



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Spokane District
Wenatchee Field Office
915 Walla Walla Avenue
Wenatchee, Washington 98801

IN REPLY REFER TO:

9015 (ORW020) P

July 15, 2009

Dear Interested Party:

This Environmental Assessment (EA) describes a proposal to test a biological control method on Tussock Moth in the Palmer Mountain area of Okanogan County. The EA describes the purpose and need for the project, the proposed action and the no action alternatives, and the impacts of the alternatives. This proposal is in accordance with the Spokane Resource Management Plan Record of Decision (1987) and Spokane Resource Management Plan Amendment (1992). Federal actions must be analyzed in accordance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations to determine potential environmental consequences.

The purpose of this document is to inform interested and affected parties of the proposal and to solicit comments on the EA to assist with the NEPA review of the proposal. Comments received in response to this solicitation should provide specific points relating to the EA, with supporting data on the range of alternatives and the associated impacts. Comments should be sent by July 29, 2009 to the following address or email address, ATTN: Douglas-fir Tussock Moth:

BLM, Wenatchee Field Office
ATTN: Douglas-fir Tussock Moth
915 Walla Walla Avenue
Wenatchee, WA 98801
OR_Wenatchee_Mail@blm.gov

Be advised that your entire comment – including personal identifying information (address, phone number, or email address) may be made publicly available. If you have any questions, please contact the Wenatchee Field Office at 509-665-2100. Thank you for your interest in the public lands.

Sincerely,

Karen Kelleher
Field Manager

**U.S. Department of the Interior
Bureau of Land Management
Wenatchee Field Office**

OR-134-09-0026

July 13, 2009

**Palmer Mountain Douglas-Fir Tussock
Moth Control**

Project No. 09-0026

***Location:* T. 39 N., R. 26 E., W.M., Sections 17 and 18.
(See Map Attachment Figure 1)**

***Applicant/Address:* NA**

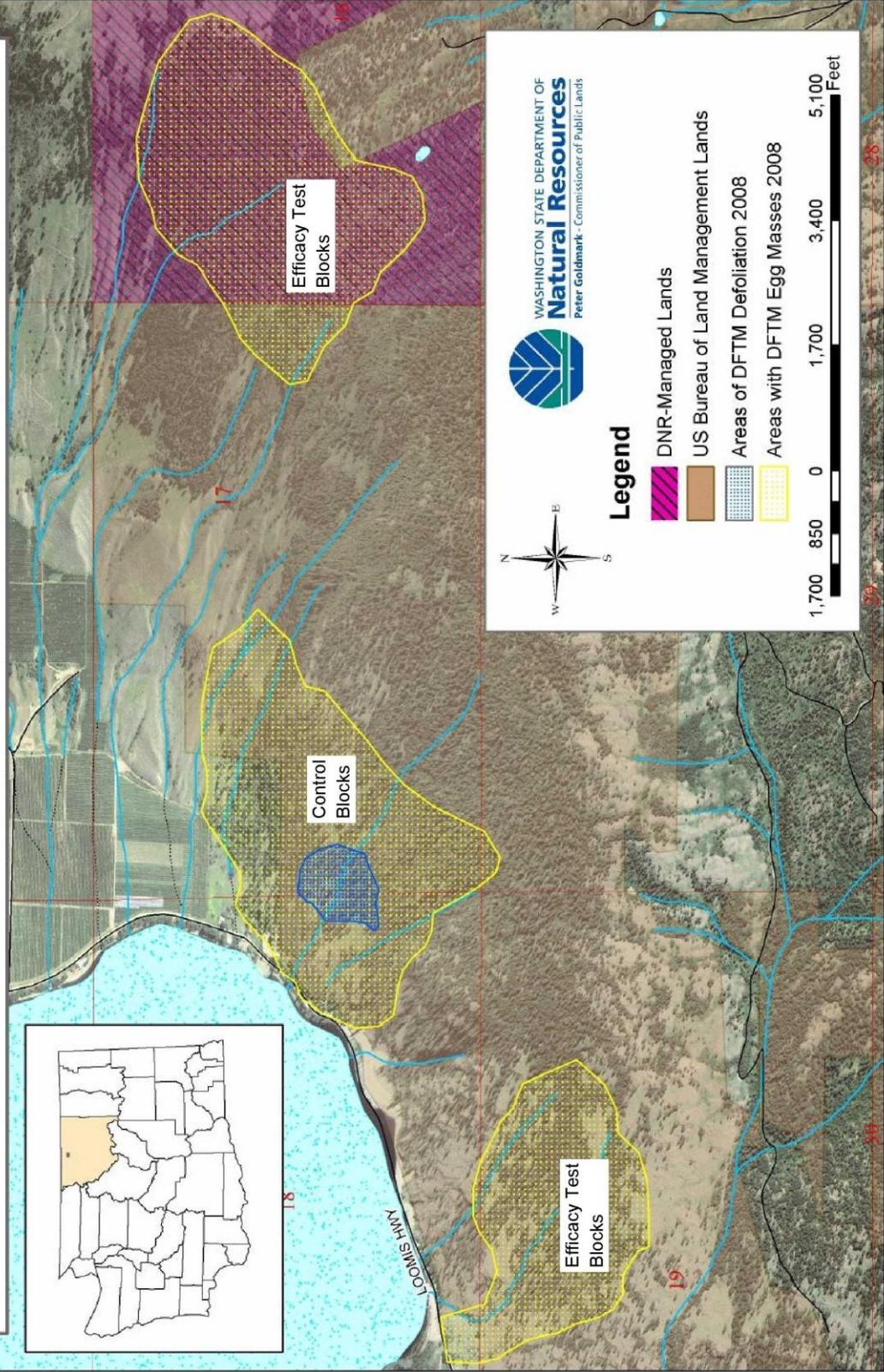


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Figure 1: Areas of Douglas-fir Tussock Moth Activity 2008 and Proposed Pheromone Efficacy Test Study Areas in the Palmer Lake Area, Okanogan County, Washington



Palmer Mountain Douglas-Fir Tussock Moth Control

INTRODUCTION: The Bureau of Land Management (BLM) proposes a collaborative project with the USDA Forest Service (USFS) and the Washington State Department of Natural Resources (DNR) to research the efficacy of control for Douglas-Fir Tussock Moth (tussock moth) on BLM-managed lands in Washington using biological suppression technology. The project, if successful, will protect predominately Douglas-fir stands located on the north side of Palmer Mountain north of Loomis in Okanogan County, Washington from an infestation of the tussock moth. Figure 1 shows areas of Palmer Mountain where tussock moth egg masses and defoliation occurred in 2008. The project area lies within the BLM-managed area of the current outbreak. The action is based on a strategy recommended by DNR and USFS entomologists.

The project is part of a regional research study designed to test the efficacy of pheromone treatment to inhibit tussock moth population increases on both public and private lands where the tussock moth has been found. Implementation is anticipated to occur over a 2 to 3 year period, until either a cold winter weather event or other environmental factors substantially reduces the regional populations to low levels, or until a more enduring silvicultural control project could be developed that retains some or all of the mature Douglas-fir stand values that are currently susceptible to attack.

BACKGROUND The Douglas-fir tussock moth, *Orgyia pseudotsugata*, (McDunnough) is a native insect species in the Western USA and Canada whose larvae feed on the needles of Douglas-fir, true firs and spruce. Mature tussock moth caterpillars are about 25 to 30 mm (1 to 1.2 inches) long and striking looking with brightly colored tufts of hair. See Figure 2. The body hairs are irritating to some humans and may cause a severe rash called "tussockosis", which may be of concern in campgrounds and other recreational areas.

Douglas-fir tussock moth outbreaks occur periodically (about once every 9 years) in the Pacific Northwest and can cause significant defoliation of the conifer species on which it feeds. Outbreaks are short lived and there is usually only one, or possibly two years, during which there is an opportunity to evaluate the population and make management decisions to reduce the extent of the outbreak. Tussock moth populations build-up very quickly and

cause most of the significant defoliation, top-kill and tree mortality in one year, and then collapse.

Figure 2

Douglas-fir tussock moth feeding on Douglas-fir branch showing "tussock" spines on back.

Source: McLean, UBC, www.ubc.ca



Most often, the outbreak and subsequent feeding damage first become evident the year before the heaviest defoliation occurs, and treatment is applied during the following year when the heaviest defoliation occurs. In recent years, suppression projects have typically used a biological insecticide, such as *Bacillus thuringiensis* (Btk), or the tussock moth nucleopolyhedrosis virus, (TM-Biocontrol-1). The material is applied while the larvae are feeding in the spring. This approach can be effective in causing the tussock moth population to collapse, but a significant amount of feeding and defoliation may still occur. Although foliage protection is often a main objective of a treatment program; treatment during this peak may have little impact on tree mortality in the area of the outbreak.

Two Forest Service entomologists with the Forest Health Protection Group of the Northwest Region Office and the DNR entomologist have evaluated the project area. See Figure 3. They have determined that an outbreak is currently occurring on the north slope of Palmer Mountain and is subject to this proposal as evidenced by egg masses and defoliation. Figure 4 shows one of the egg masses found on Palmer Mountain during the reconnaissance survey in November 2008.

Figure 3

Douglas-fir tussock moth found on Palmer Mountain and identified by DNR entomologist, Glenn Kohler.

Source: Murphy, BLM, www.blm.gov



Figure 4

Douglas-fir Tussock Moth Egg Masses found in Douglas-fir foliage on Palmer Mountain during 21 Nov 2008 Reconnaissance Survey.

Source: Murphy, BLM, www.blm.gov



The insect specialists counseled the BLM that the infestation is serious and that several control options are available in the early stages to moderate the damage and protect the forest stands. They recommend that a new control strategy, mating disruption using pheromones, be tested in three areas of North Central Washington, where outbreaks are currently occurring.

Mating disruption works by inundating the treatment area with a synthetic version of the female sex attractant pheromone. Male moths become confused and are unable to locate females and mate, causing a reduction in number of eggs laid and subsequent reduction of caterpillar population in the year following treatment. The pheromone product being evaluated in this proposal is specific to Douglas-fir tussock moth and only affects the behavior of male tussock moth. Application to the proposed forested area should not affect non-target organisms.

The use of Hercon laminated plastic bio-flake formulation of Z-6-heneicosen-11-one was registered by the Environmental Protection Agency (EPA) in 2005 for use in the control of lepidopteran insects including tussock moth. This project will test the efficacy of the bio-flake and biodegradable pellet formulations of the same pheromone. Although the pheromone can be used at rates of 30 grams per acre AI (active ingredient), the BLM and its cooperators propose to use 10 grams per acre AI for the initial test phase. Subsequent treatments may utilize up to the maximum permissible use amount. The recommended control activities should begin during the 2009 season and possibly continue in 2010 through 2012.

The tussock moth is a defoliating caterpillar that can cause severe damage or mortality to Douglas-fir, true firs, and spruce. Without control actions, the infestations are expected to grow to overwhelming outbreak proportions

within the next several years, with a projected high mortality of the larger overstory trees like those shown in Figure 5 below in Eastern Oregon.

Figure 5

Tussock moth outbreak with high mortality near La Grande, Oregon.

Source: McComb, USFS, www.bugwood.org



The test must be conducted before and during the breeding season which generally begins in mid-July, but will be delayed to the end of July 2009 due to cold spring weather. The insect population in the infested trees in the test sites should be reduced by mating interference characteristic of the pheromone in subsequent years. The use of pheromones to reduce population levels of tussock moth allows natural predators and disease factors to minimize damage to the forest resource during the next few years.

PURPOSE AND NEED FOR THE PROPOSED ACTION: This treatment project is needed to test whether a biological control technology will reduce the potential for a large-scale outbreak of tussock moth, a substantial threat to the region's forest health. Stand conditions and tussock moth levels are currently moderate but populations could explode to produce an outbreak like the one that decimated timber resources in the Blue Mountains of Oregon. The BLM has responsibility to protect and enhance forest resources and wildland habitats under the Healthy Forest Restoration Act, the Migratory Bird Treaty Act, the Spokane District's Resource Management Plan, and other federal, state and local laws and policies. The DNR and the Forest Service have requested the BLM to cooperate on this experiment to determine whether this control method is effective to control tussock moths in an early stages of epidemic infestation. These three agencies are working together to prevent high concentrations of dead fuels on federal and state lands in a wildland urban interface (WUI) area in reducing insect damage expected on adjacent private residential lands.

The purpose of this project is to evaluate the efficacy of the Hercon biodegradable formulation of the Douglas-fir tussock moth pheromone (Z-6-heneicosen-11-one) to cause mating disruption.

ISSUES: BLM has identified the following issues related to the proposed action:

- Will the aerial dispersal of the pheromone flakes affect air quality?
- Will the pheromone flakes affect any cultural sites or traditional cultural properties?
- Will there be any adverse affects on forest/fire ecology?
- Will the experiment affect riparian resources?
- Will the proposed action affect threatened, endangered, or otherwise sensitive plant and wildlife species?

Conformance With BLM Land Use Plan(s): This action would follow the guidance for the management of public lands in this area as set forth in the Spokane Resource Management Plan Record of Decision completed in May 1987. The Plan directs the BLM to:

Manage forest land or minimize losses or damage to commercial tree species from insects and disease (BLM 1987).

Relationships to Statutes, Regulations and Other Plans: Title I of the Healthy Forests Restoration Act provides authority for control of situations similar to those found on Palmer Mountain. Even given a high priority and expedited analysis under Healthy Forests, a comprehensive silvicultural control project would probably take two years to develop and put into practice. The tussock moth infestation is expected to be well entrenched on Palmer Mountain by that time, effectively removing the feasibility of the project from insect suppression and control which maintains mature overstory Douglas-fir stand components, over to timber salvage/fuel reduction objectives that are likely to include the regeneration and establishment of new pine stands which are less likely to be damaged by insects, disease and drought. This action is expected to suppress the local growth of tussock moth populations.

The Migratory Bird Treaty Act of 1918 and Executive Order 13186 of 2001 protect and require federal agencies to “minimize... adverse impacts.” This order also requires that each agency shall “restore and enhance habitat for migratory birds.” This would include management of vegetation to maintain

or improve habitats for a variety of grassland, shrubland and forest bird species.

The project area comes under the Okanogan County Wildfire Protection Plan that was adopted by the county commissioners in 2006 (DNR . The plan identified the area as a low density WUI and WUI buffer, with public lands that have current moderate and high priorities for fire risk control treatment. Epidemic levels of tussock moth infestation and tree mortality would tend to increase these priorities, as a result of a substantial increase in the proportions of dead to live materials in the current fuel composition.

This action is consistent with authority granted to protect and preserve timber owned by the United States upon the public lands under the Protection Act of September 20, 1922 (42 Stat. 857) and the Forest Pest Control Act of July 25, 1947 (61 Stat. 177). The action conforms and complies with an Agreement between the U.S. Department of Agriculture and the U.S. Department of the Interior dated March 28, 1983, concerning the Conduct of Forest Insect and Disease Management on Lands Administered by the U.S. Department of the Interior.

DESCRIPTION OF ALTERNATIVES

PROPOSED ACTION: The proposed project will be conducted by Forest Service and DNR entomologists. The Forest Service is administering an end-product contract with the aerial applicator. The Forest Service will supply a Contracting Officer's Representative (COR) during planning and application to ensure quality control, calibration, safety, and mitigation of any environmental hazards.

The proposed action will apply tussock moth pheromone bio-flakes or biodegradable pellets (Hercon laminated biodegradable formulation of Z-6-heneicosen-11-one) by aircraft flying 75 to 100 above the forest canopy.

The purpose of this project is to interfere with the life cycle of the tussock moth using natural pheromones contained in a bio-flake or biodegradable pellet. The bio-flake is a paper-thin 1 mm by 3 mm (1/10 the size of a postage stamp) plastic strips and the pellet is of similar size but egg-shaped and completely biodegradable. The flake or pellet is dropped into the project area by helicopter and will be discussed in general terms as bio-flakes. The pheromones would confuse and disrupt mating among the tussock moth

population and reduce or reverse the population explosion that generally occurs where tussock moths have colonized an area with suitable and substantial food supply.

A helicopter with applicator bucket application technology is the preferable application mechanism for the tussock moth bio-flake. The bio-flakes contain 10% active ingredient. The rate of application would be between 100 gm and 300 gm per acre of formulated 10% AI pheromone flakes. Flakes must be coated with a sticker to insure that the majority of flakes will stay in the canopy of the trees. One potential application device would be a fertilizer bucket adapted to handle the flake/sticker formulation. This would require mixing the bio-flakes with water, the Micro-Tac sticker and a guar gum thickener (Micro-Thic) to hold the flakes in suspension. The initial treatment area will not exceed 250 acres. This project will require a number of passes at a time of low wind speed to maximize the effectiveness of the pheromone treatment within the study blocks. The flakes will fall to the canopy and most will stick to the foliage of the trees in the densely forested areas, remaining in the air for a few minutes.

The product will be applied on BLM-managed lands on the north slope of Palmer Mountain within the boundaries identified in Figure 1 Project Map. The adjacent private land and other public lands in the area will not be part of this study but may be part of future treatments as determined by the efficacy of the treatment and willingness of the landowners to take part in future management options. Each treatment plot will be at least 20 to 40 acres. Location and size of the treatment plots will be determined based on a ground survey of tussock moth distribution and population. Application of the product will occur approximately up to 10 days prior to adult emergence from the cocoons. The product will be applied with aircraft flying about 75 to 100 feet above the canopy. Flight path and staging area location will be determined by the contractor. Subsequent applications of pheromone may occur during the summer months of 2010 through 2012 depending on the results of the 2009 tests.

As tussock moth outbreaks normally run a few years in length, it is probable that additional suppression activities would be needed in the general area the next three years. The need for additional actions would be evaluated beginning in 2010, which will consider the numbers of tussock moths collected in the traps and evidence of insect infestation throughout the area.

NO ACTION: Under no action, the BLM and cooperating agencies would not apply pheromone materials to interfere with mating behavior on public lands.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

INTRODUCTION AND GENERAL SETTING: The project area consists of blocks of public and private lands and is characterized by steep slopes, difficult ingress and egress, a mixed pine-Douglas fir forest with southern and western slopes at lower elevations dominated by shrub-steppe vegetation. See Figure 1 for land ownership pattern in the area affected by tussock moth infestation. The private, residential lands adjacent to the treatment area are within a low density WUI and WUI buffer identified in the Okanogan County Wildfire Protection Plan (DNR 2006).

The private lands to the south are ranchlands and mineral estates used primarily for livestock grazing and occasional mining. Private residences and outbuildings are present on these adjacent lands. Directly below the project area is Palmer Lake, a popular recreational area that contains swimming beaches, campgrounds and a private resort. The rural neighborhood on the east side of Palmer Lake contains homes, outbuildings and orchards on the terrace above the lake as shown in Figure 5.

Figure 5

Steep north-facing slopes of Palmer Mountain and adjacent private residences and orchards.

Source: Murphy, BLM, www.blm.gov



The Okanogan County Wildfire Protection Plan identifies the Palmer neighborhood as a high potential fire risk due to the abundance of recreational activities and because many of the homes are only seasonally or occasionally occupied. High recreation use tends to increase the potential for fire due to ignition sources associated with campfires, barbeque pits, all-terrain vehicles (ATV) or watercraft motors, cigarettes, and other human activities (DNR 2006).

Structures in the Palmer Neighborhood are located along the eastern shore at the base of a very steep slope. This neighborhood has a moderate wildland urban interface-type fire risk due being located at the base of the slope and the accessibility to water. Fires in this area are more likely to start near the lake and move upslope away from the population rather than back down the steep mountains to the community without initial attack interference. Nevertheless, many of the structures on Palmer Lake are recreational homes with out-of-area owners. Some homeowners in this area may not be fully aware of the potential fire risk; thus, their homes do not have an adequate defensible space. Also, homes in the Palmer Neighborhood are not covered by a rural fire protection district (DNR 2006).

The Resources listed in Table 1 below have been evaluated with regards to the proposed action as follows:

Table 1: Resources and Rationale for Determination

Determination*	Critical Element Resource	Rationale for Determination
NI	Air Quality	No burning will occur. The pheromone chemical will disperse in an open air environment over time.
NP	Areas of Critical Environmental Concern	Project location not in an ACEC.
NI	Cultural Resources	Cultural survey conducted on Palmer Mountain to evaluate grazing leases. Project would not impact any cultural resource in area.
NI	Environmental Justice	No impacts to minority or low-income populations.
NP	Farmlands (Prime or Unique)	Project not located on prime or unique farmlands.
NP	Floodplains	Project not located on a floodplain.
PI	Forest and Fire Ecology/Forest Health	Success with research blocks would reduce tussock moth infestation and subsequent defoliation.
NI	Invasive, Non-native Species	This action would not cause any ground disturbance and have no impact on invasive, non-native species.
NP	Native American Religious Concerns	Project not located in area with Native American religious concerns.

PI	Wildlife and Plants (Sensitive, Threatened and Endangered Species)	Gray wolves may be present in the project area but would not be impacted by the project. Project would not alter habitat or prey base.
NP	Wastes (hazardous or solid)	No hazardous or solid wastes located in project area.
NI	Water Quality (drinking/ground)	No road construction will occur. Pheromone chemical will disperse in the air in very low quantities for three months.
NP	Wetlands/Riparian Zones	None of the proposed treatments located in or near riparian reaches.
NP	Wild and Scenic Rivers	None present.
NP	Wilderness	Project located well outside any Wilderness or WSA boundary.

*Possible determinations:

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with impact analyzed in detail in the EA

AIR QUALITY: The project area lies in a rural area noted by steep glacial valleys and low population density. The air quality is generally good to excellent,, but the valleys tend to trap particulate matter including smoke, so air quality is severely impacted by wildfire within the airshed (Ecology 2009).

Proposed Action Direct and Indirect Effects: The pheromone will dissipate into the air for a period of three months after the drop. The pheromone will be formulated to stick to the foliage to provide a better dispersal to confuse male tussock moths and inhibit mating.

The effects to the air within the study blocks is negligible, because the pheromone product remains in the air for a few minutes, is mixed with a tacifier to help it stick to the foliage of the trees and the product only affects the one target species and no others. The effects on the greater airshed are infinitesimally minute and immeasurable. However, the success of the project would reduce the outbreak of tussock moth population and potentially reduce the ground fuel loading and incidence of wildfire on Palmer Mountain. Since wildfire poses a threat to both the rural neighborhoods and air quality, the net effect of this project on air quality would be neutral to slightly beneficial.

No Action Direct and Indirect Effects: The effects on the project area air quality and the greater airshed are zero. However, the no action permits the outbreak of tussock moth population to continue unabated and potentially increases the ground fuel loading and incidence of wildfire on Palmer Mountain. Since wildfire poses a threat to both the rural neighborhoods and

air quality, the net effect of no action on air quality would be neutral to slightly negative.

CULTURAL RESOURCES: A BLM archaeologist has evaluated Palmer Mountain and catalogued cultural sites on the mountain. The project area contains one known Pre-contact site that is potentially eligible for listing in the National Register of Historic Places (NRHP). No Historic period sites have been identified within the project area.

Proposed Action Direct and Indirect Effects: The pheromone flakes will be dispensed by helicopter on an area of Palmer Mountain, south of the Pre-contact site, and will cause no ground disturbance. This treatment would not have any direct or indirect impact on cultural resources.

No Action Direct and Indirect Effects: No action would not have any direct or indirect impact on cultural resources on Palmer Mountain.

FOREST AND FIRE ECOLOGY/FOREST HEALTH: Tussock moth outbreaks provide a large-scale natural disturbance process in Douglas-fir forests that over time increase the structural diversity in stands, and ultimately, results in increased productivity and biological diversity in an area.

The process of these large-scale disturbances through defoliation and mortality of the Douglas-fir component of the forest can be problematic for human and wildlife. The loss of live canopy increases temperatures and reduces humidity, increases both woody debris and subsequent fuel loading on the forest floor, and increases the number of snags. Snags are a natural component of healthy systems, and can occur in low numbers within live stands from agents such as disease, insects, or simply the end of a life cycle. Conversely, large stands of snags occur from large fire events or epidemic insect outbreaks that result in irruptions in snag dependent birds that serve as source populations for outlying areas. Snag development through both processes is desirable on a landscape scale to provide for the diversity of wildlife species dependent on this component.

The increase in woody debris on the forest floor and standing dead wood increases the potential for stand-replacing wildfire in the area. Since Palmer Mountain is in a WUI zone and is adjacent to a populated rural community and recreation area, the fuel loading of the forest is a critical concern. The steep terrain and vegetated swales that run down the north slope of the mountain make for a high fire danger area.

Although firewood cutting occurs on Palmer Mountain, the steep and difficult to access north slopes are not likely to be attractive to firewood cutters. However, if the tussock moth outbreak and subsequent defoliation and mortality of Douglas-fir should extend over the top of the mountain or around the base near existing roads and trails, it would be likely that some trees would be removed. This low level firewood harvest would not likely have any effect on the outbreak due to the large number of "green" trees holding insects and access and vehicle limitations.

Proposed Action Direct and Indirect Effects: Success in reducing the incidence of tussock moth on Palmer Mountain would reduce defoliation and mortality of Douglas-fir, minimize the impacts to microclimate within the stand, reduce woody debris and snag production in the near future, but not impact development of snags by other factors. The reduction in tussock moth population would also reduce the fuel loading that would otherwise result from increased mortality within the Douglas-fir component of these stands. The reduction of fuel loading would reduce the likely loss of habitat from wildfire in the near and medium term future.

No Action Direct and Indirect Effects: The no action alternative would not slow the spread of the tussock moth into additional Douglas-fir stands adjacent to the proposed treatment area. The tussock moth would continue to expand until it runs out of Douglas-fir or is subsequently attacked by a natural disease agent. The resultant outbreak would recruit additional large diameter snags and down woody material created in the area and could potential lead to 80 percent or greater mortality of mature Douglas-fir greater than 8 inches DBH. The mortality of mature overstory trees due to the continued tussock moth infestation would increase dead fuel loading in the forest and increase the likelihood of stand-replacing wildfire in the future.

With this alternative, the tussock moth infestations are expected to become well entrenched and cause high mortality of Douglas-fir stands in the affected area.

RIPARIAN AND WATER QUALITY: The project area lies above Palmer Lake and but does not contain any riparian reaches or wetlands. However, alternating cliff faces and steep swales direct snowmelt runoff periodically down to the lake do occur within the project area.

Proposed Action Direct and Indirect Effects: The pheromone bio-flakes will be dispensed high on Palmer Mountain during summer months after snowmelt and the pheromone will have dissipated into the air affecting mating behavior of the tussock moth. Eventually, the flakes will be

incorporated into forest floor litter and have lost most of its pheromone content by the time of first snow. This treatment would not have any direct or indirect impact on the waters of Palmer Lake.

No Action Direct and Indirect Effects: No action would not have any direct or impact on the waters of Palmer Lake. However, the increased defoliation and mortality caused by tussock moth increase the fuel loading in the forest and the potential for wildfire. Wildfire has a greater potential to impact water quality than the direct impact of either alternative considered.

WILDLIFE AND PLANTS: The project area and surrounding lands provide habitat for a wide variety of wildlife species common to forest and shrub-steppe habitats of north central Washington. The area provides diverse habitat of mature dry and wet forest types as well as open shrublands. Forested habitats are dominated by large, mature Douglas-fir and ponderosa pine with an understory of pine grass interspersed with aspen groves and open areas of bitterbrush and sagebrush. The juxtaposition of habitat types on BLM and private lands in and adjacent to the project area, provides good hiding, foraging and breeding habitat for numerous wildlife species.

Historic logging combined with fire suppression has resulted in densely growing stands that are mostly even aged, smaller diameter trees. This has affected many species that depend on large trees and multi-layered canopies, such as woodpeckers and various migratory song birds. Many of these species forage on insects, and loss of suitable habitat and subsequent population reductions of these species has resulted in increased problems with forest insects.

Special status species known to occur in the area include bald and golden eagle, Lewis' woodpecker, pileated woodpecker, sage thrasher, sharp-tailed grouse, and several bat species. The project area also provides suitable habitat for gray wolf, grizzly bear, flammulated owl, Vaux's swift, black-backed woodpecker, white-headed woodpecker, peregrine falcon and white-tailed jackrabbit, although recent occurrences of these species have not been documented. Table 2 shows Federal and State status of sensitive species.

Table 2. Special Status Wildlife Species known or suspected on Palmer Mountain (Adapted from BLM Palmer Mountain Grazing Lease Renewal EA)

Common Name	Scientific Name	Type	Status*
Gray Wolf	<i>Canis lupis</i>	Mammal	FE, SE
Grizzly Bear	<i>Ursus arctos</i>	Mammal	FT, SE
White-tailed Jackrabbit	<i>Lepus townsendii</i>	Mammal	SC
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Mammal	FCo, SC
Spotted Bat	<i>Euderma maculatum</i>	Mammal	SM
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	Bird	FCo, ST
Sage Thrasher	<i>Oreoscoptes montanus</i>	Bird	SC
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Bird	FCo, SS
Golden Eagle	<i>Aquila chrysaetos</i>	Bird	SC
Peregrine Falcon	<i>Falco peregrines</i>	Bird	FCo, SS
Flammulated Owl	<i>Otus flammeolus</i>	Bird	SC
Lewis' Woodpecker	<i>Melanerpes lewis</i>	Bird	SC
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Bird	SC
Black-backed Woodpecker	<i>Picoides arcticus</i>	Bird	SC
White-headed Woodpecker	<i>Picoides albolarvatus</i>	Bird	SC
Vaux's Swift	<i>Chaetura vauxi</i>	Bird	SC

*Status: FE=Federally Endangered, FT=Federally Threatened, FCo=Federal Species of Concern, SE=State Endangered, ST=State Threatened, SC=State Candidate, SS=State Sensitive, SM=State Monitor.

Tussock moths and their larvae are a likely food source for a variety of wildlife, including woodpeckers and other birds as well as bats, small mammals, reptiles and amphibians. The insects are high in protein and may be an important nutrient source for many species.

Trees killed by the tussock moth provide decades of foraging and nesting habitat for snag dependent wildlife. The trees fall at varying rates over a 30-year period, creating downed wood for a diversity of wildlife and openings in the canopy that allow sunlight to penetrate the forest floor resulting in the regeneration of forbs, grasses, shrubs, and trees that are utilized by a number of wildlife for forage, nesting, denning, and cover.

Proposed Action Direct and Indirect Effects: The proposed action would cause noise during passes by the helicopter dispersing the pheromone to the study blocks. This could temporarily displace or disturb wildlife in the area. Application would occur outside of the breeding/nesting period for most

species, so impacts of disturbance would be minimized. The active pheromone for tussock moth mating disruption, Hercon bio-flake formulation of Z-6-heneicosen-11-one, does not influence other invertebrate or vertebrate species.

The proposed action with a successful reduction of tussock moth population would reduce Douglas-fir mortality and recruit fewer snags and large woody debris on the forest floor. Greater canopy closure would maintain hiding cover for big game species but would not increase forage for big game. If successful, the proposed action would also maintain habitat for species that depend on live forest for nesting, foraging and other habitat needs. Less tree mortality due to the tussock moth and maintaining canopy closure would limit substantial increases in standing, and ultimately downed, woody debris. The project would not impact snag and large woody debris recruitment from causes other than the tussock moth. Successful control of tussock moth populations would maintain a more long term nutrient supply for wildlife species that forage on the insect. The proposed action may result in reduction of tussock moth populations, but over the long term would maintain tussock moth population in the area, compared to a large population increase followed by a crash that would be expected under the no action alternative.

The project would not remove or impact sensitive plant habitat because BLM sensitive plant species have not been documented in the project area and the proposed action would have no direct or indirect impacts on plants other than to reduce mortality of Douglas-fir.

No Action Direct and Indirect Effects: Under the no action alternative, there would be no direct effects to wildlife or wildlife habitat. It is expected that tussock moth populations would continue to grow and would eventually defoliate and kill Douglas-fir in the vicinity of the outbreak.

The loss of large, mature overstory trees caused by tussock moth defoliation would reduce hiding cover for big game species but would increase forage for big game. The loss of live trees would also reduce habitat for species that depend on live forest for nesting, foraging and other habitat needs. However, the creation of snag habitat across the project area would increase breeding and foraging habitat for a wide range of species including but not limited to pileated woodpeckers, forest bat species and black bear. Tree mortality due to the tussock moth and reduction in canopy closure would result in substantial increases in standing, and ultimately downed, woody debris. After trees fall to the ground, persistence through time of dead trees (especially those of large diameter) can last several decades. Besides providing a source of organic and inorganic nutrients for soil development,

these logs also provide nesting denning, and/or hiding cover as well as foraging opportunities for small mammals, birds, and reptiles. However, the increase of ground fuels and mortality in the forest make the stand more susceptible to stand-replacing wildfire.

BLM sensitive plant species have not been documented in the project area and no action would have no direct nor indirect impacts on plants other than Douglas-fir.

CUMULATIVE IMPACTS

Past, Present and Reasonably Foreseeable Actions: The project area is located in a matrix of BLM, state and private ownership. The BLM has a long-term plan to reduce forest fuels and enhance forest health on Palmer Mountain in the reasonably foreseeable future. The north slope of Palmer Mountain is less likely to be treated under these future projects because of the steep inaccessible slopes and difficult working conditions. However, hand cutting, piling and burning may be an appropriate measure in areas relatively inaccessible to mechanized harvesting equipment.

The BLM will likely emphasize fuel reduction and forest health projects to the south, southwest and southeast of the project area due to greater accessibility by road and gentler slopes.

The DNR manages lands to the east of the project area and may develop a project in that area in the future, but has no current plans to harvest or perform fuels reduction projects there.

The adjacent private landowners utilize the forest resource along the lower slopes more accessible to their homes for firewood. They likely select dead or dying trees to reduce fuel loading and fire hazard near their homes and are likely to continue similar management in the foreseeable future.

Cumulative Effects on Air Quality: The foreseeable fuels reduction and forest health projects in the near future on BLM lands may or may not impact air quality depending on whether forest residues are harvested as biomass, chipped on site, piled and burned and whether broadcast burning is performed. It is probable that some form of prescribed fire will be considered since many of the forest stands are under attack by insects and disease agents. Fire serves to kill some of the insect and disease agents in dryland forests and reduce future outbreaks enhancing forest health. Broadcast burning would have temporary impacts on the local air quality but reduce the potential for a large wildfire on Palmer Mountain which would have a much greater impact on local and regional air quality. The no action

alternative would result in higher loading of dead fuels on the mountain and increase the potential for wildfire and subsequent impacts to air quality. Without wildfire, the cumulative effects are nearly equal whether the proposed action or no action alternative is selected.

Cumulative Effects on Riparian: The foreseeable fuels reduction and forest health project would be designed to protect riparian resources on Palmer Mountain with best management practices to protect water quality. However, the ground disturbance and skidding of logs would likely have some impact to soil erosion and sediments potentially entering local streams. The no action alternative would result in higher loading of dead fuels on the mountain and increase the potential for wildfire and subsequent impacts to water quality. Without wildfire, the cumulative effects are nearly equal whether the proposed action or no action alternative is selected.

Cumulative Effects on Forest and Fire Ecology / Forest Health: The foreseeable fuels reduction and forest health project would reduce canopy cover in both Douglas-fir and ponderosa pine stands in areas south, southwest and southeast of the project area, but be less likely affect this area due to inaccessibility and steep slopes. Such projects would reduce continuous canopy cover, enhance forest health by removing competition for the healthy trees, reduce disease and insect infestation by selecting diseased or weakened trees, reduce ground fuels and potential for stand-replacing wildfire. Forest health projects in the near future would enhance the ability of the stands on the mountain to survive a wildfire event without extensive loss of large older trees. The proposed action by reducing the population growth of the tussock moth and defoliation of Douglas-fir on Palmer Mountain would support the long-term goals of enhancing forest health and provide a mixed stand into the future.

The adjacent owners will not likely change management in the near future except possibly to select dying and dead trees to individually harvest for firewood or domestic use.

Cumulative Effects on Threatened, Endangered and Sensitive Wildlife and Plants: Wildlife habitat in the analysis area has been affected by roads, timber harvest, fire suppression recreation, private land development, mining and grazing. Historic logging practices that focused on removing large diameter trees followed by years of fire suppression have created forest conditions that are less suitable for many species of wildlife than historic conditions. This, combined with fragmentation associated with roads and land conversion has contributed to the decline of many species.

The team of entomologists have surveyed for tussock moth outbreaks and found similar population and defoliation occurring in three areas of Okanogan County. They have proposed aerial application of tussock moth pheromone mating disruptor in these three general areas of Okanogan County as listed in Table 3.

Table 3: Locations of Proposed Douglas-Fir Tussock Moth Treatments in North Central Washington as Identified by Team of Entomologists

Site Name (General Area)	Township	Range	Section (s)	Acres Treated	Ownership	Distance from Palmer Mtn. (mi)
Palmer Mtn. (Loomis)	39 N	26 E	17, 18	50	BLM/DNR	0.0
Chesaw Road (Oroville)	40 N	28 E	28, 29, 32, 33	250	Private	14.6
Cub Creek (Winthrop)	36 N	21 E	31, 32	40	USFS	35.2
Rondevous (Winthrop)	35 N	20 E	1	40	USFS	38.0
Musgrave (Winthrop)	35 N	20 E	6	40	Private	43.0

The BLM does not have any projects “shovel ready” in the area of Palmer Mountain, but has identified the need for fuels reduction. It is possible that the BLM would put forth some form of fuels reduction projects (pre-commercial thinning, hand-piling, machine-piling, chipping, burning, etc.) during the next five years, however a comprehensive project in the Palmer Mountain area is not likely in the short-term future.

The foreseeable fuels reduction and forest health project would reduce canopy cover in both Douglas-fir and ponderosa pine stands in areas south, southwest and southeast of the project area, but not likely affect the project area due to inaccessibility and steep slopes. Fuels reduction projects tend to reduce continuous canopy cover, enhance forest health by removing competition for the healthy trees, reduce disease and insect infestation by selecting diseased or weakened trees, reduce ground fuels and potential for stand-replacing wildfire.

The adjacent owners will not likely change management in the near future except possibly to select dying and dead trees to individually harvest for firewood or domestic use.

The no action alternative would contribute to the effects of other non treated areas, increasing the likelihood of a localized tussock moth population explosion and subsequent forest defoliation.

The proposed action would contribute to the effects of other treatments in the area to reduce tussock moth population growth and reduce the likelihood of large-scale localized defoliation. It would also contribute to cumulative effects of noise disturbance from other activities in the area. Based on timing of noise disturbance and the other activities this would contribute to, this would not be a significant affect.

PERSONS, GROUPS, AND AGENCIES CONSULTED

On June 1, 2009 the BLM’s Wenatchee Field Office issued consultation letters regarding the proposed tussock moth control project and a determination of *no effect upon historic properties* on BLM-administered lands in the Palmer Mountain area. Letters were sent to the Washington State Department of Archaeology and Historic Preservation (DAHP) and the Colville Confederated Tribes. On June 4, 2009, the DAHP responded, concurring with the determination of *no effect*. The Colville Tribes did not respond.

Table 4. List of Persons, Agencies and Organizations Consulted

Name/Agency	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
WA Dept. of Archaeology and Historic Preservation (DAHP)	Formal consultation and determination no effect upon historic properties on BLM-administered lands in the Palmer Mountain area.	BLM issued consultation letter and determination of No Effect . The DAHP concurred with the BLM’s no effect determination.
Colville Confederated Tribes (CCT)	Formal consultation and determination no effect upon historic properties on BLM-administered lands in the Palmer Mountain area.	BLM issued consultation letter and determination of No Effect. The Colville Tribes did not respond.
Leahe Swayze, Okanogan National Forest	Coordination with ONF on treatment locations	Locations within Okanogan NF and coordinated documentation.
Connie Mehmel USFS Region-6 Entomology	Evaluation of Douglas-fir tussock moth on public and private lands in North Central Washington	MFO-TR-06-21
Iral Ragenovich USFS Region-6, Natural Resources	Evaluation of Douglas-fir tussock moth on public and private lands in North Central Washington	MFO-TR-06-21

List of Preparers and Reviewers

Program Staff/Resource	Assigned Specialist
Cultural Resources	Françoise Sweeney
Forestry	Mark Williams
Wildlife/Fisheries/T&E Animals	Erik Ellis
Fisheries	Joe Kelly
Soil/Water/Air	Tim Murphy
Range	Dana Peterson
Weeds/Pesticide Use	Mark Williams
Riparian & Wetlands/Sensitive Plants	Pam Camp
NEPA Coordinator	Scott Pavey
Field Office Manager	Karen Kelleher

References:

Bureau of Land Management, Spokane Resource Management Plan Record of Decision, Rangeland Program Summary (RPS), Spokane WA, May 1987, 22 pp.

Cranshaw, W., I. Aguayo, and D.A. Leatherman, Douglas-fir Tussock Moths Colorado State University Extension, Revised 2/09, <http://www.ext.colostate.edu/pubs/insect/05542.html>

Environmental Protection Agency, Registration of Lepidopteran Pheromones Federal Register Notices, [\(Z\)-6-Heneicosen-11-one \(129060\)](http://www.epa.gov/pesticides/biopesticides/ingredients/fr_notices/frnotices_lep_pheromones.htm), 22 Jun 2005, http://www.epa.gov/pesticides/biopesticides/ingredients/fr_notices/frnotices_lep_pheromones.htm

Material Safety Data Sheet (MSDS), Product # P4030-94 Bedoukian (Z)-6-Heneicosen-11-One Technical Pheromone, Aug 3, 2007, www.bedoukian.com/products/displaygraphic.asp?type=m&product=P4030-94

McLean, John A., Douglas-fir Tussock Moth, *Orgyia pseudotsugata*, in British Columbia University of British Columbia, 1997, <http://www.forestry.ubc.ca/fetch21/DFTM/dftmtot.html>

Washington Department of Ecology, Site Report: Winthrop-Chewuch Road Periodic: 7/1/2008 to 6/30/2009, Report Type: AVG, <https://fortress.wa.gov/ecy/enwiwa/Default.htm>

Washington Department of Natural Resources, Okanogan County, Washington All Hazards Mitigation Plan Volume II Community Wildfire Protection Plan, Dec 13, 2006. http://www.dnr.wa.gov/Publications/rp_burn_cwppokanogan.pdf

Appendix I

**EPA Registration and
MSDS for
Douglas-Fir Tussock Moth Pheromones**

 <p style="text-align: center;">U.S. ENVIRONMENTAL PROTECTION AGENCY Office of Pesticide Programs Biopesticides and Pollution Prevention Division (7511C) 1200 Pennsylvania Avenue NW Washington, DC 20460</p> <p style="text-align: center;">NOTICE OF PESTICIDE: <u>X</u> Registration — Reregistration <small>(under FIFRA, as amended)</small></p>	EPA Reg. Number: 8730-64	Date of Issuance: 1/21/05
	Term of Issuance: Unconditional	
	Name of Pesticide Product: Hercon Disrupt DFTM	
<p>Name and Address of Registrant (include ZIP Code):</p> <p>Aberdeen Road Company d/b/a Hercon Environmental P.O. Box 435 Emigsville, PA 17318</p>		
<p>Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.</p>		
<p>On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.</p> <p>Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.</p> <p>This registration does not eliminate the need for continual reassessment of the pesticide. If EPA determines at any time, that additional data are required to maintain in effect an existing registration, the Agency will require submission of such data under section 3(c)(2)(B) of FIFRA.</p> <p>This product is registered in accordance with FIFRA section 3(c)(5) and is subject to the following terms and conditions:</p> <ol style="list-style-type: none"> 1. Make the following modifications to your label dated JAN 21 2005 before your release your product for shipment: <ol style="list-style-type: none"> a. Add the EPA Registration Number 8730-64 to your label b. Submit five (5) copies of the revised final printed labeling before you release the product for shipment. 		
<p>Signature of Approving Official:  Janet L. Andersen, Ph.D., Director, Biopesticides and Pollution Prevention Division</p>	<p>Date: 1/21/05</p>	

EPA Form 8570-6

Post-it® Fax Note	7671	Date	1/21/05	# of pages	4
To	Priscilla MacLean	From	Andrew Bryceland	Co./Dept	Hercon Env
Co./Dept	Hercon Env	Co.	USEPA	Phone #	703-305-6928
Phone #	717-779-2018	Fax #	703-308-7026		
Fax #	717-767-1016				

HERCON DISRUPT DFTM
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**HERCON®
 DISRUPT® DFTM**
DOUGLAS FIR TUSSOCK MOTH MATING DISRUPTANT
 Population Suppressant

HERCON® DISRUPT® DFTM is a controlled-release encapsulated pheromone formulation designed to lower incidence of Douglas fir tussock moth, *Orgyia pseudotsugata*, mating by disrupting normal male communications with the female. This reduction in mating will help suppress the larval (caterpillar) population for the next generation that can cause damage to Douglas fir, *Pseudotsuga menziesii* spp. *glauca* (Beissn.), true firs *Abies* spp. and pines, *Pinus* spp.

ACTIVE INGREDIENTS:

(Z)-6-Heneicosen-11-one.....	17.64 %*
OTHER INGREDIENTS	<u>82.36 %</u>
TOTAL	100.00 %

MINIMUM NET WEIGHT: KG [lb]*

*NOTE: 3.75 lb (1.7 kg) of DISRUPT DFTM flakes will treat 10 acres at 30 g AI/acre rate

KEEP OUT OF REACH OF CHILDREN
C A U T I O N
C U I D A D O

Read Directions and Precautionary Statements Before Use

FIRST AID	
IF INHALED	
<ul style="list-style-type: none"> • Move person to fresh air • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible • Call poison control center or doctor for treatment advice 	
IF ON SKIN OR CLOTHING	
<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes • Call a poison control center or doctor for treatment advice 	
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may contact the National Pesticide Telecommunications Network at 1-800-858-7378 for emergency medical treatment information. Hours of operation are seven days a week, 6:30 am to 4:40 pm PST	

ACCEPTED
 JAN 21 2005

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 8730-64

HERCON DISRUPT DFTM
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HERCON[®] DISRUPT[®] DFTM

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION: Harmful if absorbed through skin or inhaled. Avoid contact with skin, eyes and clothing. Avoid breathing dust. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco. Remove contaminated clothing and wash before reuse.

Personal Protective Equipment (PPE): Applicators and handlers must wear: long-sleeved shirt and long pants, socks, shoes, and chemical resistant gloves. Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should wash hands before eating drinking chewing gum, using tobacco, or using the toilet.

Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing

Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing

ENVIRONMENTAL HAZARDS: For terrestrial uses: Except under forest canopy, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

For any requirements specific to your State or Tribe, consult the State/Tribal agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on Farms, forests nurseries, greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on the label about personal protective equipment (PPE), restricted entry interval, and notification to workers (as applicable). Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow any worker to enter into treated areas during the restricted entry interval (REI) of 4 hours.

For early entry into treated area that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, water, wear: coveralls, chemical resistant gloves, shoes plus socks.

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HERCON[®] DISRUPT[®] DFTM

At least two weeks before adult Douglas fir tussock moth emergence, apply 30 gm of active ingredient (170 gm (6oz) of product) per application per acre. Apply a second application if adult moth emergence is extended or delayed, otherwise one application lasts the entire season. Use an inert sticker material with DISRUPT DFTM to hold flakes on treated foliage or plant parts. Hercon applicator is specifically designed to mix the proper amount of DISRUPT DFTM flakes and inert sticker at the time of application. Use in areas such as forest; residential, municipal and shade tree area, recreational area such as campgrounds, golf courses, parks and parkways; ornamental, shade tree forest plantings; shelter belts and rights of way and other easements. Application must be done by or under the supervision of a qualified person to insure proper rate and method of application

STORAGE AND DISPOSAL:

Do not contaminate water, food, or feed by storage and disposal

PESTICIDE STORAGE: Store in sealed containers in a cool dry place.

PESTICIDE DISPOSAL: Waste resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Then disposed of empty bag in a sanitary landfill or by incineration, or, if allowed by state or local authorities, by burning. If burned stay out of smoke.

NOTICE: Manufacturer warrants that this material conforms to the chemical description on the label. Manufacturer neither makes nor authorizes any agent or representative to make any other warranty of fitness or of merchantability, guarantee or representation expressed or implied, concerning this material. Manufacturer's maximum liability for breach of this warranty shall not exceed the purchase price of this product. Buyer and user acknowledge and assume all risks and liabilities resulting from the handling, storage and use of this material, whether in accordance with directions or not.

EPA Reg. No. 8730-AU

EPA Est. No. 8730-PA-01

Made in the USA by

HERCON ENVIRONMENTAL

Emigsville, PA 17318-0435

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SECTION 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Standard absorbents can be used.

WASTE DISPOSAL METHOD: Incineration or sanitary landfill in accordance with local, state, and federal regulations.

SECTION 7. HANDLING AND STORAGE

HANDLING

Observe all warnings and precautions listed for the product. Use in accordance with good manufacturing and industrial hygiene practices. Use product in a properly ventilated work area. Do not eat, drink or smoke while handling product.

STORAGE

Store tightly sealed under inert gas in a cool, well-ventilated area.

FIRE PROTECTION

Keep away from heat, sparks, and open flame.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Mechanical (general)

RESPIRATORY: Usually not required

SKIN: Rubber gloves

EYES: Splash-proof safety glasses

OTHER PROTECTIVE EQUIPMENT: Safety shower, eye wash

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

APPEARANCE: yellow liquid

ODOR DESCRIPTION: fruity, oily

BOILING POINT: 90C @ 4 mm Hg

VAPOR PRESSURE : Not found

VAPOR DENSITY (Air = 1): >1

SPECIFIC GRAVITY @ 25C (water = 1): 0.8420:0.8470

SOLUBILITY IN WATER: Insoluble in water.

FLASH POINT (CC): 266 F 130 C

SECTION 10. STABILITY AND REACTIVITY

INCOMPATIBILITIES

CONDITIONS TO AVOID: Presents no special reactivity hazard.

MATERIALS TO AVOID: Strong oxidizing agents

HAZARDOUS COMBUSTION PRODUCTS

CO, CO₂, water

SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE EFFECTS

Most likely route of entry is through the skin.

Full strength may be irritating to skin and eyes.

TOXICITY DATA

This material is a Lepidopteran Pheromone, a class of pheromones with no expected risks to human health or non-target organisms

THRESHOLD LIMIT VALUE (TLV): Not established

OSHA PERMISSIBLE EXPOSURE LIMIT (PEL): Not established

LISTED AS CARCINOGEN BY NTP, IARC, OR OSHA?: NO

SECTION 12. ECOLOGICAL INFORMATION

GENERAL

Prevent contamination of soil, ground- and surface water.

SECTION 13. DISPOSAL CONSIDERATION

WASTE DISPOSAL METHOD: Incineration or sanitary landfill in accordance with local, state, and federal regulations.

SECTION 14. TRANSPORT INFORMATION

	Class	Pack Group	Sub. Risk	UN No.
Road(U.S.-DOT):	not regulated.			
Air (IATA):	not regulated.			
Sea (IMDG):	not regulated.			

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION

Based on toxicological studies in the published literature, there are no risk and safety phrases to assign for this product.

REVIEWS, STANDARDS, AND REGULATIONS

This chemical is listed on the following inventories:

TSCA NDSL ECL

LISTED AS CARCINOGEN BY NTP, IARC, OR OSHA?: NO

SECTION 16. OTHER INFORMATION

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY

THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED REGARDING ITS CORRECTNESS.

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