn treatment may have a low risk for noxious weeds spread and establishment due to low amounts of ground disturbance. An indirect effect may result from the addition of nitrogen to the soil, temporarily increasing plant growth, following an underburn. Depending upon the available seeds in the area either native plants would be stimulated reducing the potential for noxious weeds to become established in the area or, if noxious weeds seeds are available in the soil, further spread would occur at a higher growth rate than in the absence of the nitrogen. Therefore the various fuel treatments, when looked at as a whole, would have a moderate to high risk for noxious weeds spread and establishment.

Monitoring and treating noxious weeds post treatments would assist in reducing the spread of weed species (Design Feature D).

Road Reconstruction, Storage, and Decommissioning

Approximately 18.7 miles of road on National Forest System lands would be reconstructed to provide access for timber harvest in Alternatives B. Reconstruction of existing roads to prepare them for timber hauling may result in a shift in accessibility from high clearance vehicles only to passenger car access. Fewer miles may be reconstructed depending on hauling needs. Reconstruction may include the installation of drain dips and culverts, grading, clearing, dust abatement, and resurfacing. The indirect effects of road reconstruction would be an increase in the potential for the introduction and expansion of weed species, especially into previously inaccessible areas, with increased access. Road reconstruction would have a moderate risk to the spread of noxious weeds.

Currently there are 15.7 miles of open roads in the project area. Alternative B would reduce the miles of open roads to 5.4 miles. Decrease of access is discussed below under each type of restrictions.

Roads in Prescription A (gated), currently 21.4 miles, would maintain the existing road prism, allow administrative traffic, and would be available for pedestrian, stock and bicycle traffic. Alternative B would reduce gated roads to 6.2 miles. The remaining 15.2 miles would be put into Prescription B, C, or D, thus decreasing access on these roads. While gating roads decreases the intensity of use, these roads remain a vector for noxious weed dispersal. Design Feature A decreases the further risk to noxious weed spread. Prescription A roads will have a low risk to noxious weed spread and establishment.

Currently 40.4 miles of road are in intermittent storage Prescription B (barrier). Approximately an additional 9.7 miles would be put into Prescription B. These restrictions would maintain the existing road prism, allow intermittent administrative traffic, and would be available for pedestrian, stock and bicycle traffic. Of the current 40.4 barrier miles 33.7 miles would be put into Prescription C and D. Thus leaving approximately 16.4 miles of barrier roads. Prescription B roads will have a low to moderate risk to noxious weed spread and establishment.

Approximately 25.3 miles of road would be put into Prescription C (long-term storage). Long-term storage is intended to eliminate motorized access while still permitting stock, bicycle, and pedestrian access. This would reduce opportunities for weed spread in the long-term. The reductions in vehicular access would result in a decreased potential for weed transport.

Decommissioning of about 32 miles of roads (Prescription D) would eliminate all types of future access and would have a short-term increase in disturbed soil outside of the existing disturbed road surface. Over the long term there would be a reduction of weed risk as those decommissioned roads re-vegetate and the vectors that once utilized the roads are eliminated. The long-term reduction would have to occur in conjunction with out-year monitoring and treatment of any new weed occurrences.

Roads that are not open prior to the action alternative, but would be used for activities during the sale, would be gated during the sale activities to limit access not pertinent to the sale. This would assist in reducing the spread of noxious weeds. To reduce the availability of colonization sites for weeds, all decommissioned or stored roads and landings off of specified roads would be seeded with certified weed-free mixes the year of ground disturbance (Best Management Practices and Soil and Water Conservation Practices)**.** All mulching agents would also be certified noxious weed free (Design Feature B) in order to reduce the risk of establishing new sites. Overall changes that reduce road access would lead to a reduction in noxious weeds spread and establishment.

Road Construction

Alternative B proposes approximately 2.8 miles of new road construction on National Forest System lands to implement the envisioned timber harvesting systems. When timber harvest and associated activities are complete the newly constructed roads would be put into Road Management Prescription C (long-term storage). Road construction of up to 2.8 miles would impact previously undisturbed ground. Construction would include clearing, installation of drain dips, culverts, grading, surfacing, and dust abatement. The indirect effects of road construction would be an increase in the potential for the introduction and expansion of weed species, especially into newly accessible areas. Road construction would disturb established seed beds and soil, thus becoming a high risk area for potential noxious weeds establishment. Direct effects can be mitigated for by employing measures to prevent weed colonization (Design Features A-G). However, even with associated weed control methods, weed species may colonize disturbed areas. The extent of weed expansion may be minimized, but is dependent on so many factors that it is difficult to quantify.

Cumulative Effects

Cumulative effects are the result of past, present, and future activities within the area. Past activities such as timber harvest, road and trail construction, fuels treatments, prescribed burns, and recreational use likely resulted in the introduction and /or spread of weeds in the area. Current and reasonably foreseeable activities within the project area include firewood collection; recreational use of roads, trails, and dispersed sites; road maintenance, installation of a bat-friendly gate on the Eureka mine tunnel, and fire suppression. These types of activities could result in new disturbed sites available for colonization by weeds, and they do offer the possibility of introduction of new species of noxious weeds to the watershed.

Noxious weeds can take advantage of areas with disturbance and decreased fertility (productivity). Because of their ability to grow well in habitats with low fertility weeds are able to out-compete natives. The available nitrogen is often used rapidly by noxious weeds thus decreasing the amount available to natives leading to a decrease in the productivity of a site. Decreasing weeds in a site or extirpating the weeds from the site will help re-establish the soil productivity in time. If the weeds seed source can also be eliminated then natives would do quite well and soil productivity would return to a more natural state much faster than if the seed source persists.

While some actions in Alternative B would have a higher risk for noxious weeds spread and establishment (such as timber harvest and road construction) others such as reducing road access would, over time, result in a reduction of vectors for spread. Therefore the cumulative effects on noxious weeds for Alternative B are expected to result in a static trend or in a slight increase in weeds within these areas would be scheduled as funding and other priorities allow.

Alternative C

Direct and Indirect Effects

Timber Harvest
Alternative C has 190 fewer acres of proposed timber harvest compared to Alternative B. Prescription types are the same, and harvest methods are not significantly different between action alternatives (see Tables 2 and 3 above). However, the decreased ground disturbance does reduce the potential risk of noxious weed spread and invasion compared to Alternative B.

Silvicultural prescriptions and logging methods differ in the extent to which they might promote noxious weed colonization. In general, the smaller the openings created and the least amount of work done in the stand, the smaller the opportunities for colonization. In this respect, commercial thinning would pose the lowest risk of spreading weeds, while clear cutting would pose the highest. Ground-based log skidding may promote the spread of weeds more than any other yarding method due to the greater extent of ground disturbance and use of machinery. The design features requiring cleaning road construction and logging equipment prior to entering the project area (Design Feature A) would help to minimize these effects. Cable yarding would have an intermediate effect, and skyline yarding the least effect due to the overall level of ground disturbance of the methods. Skyline yarding, depending on the distance between the line and the ground may have little to no ground disturbance. Table 2 shows the methods for each prescription and Table 3 displays the differences between alternatives in harvest prescription.

Timber Stand Improvement (TSI)
Proposed TSI work is the same in Alternative C as Alternative B. See discussion under Alternative B.

Mistletoe Units
Proposed mistletoe work is the same in Alternative C as Alternative B. See discussion under Alternative B.

Tree Planting
Proposed tree planting is the same in Alternative C as Alternative B except that only 112 acres would be planted in Alternative C. See discussion under Alternative B.

Biomass Removal
Biomass removal for the St. Maries School District Fuels to Schools Project would be a by-product of the proposed fuel treatment. This activity would occur on sites which

would be disturbed by harvest and fuel treatments. Effects of biomass removal are considered under effects of timber harvest and fuel treatment and would have no additional risks to TES species.

Pocket Gopher Control

Proposed pocket gopher control is the same in Alternative C as Alternative B except that only 112 acres would possibly be treated in Alternative C. See discussion under Alternative B.

Fuel Treatments

Fuels on approximately 312 acres within the Fallen Bear Project Ares would be treated post harvest. Fuel treatments may have direct effects through physical disturbance. Lop and scatter, and yarding tops within 200 feet of roads would have a low risk for noxious weeds spread and establishment. These treatments result in a low amount of ground disturbance. Due to ground disturbance, grapple piling with slash burn would have a moderate risk for noxious weeds spread and infestation. Underburn treatment may have a low risk for noxious weeds spread and establishment due to low amounts of ground disturbance. An indirect effect may result from the addition of nitrogen to the soil, temporarily increasing plant growth, following an underburn. Depending upon the available seeds in the area either native plants would be stimulated reducing the potential for noxious weeds to become established in the area or, if noxious weeds seeds are available in the soil, further spread would occur at a higher growth rate than in the absence of the nitrogen. Therefore the various fuel treatments, when looked at as a whole, would have a moderate to high risk for noxious weeds spread and establishment. Alternative C has 189 fewer treated acres than Alternative B, thus the overall risk is slightly less in Alternative C. Monitoring and treating noxious weeds post treatments would assist in reducing the spread of weed species (Design Feature D).

Road Reconstruction, Storage, and Decommissioning

Approximately 7.3 miles of road on National Forest System lands would be reconstructed/reconditioned to provide access for timber harvest in Alternatives C. There is 10.6 miles less reconstruction under alternative C than in alternative B. Reconstruction and reconditioning of existing roads to prepare them for timber hauling may result in a shift in accessibility from high clearance vehicles only to passenger car access. Fewer miles may be reconstructed depending on hauling needs. Reconstruction may include the installation of drain dips and culverts, grading, clearing, dust abatement, and resurfacing. The indirect effects of road reconstruction would be an increase in the potential for the introduction and expansion of weed species, especially into previously inaccessible areas, with increased access. Road reconstruction would have a moderate risk to the spread of noxious weeds.

Currently there are 15.8 miles of open roads in the project area. Alternative C would reduce the miles of open roads to 5.4 miles. Decrease of access is discussed below under each type of restrictions.

Roads in Prescription A (gated), currently 21.4 miles, would maintain the existing road prism, allow administrative traffic, and would be available for pedestrian, stock and bicycle traffic. Alternative C reduces gated roads to 6.2 miles. The remaining 15.2 miles

would be put into Prescription B, C, or D, thus decreasing access on these roads. While gating roads decreases the intensity of use, these roads remain a vector for noxious weed dispersal. Design Feature A decreases the further risk to noxious weed spread. Prescription A roads would have a low risk to noxious weed spread and establishment.

There are currently 40.4 miles of road in intermittent storage Prescription B (barrier). An additional 5.4 miles would be put into Prescription B. Of the current 40.4 barrier miles 34.9 miles would be put into Prescription C and D after harvest activities have been completed. A total of 10.9 miles would be kept as barrier roads. These restrictions would maintain the existing road prism, allow intermittent administrative traffic, and would be available for pedestrian, stock and bicycle traffic. Prescription B roads would have a low to moderate risk to noxious weed spread and establishment. Alternative C has fewer roads kept in Prescription B.

Alternative C would result in approximately 37.5 miles of road in Prescription C (long-term storage). Long-term storage is intended to eliminate motorized access while still permitting stock, bicycle, and pedestrian access. This would reduce opportunities for weed spread in the long-term. The reductions in vehicular access would result in a decreased potential for weed transport. Alternative C has approximately 5 more miles added to long-term storage than in Alternative B.

Decommissioning of about 32.2 miles of roads (Prescription D) would eliminate all types of future access and would have a short-term increase in disturbed soil outside of the existing disturbed road surface. Over the long term there would be a reduction of weed risk as those decommissioned roads re-vegetate and the vectors that once utilized the roads are eliminated. The long-term reduction would have to occur in conjunction with out-year monitoring and treatment of any new weed occurrences. Both action alternatives have the same miles of road decommissioning.

Roads that are not open prior to the action alternative, but would be used for activities during the sale, would be gated during the sale activities to limit access not pertinent to the sale. This will assist in reducing the spread of noxious weeds. To reduce the availability of colonization sites for weeds, all decommissioned or stored roads and landings off of specified roads would be seeded with certified weed-free mixes the year of ground disturbance (Best Management Practices and Soil and Water Conservation Practices). All mulching agents would also be certified noxious weed free (Design Feature B) in order to reduce the risk of establishing new sites. Overall, changes that reduce road access would lead to a reduction in noxious weeds spread and establishment.

Alternative C reduces access to a greater extent than in Alternative B. This would result in an even greater reduction of pathways or vectors of spread for noxious weeds.

Road Construction

Approximately 0.8 miles of new road construction on National Forest System lands would be necessary to implement the envisioned timber harvesting systems. Fewer miles may be constructed depending on hauling needs. When timber harvest and associated activities are complete the newly constructed roads would be put into Road Management Prescription C (long-term storage). Road construction of up to 0.8 miles would impact previously undisturbed ground. Construction would include clearing, installation of drain

dips, culverts, grading, surfacing, and dust abatement. The indirect effects of road construction would be an increase in the potential for the introduction and expansion of weed species, especially into newly accessible areas. Road construction would also disturb established seed beds and soil, thus becoming a high risk area for potential noxious weeds establishment. Direct effects can be mitigated for by employing measures to prevent weed colonization (Design Features A-G). However, even with associated weed control methods, weed species may colonize disturbed areas. The extent of weed expansion may be minimized, but is dependent on so many factors that it is difficult to quantify.

Alternative C has 2 fewer miles of new construction as compared to Alternative B. The lower amount of new road construction and employment of design features mentioned above would have a lower risk of noxious weed spread for Alternative C.

Cumulative Effects

Cumulative effects are the result of past, present, and future activities within the area. Past activities such as timber harvest, road and trail construction, fuels treatments, prescribed burns, bat gates, and recreational use likely resulted in the introduction of weeds into the area. Current and reasonably foreseeable activities within the project area include firewood collection; recreational use of roads, trails, and dispersed sites; road maintenance, installation of bat gates, and fire suppression. These types of activities could result in new disturbed sites available for colonization by weeds, and they do offer the possibility of introduction of new species of weeds to the watershed.

Noxious weeds can take advantage of areas with disturbance and decreased fertility (productivity). It is because of their ability to grow well in these habitats with lower fertility that allows them to out compete natives. The available nitrogen is often used rapidly by noxious weeds, thus decreasing the amount available to natives leading to a decrease in the productivity of a site. Decreasing weeds in a site or extirpating the weeds from the site will help re-establish the soil productivity in time. If the weeds seed source can also be eliminated then natives will do quite well and soil productivity will return to a more natural state much faster than if the seed source persists.

While some actions in Alternative C would have a high risk for noxious weeds spread and establishment (such as timber harvest) others such as reducing road access would, over time, result in a reduction of vectors for spread. Therefore the cumulative effects for Alternative C are expected to result in a static trend or in a slight increase in weed numbers within the area over time. Weed control activities within these areas would be scheduled as funding and other priorities allow. Alternative C, when compared to Alternative B, does have less ground disturbance and more restrictive road access. Therefore Alternative C would have a lower risk to noxious weed spread compared to Alternative B.

CONSISTENCY WITH FOREST PLAN AND OTHER REGULATORY DIRECTION

According to the Idaho Panhandle Forest Plan (USDA, Forest Service, 1987) direction, infestations of many noxious weed species including spotted knapweed, meadow knapweed, oxeye daisy, and St. John's wort are so widespread that control would require major programs that are not possible within expected budget levels (USDA Forest Service 1987 p. II-7). Forest Plan direction is to "provide moderate control actions to prevent new weed species from becoming established" and to treat noxious weeds with an integrated pest management approach. Alternatives B and C would meet the intent stated in the Forest Plan for moderate control, through the implementation of all noxious weed design features. Any weed control within the project area would be done in accordance with the principles of integrated pest management, which is also consistent with the Forest Plan. The No-Action Alternative would also meet the intent of the Forest Plan by not creating new habitat for the introduction of noxious weeds and continuing control efforts under the St. Joe Weed Control ROD.

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