Noxious Weeds

Introduction and Regulatory Framework

The Federal Noxious Weed Act of 1974, as amended, requires cooperation with State, local, and other Federal agencies in the application and enforcement of all laws and regulations relating to management and control of noxious weeds (USDA Forest Service, 1995a). The Forest Service Manual describes a noxious weed as a plant that is aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being native or new to or not common to the United States or parts thereof (USDA Forest Service, 1995c). The 1989 Fremont National Forest's Land and Resource Management Plan (LRMP, also referred to as the Forest Plan) stated to maintain or improve vegetative conditions as one of the Forest Management Goals (USDA Forest Service, 1989, 49). In the Forest Service Manual (USDA Forest Service, 1995b), the objective states that an integrated weed management approach should be used to control and contain the spread of noxious weeds on and adjacent to National Forest Systems lands.

In 1998, the Environmental Assessment for the Management of Noxious Weeds (the 1998 EA) was completed for the Fremont National Forest in accordance with the Regional EIS for Managing Competing and Unwanted Vegetation and the Mediated Agreement (USDA Forest Service, 1998, 4). The Decision Notice from this Environmental Assessment selected an alternative that allows a variety of noxious weed treatments, including herbicides (USDA Forest Service, 1998, 4).

The 1998 EA includes noxious weed management over the entire Fremont National Forest. The 1998 EA emphasized prevention as the first and most important aspect of noxious weed management (USDA Forest Service, 1998, 23). Implementing prevention strategies include analyzing the risk of noxious weed invasion during the project planning process and developing tactics to avoid introduction or spread of noxious weeds (USDA Forest Service, 1998, 23). The 1998 EA went further to quote the Mediated Agreement stating, "Although not considered a substitute for prevention, early treatment methods should seriously be considered where prevention alone is insufficient or infeasible" (USDA Forest Service, 1998, 2). A summary of the objectives found in the 1998 EA include to establish and increase awareness of noxious weeds, promote long-term health and productivity of forest and range land ecosystems, and implement treatments that move the Forest towards 100 percent control of invader species (USDA Forest Service, 1998, 2). The 1998 EA analyzed the effects of various treatment methods including manual, biological, cultural, mechanical, and chemical methods.

Since 1995, gathering of site location and size for all known noxious weed sites has been underway. This information has been put into GIS and is updated on an annual basis. Currently, there are 48 noxious weed sites on the Silver Lake Ranger District totaling 420 acres.

As of 2002, there is a three-year contract in effect for the treatment of noxious weeds on the Fremont portion of the Fremont-Winema National Forests. With this contract in effect, noxious weed treatments in 2002 were successful. Since this contract will be in effect for two more years (2003 and 2004), it is believed that successful treatment of noxious weed sites will continue. Post Toolbox Complex Fire funding has been made available for the treatment of approximately 185 additional acres over two years. This will aid in the control of previously unknown sites, new infestations that occur as a result of fire suppression activities, and infestations that are a result of weed establishment in burned and disturbed areas.

Analysis Area for the Toolbox Fire Portion

The Toolbox fire portion is approximately 57,000 acres in size and lies within the Lower, East and Upper Duncan Creek, Benny Creek, Middle Silver Creek, and a small portion of Thompson Reservoir and Upper Silver Creek subwatersheds. Within the Toolbox fire portion, the Forest Service manages the National Forest Systems lands and the Bureau of Land Management (BLM) manages the remainder of the federal land. All industrial forestland is owned by U.S. Timberlands, Co., L.P. (UST). There is a small portion of non-industrial forestlands within the Toolbox fire portion as well.

Area of Analysis for the Silver Fire Portion

The Silver fire portion is approximately 28,000 acres in size and lies within the Middle, Upper, and West Fork Silver Creek, and the Thompson Reservoir subwatersheds. Within the Silver fire portion, the Forest Service manages the National Forest Systems lands and the Bureau of Land Management (BLM) manages the remainder of the federal lands. Private ownership occurs for both industrial and non-industrial forestlands.

Existing Conditions for the Toolbox Fire Recovery Project

Within the Toolbox Fire Recovery Project (Toolbox project) boundaries, the Forest Service manages the National Forest Systems lands and the Bureau of Land Management (BLM) manages the remainder of the federal lands. Private ownership occurs for both industrial and non-industrial forestlands.

Currently, weed infestation in the project area is relatively low. However, the fires of 2002 created prime habitat for noxious weeds on approximately 85,000 acres on the Silver Lake Ranger District. Of the 85,000 acres, the Toolbox Fire Recovery Project covers 48,000 acres of National Forest Systems lands. The fires exposed ground surfaces, reduced shade (increased light), and created a flush of nutrients (Goodwin et al, 2002). Native plant species were also consumed. Without the native plant species present, there is little competition against the establishment and spread of noxious weeds.

After reviewing the GIS layer and past survey forms, it was determined there are eight noxious weed sites covering approximately 6.5 acres within the Toolbox fire portion. Three of the eight sites are infested with Canada thistle totaling 2.7 acres. One Canada thistle site is scattered over 2.5 acres, while the other two are 0.1 acres each. Musk thistle is present in the remaining five sites totaling 3.8 acres. Three musk thistle sites are 0.1 acres each, while another site is 0.3 acres in size. The largest musk thistle site is 2.2 acres followed by a site 1.0 acre in size. All eight noxious weed sites within the Toolbox fire portion are located along roads. There is only one existing noxious weed site that is located within a proposed harvest unit. In Harvest Unit #131, there is a Canada thistle site that is 2.5 acres in size and has plants scattered throughout the site. This is a proposed Harvest Unit in Alternatives C, E, G, and H. Adjacent to the Toolbox fire portion along Graham Creek, there are approximately 13 acres of musk thistle sites. These sites are scattered along a road, but are within one mile of the burn boundary. These sites could potentially increase the risk of noxious weeds spreading into the burned areas.

Inside the boundaries for the Silver fire portion, there are eight noxious weed sites totaling 5.5 acres in size. Three sites are infested with spotted knapweed totaling 2.1 acres. Two spotted knapweed sites are 1 acre each. Both of these sites have noxious weeds scattered within the 1.0-acre site. The third spotted knapweed site is 0.1 acres in size. There is one St. John's wort site that is 0.1 acre in size. Finally, there are four musk thistle sites within the Silver fire portion. The largest site is scattered among 3 acres. The other three musk thistle sites are 0.1 acre each. All eight noxious weed sites within the Silver fire portion are located along roads. Currently, all noxious weed sites are located outside proposed harvest units. Adjacent to the Silver fire portion, there is one site of medusahead rye that is within one mile of the burned areas. There are also two sites of Canada thistle totaling 3 acres within one mile of the Silver fire boundary as well. These sites could potentially increase the risk of noxious weeds spreading into the burned area.

The following is a description of the weed species that are known to occur in or near lands within the Toolbox project boundaries. These are the species most likely to spread in the project area.

Canada Thistle: *Canada thistle* (Cirsium arvense) is a perennial species where the majority of the roots are found in the upper two feet of soil, but can have extensive creeping horizontal roots up to 16 feet long and 2-22 feet deep (Morishita, 1999). It primarily reproduces vegetatively from horizontal creeping roots, but can also reproduce from seed (Morishita, 1999). Canada thistle can be found in open areas with moderate to medium moisture conditions (Morishita, 1999). In Silver Lake, it is primarily found in drainages and places with above normal moisture for this area. It has also been found in disturbed areas such as roadsides, old landings and skid trails, and road maintenance sites. Canada thistle reacts positively to disturbance. After two to three weeks of being burnt in 2002, the underground roots in the Canada thistle sites were already sending up adventitious shoots to replace the burned shoots. In areas where known sites of Canada thistle burned in 2002, it is expected these sites will be denser and larger then they had been in the pre-fire environment. There are known sites of Canada thistle on National Forest Systems lands, BLM lands, and non-industrial forestlands. Repeated

chemical treatments have proven to be successful in reducing the density and eliminating Canada thistle sites on National Forest Systems lands.

Musk Thistle: Musk thistle (*Carduus nutans*) is a biennial that germinates and grows into a rosette the first season (Beck, 1999). The second season, the plant bolts, produces seeds, and then dies (Beck, 1999). Musk thistle reproduces solely through seeds, which are dispersed by wind, water, wildlife, livestock, and human activities (Beck, 1999). It prefers sites that have had recent disturbance leading to bare soil (Beck, 1999). On the Silver Lake Ranger District, musk thistle occurs frequently in old harvest units, post-burn environments, and along roadways. Musk thistle is known to occur on National Forest Systems lands. Mechanical and chemical treatment methods have proven to be effective in reducing and eliminating musk thistle sites.

Bull Thistle: Bull thistle (*Cirsium vulgare*) is a biennial with a fleshy taproot (Beck, 1999). It reproduces solely from seeds that are dispersed by water, animals, and human activities (Beck, 1999). Disturbed areas are prime habitat for bull thistle to invade (Beck, 1999). On the National Forest Systems lands, bull thistle has been sighted, but has not proven to be an aggressive noxious weed. When it occurs on a disturbed site, it seems to disappear when native vegetation regains it pre-disturbance level. Due to the combination of limited funds and noxious weed species of higher priority, bull thistle has not been actively treated on the National Forest Systems land within the Fremont portion of the Fremont-Winema National Forests. Bull thistle also occurs on BLM lands and non-industrial forestlands.

Spotted Knapweed: Spotted knapweed (*Centaurea maculosa*) is a deep taprooted perennial species (Sheley et al., 1999a). This species reproduces by seeds, which are dispersed by wind, passing animals, or humans (Sheley et al., 1999a). Spotted knapweed responds favorable to disturbance, but will also invade well-established rangelands (Sheley et al., 1999a). The spotted knapweed sites on the National Forest Systems lands have decreased in number and size due to manual treatments combined with chemical treatments.

St. John's Wort: St. John's wort (*Hypericum perforatum*) is a perennial species with a deep penetrating taproot (Piper, 1999). It is commonly referred to as goatweed or Klamath weed (Piper, 1999). This species can become established in degraded or pristine range or forestlands (Piper, 1999). Any soil disturbance will decrease competition for St. John's wort and will cause it to increase (Piper, 1999). On the National Forest Systems lands within the Silver Lake Ranger District, there are two sites of this species. Chemical treatments on both sites have reduced the number of plants present.

Medusahead: Medusahead rye (*Taeniatherum caput-medusae* subsp. *asperum*) is an annual grass that reproduces by seed (Miller, et al., 1999). The seeds have small silica barbs, which enable the seed to cling to animals, human clothing, and machinery (Miller, et al., 1999). The seeds are also transported by wind and water (Miller, et al., 1999). The seeds can germinate in the fall, winter or spring (Miller, et al., 1999). If the seed germinates during the fall months, the primary root will grow downwards during the winter and in the spring, the lateral roots develop (Miller, et al., 1999). This gives medusahead rye a competitive advantage over other native plant species (Miller, et al., 1999). This species likes to invade areas where native vegetation has been weakened by overgrazing, intense fires, or cultivation (Miller, et al., 1999). Medusahead rye is also capable of maintaining itself in diverse native plant communities (Miller, et al., 1999). This species is present on National Forest Systems lands, BLM lands, and potentially non-industrial lands.

Mediterranean Sage: Mediterranean sage (*Salvia aethiopis*) is a biennial reproducing primarily by seeds (Roche and Wilson, 1999). The seeds are dispersed in a tumble-weed fashion (Roche and Wilson, 1999). This species prefers degraded habitats with dry soils, such as roadside cutbanks and other areas of disturbance (Roche and Wilson, 1999). Mediterranean sage is currently present within and adjacent to the Toolbox project boundaries on BLM lands. It is potentially located on non-industrial forestlands as well. Manual and chemical treatments have proven to be effective, but it does take repetitive treatments.

Cheatgrass: Cheatgrass (*Bromus tectorum*) is a nonnative annual grass (Mosley, et al., 1999). The seeds germinate in the fall and survive the winter as a seedling (Mosley, et al., 1999). This gives cheatgrass a distinct advantage over other native species. This species reproduces by seeds, which can be transported by wind, animals and human contact (Mosley, et al., 1999). Cheatgrass can be found on disturbed sites as well as undisturbed sites. Once cheatgrass is present in a plant community, it has the ability to out compete other native vegetation (Mosley, et al., 1999). This species is known to occur on National Forest Systems lands, BLM lands, and on non-industrial lands.

There is also potential for new weed species to be introduced to the area. Of particular concern are:

Yellow Star Thistle: Yellow star thistle (*Centaurea solstitialis*) is a winter annual that depends upon seeds for reproduction (Sheley et al., 1999b). The seeds are primarily dispersed by birds, however, animals, whirlwinds, humans, and vehicles also disperse seeds (Sheley et al., 1999b). Yellow star thistle displaces native plant communities and reduces plant diversity (Sheley et al., 1999b). It had been noted to invade sites that have had recent disturbance (Sheley et al., 1999b). Yellow star thistle favors sites originally dominated by perennial grasses, but it does not seem to compete well with sagebrush, except in disturbed areas (Sheley et al., 1999b). Currently, National Forest Systems lands and BLM lands do not have known occurrences of this weed. However, with the disturbance created by the fire suppression activities and the amount of suppression equipment and personnel that were from outside the local area, the chance of this species appearing is greater then ever before.

Leafy Spurge: Leafy spurge (*Euphorbia esula*) is a long-lived perennial with deep taproots (Lajeunesse et al., 1999). It reproduces either by seeds or vegetatively (Lajeunesse et al., 1999). Leafy spurge can be found along roadsides, in abandoned croplands, and other areas that have been disturbed (Lajeunesse et al., 1999). This species is highly competitive and can displace native vegetation creating a monoculture (Lajeunesse et al., 1999). Leafy spurge has been found in several sites on the Fremont portion of the Fremont-Winema National Forest on the Bly Ranger District. This noxious weed species poses a threat to the burned areas. With all the fire suppression equipment and personnel from outside the local area, there is a potential for this weed species to appear within the Toolbox project boundaries.

Dalmatian Toadflax: Dalmatian toadflax (*Linaria dalmatica*) is a deep-rooted perennial species that reproduces by seeds and by vegetative buds on the roots (Lajeunesse, 1999). Reproduction by seed is more important for initiating new toadflax infestations, while vegetative buds on the roots is important for increasing the plant density of a site (Lajeunesse, 1999). Dalmatian toadflax can be found invading disturbed sites such as roadbanks, areas near dwellings, and gravel pits (Lajeunesse, 1999). As of 2002, there is one site on the National Forest Systems lands within the Silver Lake Ranger District. This site consisted of one plant that was manually removed. There will be future monitoring of this site and adjacent area for additional plants.

On Federal lands, all noxious weed sites within and adjacent to the Toolbox project boundaries have been given top priority for treatment in 2003 and 2004.

Gravel pits designated for use in road maintenance/construction for the Toolbox project have been surveyed and are currently weed free.

The number of sites and locations of noxious weeds on industrial or non-industrial forestlands are unknown.

Environmental Consequences

Direct and Indirect Effects

Effects Common to All Alternatives

Noxious weed spread may occur in the project area, regardless of which alternative is chosen. The fire created suitable habitat for weeds, and weed seeds are readily dispersed by wind, vehicles, and animals. Additionally, as described in the cumulative effects section, fire suppression activities may have introduced noxious weeds to the area, and ground disturbing activities on adjacent land ownerships may increase weed spread in the area.

The consequences of noxious weed infestation can include alteration of the structure, organization, or function of ecological systems (Olson, 1999). Noxious weeds can increase soil erosion, leading to a disproportionate loss of biologically active organic matter and nitrogen. Noxious weeds have the ability to deplete soil water and nutrients to levels lower then native plant species can tolerate, allowing noxious weeds to out compete native vegetation. Many noxious weeds are early successional species, meaning they colonize areas that have been recently disturbed. Since noxious weeds have the ability to deplete available resources to lower levels then native vegetation, they can quickly dominate the disturbed site. When noxious weeds dominate over native plant communities, native plant species diversity is decreased. Noxious weeds can out compete native species because they produce abundant seed, have fast growth rates, have no natural enemies, and are often avoided by large herbivores. Some noxious weeds also produce secondary compounds, which can be toxic to other native

plant species, or animals. Weed infestation can therefore lead to a decrease in native plant species, which can alter the ability of wildlife to find suitable, edible forage.

At the watersheds level, noxious weeds can alter the seasonal water flow. Noxious weeds create more erosion than native plant species because they have fewer shallow roots, which would soak up and hold water. Noxious weeds also have less canopy closure then native plants. This increases the amount of sunlight directly hitting the soil, increasing the amount of water evaporated at the soil surface. This creates a hard crust on the soil, which becomes difficult for additional moisture to penetrate. When moisture cannot penetrate into the soil, this leads to increased soil surface run-off. The moisture held by the soil helps maintain stream levels throughout the summer. When noxious weeds are present, there is an increase in erosion and surface run-off, leading to a deterioration in watershed conditions.

The Toolbox Fire Recovery Project (Toolbox project) area will be monitored for noxious weeds under all of the alternatives. With the 1998 Environmental Assessment for the Management of Noxious Weeds (the 1998 EA) and the Forest Service noxious weed treatment contract in effect, regardless of which alternative is chosen for the Toolbox project, noxious weed sites on National Forest Systems lands will be treated in accordance with funds available. In addition to the funding for the noxious weed treatment contract, post Toolbox Complex Fire funding has been made available for the treatment of approximately 185 additional acres over two years. This will aid in the control of previously unknown sites, new infestations that occur as a result of fire suppression activities, and infestations that are a result of weed establishment in burned and disturbed areas. The noxious weeds found inside and surrounding the Toolbox fire portion on National Forest Systems lands have been given top priority for treatment in 2003 and 2004.

In the short term, the alternatives would affect the potential for noxious weed infestation in the project area in two main ways. First, ground disturbing treatment activities, such as harvest activities and temporary road construction, would increase the amount of open disturbed habitat available for infestation. Second, increased activity and traffic would heighten the chance for introduction of noxious weed seeds from vehicles and equipment. The potential for noxious weed infestation would therefore increase with the amount of ground disturbing activity in each alternative.

In the long term, the alternatives would affect the recovery of native vegetation and reduction of open, disturbed habitat over time. Reforestation and re-establishment of tree canopy would reduce the amount of open habitat suitable for noxious weed establishment. Likewise, road decommissioning and lowering road density would reduce disturbed habitat and corridors for weed infestation.

Long-term impacts also include the potential for future high severity fires, which would create additional area at risk to weed infestation. This risk decreases as the amount of fuel reduction activities increase.

Timber sale contracts, road packages, stewardship pilot projects, and service contracts are now required to include provisions to minimize the introduction and spread of invasive plants, pursuant to Executive Order 13112 dated February 3, 1999 (Joyner, 2002) (see mitigations in Chapter 2). These provisions state the Purchaser/Contractor shall certify in writing that off-road equipment is free of noxious weeds prior to the start-up of timber sale, road, or other activities requiring off-road equipment operations and for subsequent moves of equipment to Sale Area (USDA Forest Service, Region 6, 2002). Being free of noxious weeds means the equipment will not have soil, seeds, vegetative matter, or other debris that could contain or hold seeds (USDA Forest Service, Region 6, 2002). “Off-road equipment” includes all logging and road construction machinery, and service contract equipment, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles (USDA Forest Service, Region 6, 2002). Equipment such as skyline yarders, brush cutters, flailers, or other equipment, which operate from the road surface shall be considered off-road equipment (USDA Forest Service, Region 6, 2002). This direction applies to road construction and reconstruction, logging, building of temporary roads, service contracts, or any project with operations involving “Off-road equipment” (USDA Forest Service, Region 6, 2002). The purchaser must also clean off-road equipment prior to moving between cutting units that are known to be infested with noxious weeds and units that are free of noxious weeds (USDA Forest Service, Region 6, 2002). This requirement will reduce the potential for introduction of weed seeds during implementation of the action alternatives.

Alternative A

The No Action Alternative would leave the proposed activity areas in their post-fire condition. Additional fire recovery activities would not occur on National Forest Systems lands, other then completion of activities proposed by the Burned

Area Emergency Recovery (BAER) plan (Appendix A, Table A-7). Without additional ground disturbing activities occurring, noxious weed habitat and the potential for new introductions would not be increased above the existing condition. The existing 6.5 acres of noxious weeds in the Toolbox fire portion and the 5.5 acres in the Silver fire portion will be monitored and given priority for treatment in 2003 and 2004.

With additional activities not occurring within the Toolbox fire portion for Alternative A, this means that predicted fuel accumulations would be the highest for Alternative A. Higher fuel accumulation would increase the probability for future high severity fires, which would create additional noxious weed habitat.

In the No Action Alternative, roads would be left in their current condition. Closing and revegetating roads as proposed in all other alternatives would assist in preventing noxious weed spread. Alternative A would not reforest severely burned areas. If reforestation activities do not occur, the length of time for a forested canopy to grow and assist in shading out noxious weeds would be greater than in the action alternatives.

Noxious weed spread many occur in the project area if Alternative A is chosen. However, because of the lack of additional ground disturbance, Alternative A has the lowest probability of spreading and introducing noxious weeds when compared to Alternatives C, D, E, G, or H (Table 1).

Table 1: Factors Affecting the Risk of Noxious Weed Infestation in the Toolbox Project.

	Factors Increasing Risk Short-term		Factors Decreasing Risk Long-term			Comparative Risk
Alternative	Acres of Ground Disturbance*	Miles Temp Road Constructed**	Acres Reforested	Road Density ***	Acres of Fuel Treatment ****	
A	0	0	0	3.7	0	low
C	18,013	37.4	20,906	1.7	10,244	high
D	8,817	5.7	20,743	1.7	5,680	medium
E	11,490	29.0	20,753	2.5	6,723	medium
G	23,587	37.4	20,728	2.5	11,354	high
H	15,481	34.6	20,721	1.7	9,070	high

* Ground Disturbance was compiled using proposed harvest acres and prescribed burning acres. For Alternative G, the additional fuels treatments outside harvest units were included here.

** The figures in this column show the miles of new temporary roads that would be constructed in addition to the miles of unclassified roads that would be re-opened. In Alternative D, only re-opening of unclassified roads would occur.

*** Road Density is measured in miles of road per square mile of land. The value in the column represents the density of roads that will remain open after proposed activities are completed for each alternative. In Alternative A, the roads would be left in their current condition.

**** These figure encompass the additional fuels treatments within Harvest Units that are predicted to have greater than 20 tons per acre (TPA) for Alternatives C, D, G, and H. For Alternative E, these acres are predicted to have greater than 30 TPA.

Alternative C, E, G, and H

Alternatives C, E, G, and H are being grouped together due to their similar levels of proposed activities. Alternatives C, E, G, and H propose a range of approximately 11,500-14,500 acres of commercial salvage for the Toolbox project. The potential for weed invasion and spread will vary slightly among these alternatives based on the amount of activities proposed, which are shown in Table 1.

The Canada thistle site in Harvest Unit #131 and any new sites discovered in or near units during monitoring and unit layout will receive priority for treatment in 2003 and 2004, in an attempt to eradicate the sites before harvest and other ground disturbing activities occur. If existing or newly discovered noxious weed sites are not eradicated before harvest activities occur, construction of landings and skid trails will not be permitted on these noxious weed sites (see mitigations in Chapter 2).

Alternatives C, G, and H are proposing to conduct activities fuels treatment in harvest units that are predicted to have greater than 20 tons per acre (TPA) of ground fuel accumulation in 15 years. Reducing the ground fuel accumulation would reduce the potential for future high severity fires, thus decreasing the possibility of creating additional noxious weed habitat. Alternative E is proposing to conduct activities fuels treatments in harvest units that are predicted to have greater than 30 TPA of ground fuel accumulation in 15 years. This would help reduce the potential for future high severity fires as well. For Alternative E, fewer acres of activities fuels treatments would occur than in Alternatives C, G, and H. Therefore, Alternative E would not reduce the threat of future high severity fires as efficiently as Alternatives C, G, or H. In the short-term, activities fuel treatment would create ground disturbance, increasing the habitat for noxious weeds. In the long-term, reducing the probability of future high severity fires would decrease the probability of creating noxious weed habitat.

In addition to the activities fuels treatments that are proposed to occur in harvest units in Alternative C, E, G, and H, Alternative G is proposing additional fuels treatments on National Forest Systems lands that are within a quarter mile of private lands. This would mean fuels treatments outside harvest units and additional activities fuels treatments within harvest units. The additional activities fuels treatments would reduce the probability of fire spreading between private and National Forest Systems lands. In terms of proposed activities fuels treatments, Alternative G would have the most, thus decreasing the potential for future high severity fires more efficiently then Alternatives C, E, and H. In the short-term, activities fuel treatment would create additional ground disturbance, increasing the habitat for noxious weeds. In the long-term, reducing the probability of future high severity fires would decrease the probability of creating noxious weed habitat.

Alternatives C, G, and H propose a range of 2,400 to 3,500 acres of prescribed burning within the Toolbox fire portion. Two noxious weed sites are adjacent to the proposed burn area. One noxious weed site is infested with Canada thistle that is 0.1 acres in size. The second site is musk thistle that is 0.1 acres in size. These sites would be a priority for weed treatment in 2003 and 2004 to number of plants in the sites, if not eliminate all the plants from the site. Prescribed burning would create additional ground disturbance, possibly increasing the habitat for noxious weeds. Prescribed burning outside of activities fuels treatments is not a proposed activity in Alternative E. There is also no proposed prescribed burning for the Silver fire portion.

Alternatives C, E, G, and H would reforest approximately 20,700-20,900 acres each of severely burned areas, speeding the establishment of a forest canopy, which would assist in shading out weeds (see Table 1).

Within the Toolbox project, Alternatives C, E, G, and H propose to construct new temporary roads or re-open existing unclassified roads. Alternatives C and G propose to construct or re-open 37.4 miles of roads, while Alternative H proposes 34.6 miles and Alternative E proposes 29.0 miles. When activities behind the newly constructed or re-opened roads are completed, these roads would be closed or decommissioned. In the short-term, construction of new temporary roads and re-opening of existing unclassified roads would create additional noxious weed habitat. When these roads are eventually closed or decommissioned, then noxious weed habitat and corridors would be eliminated.

Watershed improvement projects, such as decommissioning existing roads, would assist in preventing noxious weed spread by closing off corridors. Alternatives C and H propose reducing road density to 1.7 miles of road per one square mile of land. Alternatives E and G proposed reducing road density to 2.5 miles of road per one square mile of land. These activities would help eliminate noxious weed habitat and corridors for seed dispersal.

Overall, Alternatives C, E, G, and H have a relatively high potential for introducing and spreading noxious weeds due to the amount of ground disturbing activities when compared to Alternatives A and D (see Table 1).

Alternative D

In Alternative D, approximately 6,400 acres is proposed for commercial salvage. All the known noxious weed sites exist outside of proposed harvest units. Therefore, harvest activities would not disturb known noxious weed sites. Any new sites discovered in or near units during monitoring and unit layout will receive priority for treatment in 2003 and 2004, in an attempt to eradicate the sites before harvest and other ground disturbing activities occur.

In Alternative D, prescribed burning is not a proposed activity outside of activities fuels treatments. This would not create additional ground disturbance, therefore noxious weed habitat would not be increased.

Alternative D would reforest 20,700-20,900 acres of severely burned areas, speeding the establishment of a forest canopy, which would assist in shading out weed (see Table 1).

Within the Toolbox fire portion, Alternative D does not propose to construct new temporary roads, but proposes to or re-open 5.7 miles of existing unclassified roads. This would not increase noxious weed habitat in the short or long-term.

Watershed improvement projects, such as decommissioning existing roads, would assist in preventing noxious weed spread by closing off corridors. Alternative D proposes reducing road density to 1.7 miles of road per one square mile of land. This activity would help eliminate noxious weed habitat and corridors for seed dispersal.

Alternative D proposes a lower amount of harvest activities and activities fuels treatments when compared to Alternatives C, E, G, or H (Table 1). In the short-term, there would be less ground disturbing activities occurring in Alternative D than the other action alternatives, which means less noxious weed habitat would be created than for Alternatives C, E, G, or H. Alternative D is less effective at treating fuels than the other action alternatives, which would increase the potential for future high severity fires in the long term (Table 1). Alternative D would create more short-term noxious weed habitat due to the proposed ground disturbing activities than Alternative A. In the long-term, Alternative D would be more effective in reducing ground fuel accumulation than Alternative A, which would increase the potential for future high severity fires in the long term (Table 1).

Cumulative Effects

Common to All Alternatives

Within Appendix A, the past, present, and reasonably foreseeable future activities are provided in a table format. All the activities listed in Appendix A tables were considered when compiling this report. However, only some of the activities mentioned in Appendix A have the potential to produce cumulative effects on noxious weed spread and establishment. These activities will be disclosed and discussed below.

Past Activities:

Suppression activities within the Toolbox fire portion, include retardant, and firing/burnout operations, in conjunction with dozer line, were used (Appendix A, Table A-1). There were approximately 236 miles of dozer line constructed for suppression reasons (140 miles constructed in the Toolbox fire portion and 96 miles in the Silver fire portion) (Appendix A, Table A-1). Some of the dozer lines are located outside the Toolbox project boundaries; however, all the dozer lines will be included within the cumulative effects analysis. The dozer line created prime habitat for noxious weeds. With the magnitude of the Toolbox Complex Fire, additional resources were brought in from places that are outside Lake County. This influx of equipment, personnel, and vehicles may have introduced noxious weed seeds. There is a possibility that the amount of noxious weed sites will increase, especially in the rehabilitated dozer lines. There is also a possibility that different noxious weed species will appear due to the broad geographical range the equipment, personnel, and vehicles came from.

During the time when the Toolbox Complex Fires were burning, a third fire, the Winter fire, was burning just southeast of the Toolbox fire. The Winter fire burned approximately 34,000 acres (USDA Forest Service,2003, Chapter 1). This fire burned on the east side of Winter Rim from the Toolbox fire portion side. Suppression activities may have introduced weeds in this fire as well. Due to the proximity of the Toolbox fire portion to the Winter fire, it is possible that the activities occurring on the Winter fire could have a cumulative effect on noxious weed spread and establishment within the Toolbox fire portion. Because the Winter fire is several miles away from the Silver fire, the Winter fire is unlikely to affect noxious weed spread in the Silver fire.

The treatment of noxious weeds has been occurring on the National Forest Systems lands as well as BLM lands in past years. Accurate documentation of noxious weed sites began occurring around 1995 for National Forest Systems lands. After the 1998 Environmental Assessment for Management of Noxious Weeds for the Fremont National Forest (1998 EA) was approved, chemical treatment was permitted for use on National Forest Systems lands. In 2002, the Forest Service and BLM began separate three-year contracts for the treatment of noxious weeds. Past treatment of noxious weeds has not only

reduced the number of existing sites, but within the noxious weed sites still remaining, the density of plants has been reduced considerably on both National Forest Systems and BLM lands (Appendix A, Table A-4).

Present and Future Foreseeable Activities:

As a response to the Toolbox Complex Fire, the Bureau of Land Management (BLM) wrote a Burned Area Emergency Stabilization and Rehabilitation (ESR) Plan Environmental Assessment. A summary of the activities proposed by the BLM can be found in Appendix A, Table A-15. For the Toolbox fire portion, ground disturbing activities include salvage harvest on 71 acres and juniper thinning on 1,650 acres. These activities will reduce future fuel accumulation. Revegetation activities include seeding on 1,650 acres, and planting ponderosa pine and bitterbrush seedlings on 600 acres within the Lower Duncan Creek subwatershed (Appendix A, Table A-15). For the Silver fire portion, the BLM proposes to juniper thin on 3,000 acres within the Middle, Upper, and West Fork Silver Creek subwatershed, seed on 290 acres within the Middle and Upper Silver Creek subwatershed, and plant ponderosa pine and bitterbrush seedlings on 250 acres within the Upper Silver Creek subwatershed (Appendix A, Table A-15).

Seeding and planting seedlings will provide competition against noxious weeds and nonnative species in the newly disturbed areas. Prior to the fires of 2002, the BLM had known noxious weeds (Canada thistle, medusahead rye, and Mediterranean sage) and nonnative species (cheatgrass) on their lands within the Toolbox fire portion (USDI Bureau of Land Management, 2003). The potential for medusahead rye to invade National Forest Systems lands is high due to its presence along most roads in the Dead Indian Rim and Duncan Creek areas (USDI Bureau of Land Management, 2003). The BLM has a contract with a private entity for the treatment of noxious weed sites. This will help reduce the spread and establishment of noxious weeds and nonnative species. The BLM has placed all the noxious weeds and nonnative species within and surrounding the Toolbox fire portion as a top priority for treatment in 2003. The proposed seeding and seedling plantings, in conjunction with weed treatments on BLM lands reduces the threat of noxious weeds and nonnative species spreading onto National Forest Systems lands.

The industrial forestlands within the Toolbox fire portion are owned by U.S. Timberlands Co., L. P. (UST). UST also owns industrial forestlands within the Silver fire portion as well. The activities and the numbers presented below are for all UST lands within the Toolbox project boundaries. It is unknown exactly where the following will occur. However, industrial forestlands are far more prominent on the Toolbox fire portion than the Silver fire portion. Approximately 23,200 acres of UST lands burned within the Middle Silver Creek, Benny Creek, Lower, East, and Upper Duncan Creek subwatershed. Ground disturbing activities include harvest of both dead and green timber on approximately 16,000 of the 23,200 acres. These activities will reduce future fuel accumulation in the area. The majority of the salvage logging operations were conducted in the fall of 2002, and the remainder will be completed in 2003. In 2003, UST is planning on conducting approximately 5,000 acres of site preparation by ripping. Additional site preparation may be conducted if areas are found to require ripping prior to planting. Revegetation activities include replanting approximately 18,000 acres (10,000 acres from salvage, 6,000 acres from logging prior to the fires, and 2,000 acres from burned plantations) (Appendix A, Table A-13). In 2003, approximately 8,400 acres will be planted and the remaining acres in 2004 (Appendix A, Table A-13).

Since UST conducted the harvest operations during the fall and winter, native plant recovery will be greater then if harvest activities would have occurred during the spring and summer. Harvest operations conducted in the fall and winter also reduced the probability of spreading noxious weed seeds to non-infested areas during harvest activities. Noxious weed and nonnative species occur on UST lands, but the location and size of the sites are unknown. Planting tree seedlings will help provide competition against noxious weeds and nonnative species in the long-term. Currently, treatment of noxious weed and nonnative species discovered on lands owned by UST is not scheduled to occur. Overall, with the volume of salvage logging and disturbance occurring on UST lands, there is potential for noxious weeds to become established there, and spread onto National Forest Systems lands.

Another industrial forestlands owner is Wasser and Winters Company. Their land is located within the Silver fire portion. They decided there was not enough commercial volume remaining after the fires to conduct salvage harvest. Wasser and Winters Company is also tentatively relying on natural regeneration by lodgepole pine. Therefore, additional activities are not planned to occur on their lands.

For the non-industrial forestlands within the Toolbox fire portion, some owners are planning to harvest both dead and green timber to make the harvest activities profitable. They also plan to plant the lands that do not reach State density

requirements. It is unknown where noxious weed sites occur or by what means non-industrial forestlands owners plan to treat noxious weeds. However, non-industrial forestland owners are aware of problems noxious weeds create and are trying to eliminate noxious weeds on their lands.

On-going Forest Service projects in the Toolbox fire portion include part of the Triad Restoration project and part of the Windmill Restoration project (see Elston, R., 2003, "Toolbox Fire Recovery Project – Future Activity Already Covered with NEPA Decisions" in the Toolbox Fire Recovery Project analysis file). A summary of this report can be found in Table A-16 of Appendix A. The Silver fire portion has ongoing Forest Service projects as well, including part of the Triad Restoration project and a portion of the West Fork Silver Creek Restoration Project. In the areas of overlap between these restoration projects and the Toolbox project boundary, noxious weeds are not present. For these restoration projects, minimal project implementation will occur in the future for the area of overlap within the Toolbox project boundary.

The Winter Fire Salvage and Restoration Environmental Assessment (USDA Forest Service, 2003) proposes activities on National Forest System lands in the adjacent Winter Fire. Ground disturbing activities includes salvage logging. These treatments would reduce future fuel accumulation in the area. Reforestation would occur in harvested units.

Approximately 69 acres within the Winter project area are currently infested with noxious weeds (USDA Forest Service, 2003, Chapter 3, p. 56). With the proposed harvest activities, there is a potential for spreading noxious weeds into uninfested areas. However, the Winter Environmental Assessment proposes to conduct the majority of harvest operations using helicopters instead of ground based tractors and equipment, which will help reduce the amount of ground disturbance, and noxious weed habitat created. Treatment of weeds in the Winter project area is on-going and will be a priority in 2003 and 2004, reducing the potential for spread into the Toolbox fire portion.

The Toolbox project overlaps 5 existing cattle grazing allotments (Foster Butter, Yamsay Mountain, Buck Creek, Winter Rim, and Sycan Allotments). Grazing will continue in the project area in 2003, with reduced numbers in the Winter Allotment, Yamsay Allotment, and 3 out of the 6 pastures in the Foster Butte Allotment. Monitoring will be done during the 2003 season to determine appropriate stocking numbers for out-year grazing. The affect of livestock grazing on noxious weed spread is not well studied and appears to vary under different circumstances. Grazing can potentially contribute to noxious weed spread by creating ground disturbance, removing competing native vegetation, and dispersing weed seeds. Grazing is also used in some systems as a control method to reduce noxious weed seed production. Gazing has occurred on National Forest System lands in the Toolbox project area for decades at higher numbers than will occur in 2003, with apparently little effect on weed infestation. Currently, only .03% of National Forest System land in the Toolbox project area is infested. It is therefore expected that grazing will have a minor impact on noxious weed spread compared to proposed and on-going ground disturbing activities such as salvage logging.

When cattle are brought onto National Forest Systems lands, they are unloaded in designated areas. District range personnel monitor these unloading sites for noxious weeds regularly. Currently, new noxious weed infestations have not been observed at the designated unloading sites.

Alternative A

Alternative A would not contribute to cumulative ground disturbing activities in the Toolbox project, and therefore would not contribute to increased noxious weed habitat or increased risk of weed introductions. Ground disturbing activity on adjacent lands will increase the potential for weed infestation on National Forest Systems lands in the Toolbox project. The BLM is planning harvest activities on 71 acres, all within the Toolbox fire portion. Overall, the BLM had 8,000 acres burn. Therefore, the BLM is harvesting less than 1 percent of their burned lands. UST has or will have harvested approximately 16,000 acres of the 23,200 acres within the Toolbox project boundary, or 68 percent, with the majority of the harvest activities occurring within the Toolbox fire portion. Cumulative ground disturbing activities, such as salvage logging and prescribed fire, on all land ownerships would occur on approximately 16,071 acres out of 85,000 acres, or an estimated 19 percent of the Toolbox project area with this alternative.

Alternative A would not contribute to cumulative fuel reduction in or near the Toolbox project, and therefore would result in a higher risk of future severe fires which could create additional noxious weed habitat, compared to the action alternatives.

Alternative A would not contribute to cumulative restoration of native vegetation in the area. On National Forest Systems lands, the time for a forested canopy to grow and assist in shading out noxious weeds would be longer for this alternative than for the action alternatives.

Alternatives C, E, G, and H

Alternative C proposes ground disturbing activities over approximately 18,000 acres and proposes 37.4 miles of roads be constructed or re-opened (see Table 1). The acres of harvest for BLM and UST would be the same as mentioned above in Alternative A. Therefore, cumulative ground disturbing activities, such as salvage logging and prescribed fire, on all land ownerships would occur on approximately 34,071 acres, or an estimated 40 percent of the Toolbox project area.

Alternative E proposes 11,490 acres of ground disturbing activities and 29.0 miles of roads to be constructed or re-opened. Therefore, cumulative ground disturbing activities for all land ownerships would occur on approximately 27,560 acres, or an estimated 32 percent of the Toolbox project area.

Alternative G proposes 23,590 acres of ground disturbing activities and 37.4 miles of roads to be constructed or re-opened. Therefore, cumulative ground disturbing activities for all land ownerships would occur on approximately 38,660 acres, or an estimated 47 percent of the Toolbox project area.

Alternative H proposes 15,480 acres of ground disturbing activities and 34.6 miles of roads to be constructed or re-opened. Therefore, cumulative ground disturbing activities for all land ownerships would occur on approximately 31,550 acres, or an estimated 37 percent of the Toolbox project area.

Overall, Alternative G would have the most cumulative ground disturbing activities, followed by Alternative C, Alternative H, then Alternative E.

These alternatives would result in a substantial increase (32-47 percent) in suitable weed habitat and risk of noxious weed introduction in the area as a whole. Mitigations described in the Direct and Indirect Effects section along with early detection and treatment would be used to help reduce the risk of weed spread on National Forest System lands.

As described under Direct and Indirect Effects, Alternatives C, E, G, and H would contribute to cumulative fuel reduction activities in or near the Toolbox Fire portion, and would result in a lower risk of future high severity wildfire than Alternatives A and D. Future high severity fires could create additional weed habitat.

Alternatives C, E, G, and H would contribute to cumulative restoration of native vegetation in the area, decreasing the length of time for a forested canopy to grow and assist in shading out noxious weeds than would occur under Alternatives A and D.

Alternative D

Alternative D proposes ground disturbing activities over approximately 8,870 acres and proposes 5.7 miles of roads be constructed or re-opened (see Table 1). The acres of harvest for BLM and UST would be the same as mentioned above in Alternative A. Therefore, cumulative ground disturbing activities, such as salvage logging and prescribed burning, on all land ownerships would occur on approximately 24,940 acres, or an estimated 29 percent of the Toolbox project area.

Alternative D would result in the least amount of cumulative ground disturbance of the action alternatives. Mitigations described in the Direct and Indirect Effects section along with early detection and treatment would be used to help reduce the risk of weed spread on National Forest System lands.

As described under Direct and Indirect Effects, Alternative D would contribute to cumulative fuel reduction activities in or near the Toolbox Fire portion, and would result in a lower risk of future high severity wildfire than Alternatives A, but a higher risk than the other action alternatives. Future high severity fires could create additional weed habitat.

Alternative D would contribute to cumulative restoration of native vegetation in the area, decreasing the length of time for a forested canopy to grow and assist in shading out noxious weeds than would occur under Alternative A.

Reviewed by: /s/ Sarah Malaby
SARAH MALABY Date: June 3, 2003
Forest Botanist for the Fremont-Winema National Forests

This Toolbox Fire Recovery Project specialist report was prepared during March, April and May of 2003. It will be used, along with specialist reports from multiple resource areas, to prepare a Draft Environmental Impact Statement (DEIS) for the Toolbox Fire Recovery project. This specialist report will become a part of the planning record for the project, filed under:

"Toolbx/ Planning Record/ E_Specialists_reports_data_inventory_and_collection"

This report will be filed both in the 'hard-copy' planning record binders, on file at the Silver Lake Ranger District, and on the Fremont National Forest "K-Drive". In the interest of planning process efficiency, particularly in light of time and budget constraints, editing that occurs to the content of this report during the preparation of the DEIS will be reflected in the DEIS and will not necessarily be entered back into the content of this report. To insure the accuracy of such edits, I will review the content of both the DEIS and the (Final) FEIS and certify that their content is consistent with the analytical conclusions in this report. If during DEIS or FEIS editing, substantially different conclusions or interpretations are reached or substantial additional analysis is prepared from that displayed in this report, an addendum to this report will be prepared.

Specialist: /S/ Jeannette Wilson Discipline: Silver Lake District Botanist Date: 6-3-03

References:

Beck, K. George. 1999. Biennial Thistles. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 145-161.

Goodwin, Kim, Roger Sheley, and Janet Clark. 2002. Integrated Noxious Weed Management after Wildfires. Montana State University Extension Service.

Joyner, Calvin N. 2002. Correspondence: Implementation of Invasive Plants Contract Provisions. USDA Forest Service, R6.

Lajeunesse, Sherry. 1999. Dalmatian and Yellow Toadflax. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 202-216.

Lajeunesse, Sherry, Roger Sheley, Celestine Duncan, and Rodney Lym. 1999. Leafy Spurge. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 249-260.

Miller, Heather C., David Clausnitzer, and Michael M. Borman. 1999. Medusahead. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 271-281.

Morishita, Don W. 1999. Canada Thistle. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 162-174.

Mosley, Jeffrey C., Stephen C. Bunting, and Mark E. Manoukian. 1999. Cheatgrass. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 175-188.

Olson, Bret E. 1999. Impacts of Noxious Weeds on Ecologic and Economic Systems. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 4-18.

Piper, Gary L. 1999. St. Johnswort. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 372-381.

Roche, Cindy Talbott and Linda M. Wilson. 1999. Mediterranean Sage. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 261-270.

Sheley, Roger L., James S. Jacobs, and Michael L. Carpinelli. 1999a. Spotted Knapweed. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 350-361.

Sheley, Roger L., Larry L. Larson, and James S. Jacobs. 1999b. Yellow Starthistle. In: Roger L. Sheley and Janet K. Petroff (eds.), Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, OR, p. 408-416.

Shelmerdine, Phil. 2003. Fuels Specialist, Silver Lake Ranger District. Personal Communication concerning potential ground fuels accumulation. Should I refer to his specialist report?

USDA Forest Service. 2003. Winter Fire Salvage and Restoration Project Environmental Assessment.

USDA Forest Service, Region 6. 2002. Implementation Guidelines to Minimize the Spread of Invasive Plants on Timber Sales, and Road Construction and Reconstruction Projects.

USDA Forest Service. 1998. 1889 Environmental Assessment for the Management of Noxious Weeds, Fremont National Forest.

USDA Forest Service. 1995a. Forest Service Manual, Series 2000 – National Forest Resource Management, 2080.1 – Authority.

USDA Forest Service. 1995b. Forest Service Manual, Series 2000 – National Forest Resource Management, 2080.2 – Objectives.

USDA Forest Service. 1995c. Forest Service Manual, Series 2000 – National Forest Resource Management, 2080.5 – Definitions.

USDA Forest Service. 1989. Land and Resource Management Plan Fremont National Forest. Ask Mary about this cite

USDI Bureau of Land Management. 2003. Tool Box Complex Fire (M262) Burned Area Emergency Stabilization and Rehabilitation (ESR) Plan Environmental Assessment. EA#OR-010-2002-08.