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Fort Lewis Integrated Training Area Management Program

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Abstract

Fort Lewis has a total 86,000 acres with 63,563 acres of actual training land and 12,511 acres of impact area. Fort Lewis has both light and heavy forces, meaning soldiers walking, bivouacking, jumping from airplanes, rappelling from helicopters, maneuvering over the land with tracked and wheeled vehicles, and firing weapons from pistols and rifles to artillery and tank guns.

The ITAM program is an Army initiative developed to address training land management and natural resource issues. It is an unique program that integrates the training mission and land management in a systematic manner. The ITAM program is accomplished with four components: 1) Land Condition Trend Analysis (LCTA) evaluates the capability of land to meet multiple use demands on a sustained basis, monitors changes over time, evaluates changes in terms of current land uses, and recommends changes to insure long-term resource availability; 2) Land Rehabilitation and Maintenance (LRAM) is designed to enhance, improve, maintain, and repair training lands. The LRAM component improves training lands in prairie (grassland) ecosystems by slashing Douglas fir and Scotch broom. The broom is mowed and cut by hand-held motorized brushcutters and tractors with attached bush-hogs. Additionally, the component repairs training land damage by completing site prep and planting plugs of Idaho fescue and forb species; 3) Environmental Awareness (EA) is an educational program for leaders, soldiers, and civilians to inform and convince all personnel that unnecessary damage to the environment is counterproductive to the training mission; and 4) Training Requirements Integration (TRI) incorporates a connection between training and land management that places consideration of land condition in the training planning process.

Land management should not only provide for environmental and natural resource protection, it should also support the training mission.

Fort Lewis

Fort Lewis Military Installation is 86,176 acres located in western Washington approximately 35 miles south of Seattle and 7 miles northeast of Olympia. Fort Lewis is in Pierce and Thurston Counties. The installation is boarded on the north by McChord Air Force Base (AFB), Nisqually Wildlife Refuge, and suburban and commercial development; on the east and south by rural areas, forested land, and several small communities; and on the west by Puget Sound, the Nisqually Indian Reservation, and the rural areas that surround Olympia.

Major land uses within the boundary fall into four principal categories: 1) the cantonment area (10,603 acres), which includes residential, administrative, commercial, industrial, and open space uses; 2) training areas (63,062 acres) which includes maneuver and special use areas; 3) Gray Army Airfield; and 4) impact areas (12,511) which includes the North, Central and Artillery Impact Areas.

Fort Lewis accommodates multiple non-military activities including: commercial timber harvests; recreational uses such as hunting, fishing, horseback riding, and other outdoor activities; and Native American traditional way of life activities practiced by the Nisqually Tribe.

Fort Lewis employs 5,400 civilian personnel, supports approximately 20,000 Reserve Component soldiers such as National Guard, Navy, Air force, Marines, and British Forces, and is home to 20,000 Active Component soldiers.

The units on post include: Armor, Infantry, Artillery, Supply, Transportation, Medical, Rangers, and Special Forces.

Land Management

Military training land is a substantial asset to the installation for supporting the training mission. The land provides a realistic environment for field training. Impacts of military activities on natural resources and training lands have been overlooked or little understood. Installation lands are scrutinized by Federal and State legislation, local land owners, and public environmental groups for protection of the natural resources. A perplexing situation for military planners and land managers emerges since realistic training must be conducted for support of National Defense. Therefore, an Army initiative, Integrated Training Area Management (ITAM), was developed to address natural resource and training area management. ITAM is a unique program that integrates the training mission and land management in a systematic manner.

Integrated Training Area Management

ITAM is a comprehensive training area management program that is an Army initiative developed to address land management problems. The program is designed to integrate the military mission, natural resource stewardship, and environmental compliance. It provide for the maintenance of Army training land in order to ensure quality training and realism, reduce environmental damage, and to educate

the public that the Army is a conscientious land steward.

The ITAM objective is to inventory, monitor, and evaluate the trends and capability of the training lands; to enhance, improve, and repair the training lands; to encourage land stewardship through an educational program; and to integrate training and land management. These objectives are met through four components of the ITAM program: Land Condition Trend Analysis (LCTA); Land Rehabilitation and Maintenance (LRAM); Environmental Awareness (EA); and Training Requirements Integration (TRI). The ITAM program was implemented on Fort Lewis in 1991.

Land Condition Trend Analysis

The LCTA component inventories, monitors, and reports the principles of sustained yield, land stewardship, and multiple use of military land resources. The LCTA objectives are to evaluate the capability of lands to meet multiple use demands on a sustained basis, monitor the changes over time, evaluate the changes in terms of current land use, and recommend changes to insure long-term resources availability. These objectives are accomplished through standardized data collection, analysis, and reporting methods. The data compiled by the LCTA program are used to quantify soil characteristics, physical evidence of military and non-military related disturbance, botanical composition, vegetation cover, bird and small mammal species and populations, and the presence or absence of endangered, threatened, and sensitive plant species. The data are collected from two types of permanent field plots: core and special use. The core plots are allocated in a stratified random procedure based on soil mapping units and land cover type. This allows for data extrapolation at the installation level. Special use plots are located subjectively in areas identified as unique or critical habitat related to sensitive plants or animals and current training requirements.

1992

(1) Initial Inventory - Core Plots
The summer of 1992 was the first year for the LCTA Program. The LCTA field crew completed an initial vegetation inventory of 142 core plots and collected plant specimens for the herbarium and species list. Bird and small mammal surveys were completed on 60 core/wildlife plots.

1993

(1) Monitor - Core Plots
The 1993 field season involved collecting more plants for the herbarium and species list, mapping noxious weed colonies, and monitoring the original 142 core plots. The field crew relocated 140 core plots, however, they could not find two plots. The crew managed to find the 25 m point on those plots, so they replaced the base stake. These two plots should be invalid, however, we can still use the data as long as the same base stake is used consecutively. A bird survey was completed on 60 core/wildlife plots. A small mammal survey was not completed because of no trapping on Fort Lewis.

(2) Initial Inventory - Special Use Plots

Personnel within the ITAM program decided that special-use plots needed to

be established and inventoried on 13th Division Prairie. This prairie contains high quality vegetation and was an area being focused on for stationing of the 3rd Brigade. Personnel in the GIS Lab randomly allocated 45 special-use plots on 13th Division Prairie. There were 15 plots allocated on the forest/prairie transition to study the changes in vegetation and soils with encroachment of trees, 10 plots along the Muck Creek riparian zone to study riparian vegetation, and 20 plots throughout the entire prairie to study vegetation and soil degradation. Bird or small mammal surveys were not completed.

ROTC outlined a tracked vehicle training session at Range 74 and it was brought to the attention of ITAM personnel. It was decided that special-use plots would be placed at Range 74 to study tracked vehicle effects on prairie soils and high quality native prairie vegetation. The LCTA crew randomly allocated 5 plots according to the usage of the range by ROTC. Bird or small mammal surveys were not completed.

Range 74 was monitored twice during the summer of 1993. The LCTA crew collected data on vegetation and soil degradation after the tracked vehicles had been out doing maneuvers for a couple days. When the training session was completed, the LCTA crew went back to collect more data on vegetation and soil degradation.

1994

(1) Monitor - Special Use Plots

The 1994 field season involved collecting more plants for the herbarium and species list, mapping noxious weed colonies, and studying prairie restoration and natural succession. Since prairie restoration and natural succession are such an interest, Range 74 is monitored on a yearly basis. Bird or small mammal surveys were not completed.

(2) Initial Inventory - Special Use Plots

ITAM personnel on Fort Lewis decided that an comprehensive study of the prairies was a priority, so special-use plots were established and inventoried on high quality prairies. These special use plots will be used to ascertain the success of prairie restoration efforts, determine the quality of the area, assess the habitat of threatened, endangered, and sensitive species, and document the effects of burning.

Personnel in the GIS lab randomly allocated 20 plots on Marion Drop Zone, 25 plots on Johnson Prairie, 45 plots on Lower Weir Prairie, and 45 plots on Upper Weir Prairie. Since some of the plots overlapped, were in forested sites not identified as forest in GIS, or were located on a road, the number of plots decreased to 17 plots on Marion Drop Zone, 17 plots on Johnson Prairie, 30 plots on Lower Weir Prairie, and 40 plots on Upper Weir Prairie. Bird or small mammal surveys were not completed.

1995

(1) Monitor - Core and Special Use Plots

The 1995 field season involved collecting more plants for the herbarium and species list, mapping noxious weed colonies, and studying species diversity and composition by monitoring 142 core plots and 50 special-use plots.

The field crew relocated the 130 of the 142 core plots, 33 of the 45 special-use plots on 13th Division Prairie, and 3 of the 5 special-use plots on Range 74. A bird survey was completed on the 60 core/wildlife plots and 8 special-use plots on 13th Division Prairie and Range 74. The special-use/wildlife plots were selected by habitat type such as prairie, prairie/riparian, and prairie edge. Small mammal surveys were not completed.

(2) Initial Inventory - Special Use Plots

An initial inventory of 3 special-use plots was conducted in the Upper Weir Prairie oak woodland that had been selected for Douglas-fir/Oak Woodland thinning project and 1 special-use plot on Range 79 for species composition of a high quality prairie. The 3 plots in the thinning project were inventoried prior to the Douglas fir timber sale and thinning.

1996

(1) Monitor - Special Use Plots

The 1996 field season involved collecting more plants for the herbarium and species list, mapping noxious weeds along the Nisqually River, and studying prairie restoration and natural succession. The crew relocated and surveyed 17 plots on Marion Drop Zone, 17 plots on Johnson Prairie, 30 plots on Lower Weir Prairie, and 40 plots on Upper Weir Prairie. After the plots on Johnson Prairie were surveyed a fire occurred, 5 plots near that location were resurveyed. The additional plots established and original plots on South Lower Weir were monitored after tracked vehicle damaged occurred in the area. The original base stake was not located on all of the plots; however, the crew managed to find the 25 m point or relocated the site using photographs. A replacement base stake was then used in those cases.

(2) Initial Inventory - Special Use Plots

The LCTA component is beginning to study restoration efforts, natural succession, and training/maneuver damage on a more regular basis. The crew established and inventoried 10 plots at Mortar Point 10, 6 plots in oak woodlands (2 at Mortar Point 2, 1 at Range 58, and 3 at Training Area 7S), and 2 at South Lower Weir Prairie. Bird and small mammal surveys were conducted at sites that were selected by habitat type. A total of 20 plots were established.

Wetlands

The wetlands and riparian areas on Fort Lewis are poorly represented by LCTA core plots. Only 2 core plots are established in wetlands and no core plots were allocated in riparian areas. In the Muck Creek riparian area 10 Special use plots were established. These plots are imperative for land managers to determine the effects of training on vegetation and soil compaction. It is necessary that our wetlands and riparian areas are inventoried and studied. Instead of allocating special use plots in these areas, field crews have completed site specific visits looking for ETS plant species, undiscovered plant species for the Fort Lewis species list, and noxious weeds.

The ETS plant species found in wetlands are Howellia *(Howellia aquatilis)*,

Bristly sedge *(Carex comosa*), and Green-fruited sedge *(Carex interrupta)*.

The following is a list and description of Washington State listed noxious weeds found in wetlands:

Purple loosestrife (*Lythrum salicaria*): A Washington State "Class B Designate" noxious weed which is mandatory to control. Purple loosestrife was found in MacKay Marsh in 1994. It prefers moist soils and full sun. It invades wet meadows and pastures, marshes, lake shores, stream and river banks, irrigation and drainage ditches, and storm water retention basins. Purple loosestrife aggressively infests wetlands and crowds out native wetland vegetation.

Meadow Knapweed (*Centuarea jacea var. nigra*): A Washington State "Class B Designate" noxious weed which is mandatory to control. Meadow Knapweed was discovered along the Nisqually River and Transmission Line Road in 1993. It grows in moist areas such as irrigated pastures, meadows, irrigation ditches, along rivers and streams, and in forest openings. Canada thistle (*Cirsium arvense*): A Washington State "Class C" noxious weed which is recommended to control. It is a very troublesome perennial weed that is widespread in Washington. Canada thistle infests cultivated areas as well as dry and riparian areas.

Forests

The forests; coniferous, deciduous, mixed, and plantations, were well represented by the initial allocation of core plots. There were 116 core plots allocated in forested areas. Of the 116 core plots allocated; 75 plots are in coniferous forests, 4 plots in Ponderosa pine *(Pinus ponderosa*) forests, 18 plots in deciduous/coniferous forests, and 19 plots in coniferous plantations. The forests on Fort Lewis will not need additional plots allocated unless there is an area of concern, such as Ponderosa pine stands. The forests should have site specific visits looking for ETS plant species and noxious weeds. The ETS plant species that has been found in forested sites is Small-flowered trillium *(Trillium parviflorium*). The noxious weeds that have been found are Meadow knapweed and Canada thistle.

Prairies

Prairie (grassland) ecosystems were not well represented with core plots. Within the 20,000 acres of prairie only 24 core plots were allocated; 12 plots in open prairie, 8 plots in prairie/Scotch Broom, and 4 plots on the prairie edge. Since the prairies were poorly represented, the LCTA program allocated numerous special use plots. In 1993, 45 special use plots were established and inventoried on 13th Division Prairie and 5 plots on Range 74. In 1994, 109 special use plots were established and inventoried on various high-quality prairies. Aster curtus is a Federal Candidate and a Washington State Sensitive plant species that thrives on Fort Lewis prairies.

The following is a list and description of Washington State listed noxious weeds found in forests:

Diffuse knapweed *(Centuarea diffusa*): A Washington State "Class B Designate" noxious weed which is mandatory to control. It grows in many habitats, from grasslands to open timber. It usually infests disturbed areas and will invade

any well-drained site that has plenty of sunlight.

Spotted knapweed *(Centuarea maculosa*): A Washington State "Class B Designate" noxious weed that is mandatory to control. It invades soils derived form glacial till or outwash such as pastures, forest openings, and grasslands. It grows in disturbed areas and along roads.

Leafy spurge *(Euphorbia esula*): A Washington State "Class B Designate" noxious weed that is mandatory to control. It invades moist areas as well as dry upland sites of rocky, shallow soils. It is a very persistent and competitive weed that adapts well and will dominate an area rapidly. Leafy spurge has only been located across the road from Range 93. Roy Corn with the assistance of Grounds has been actively eradicating leafy spurge in the area.

Tansy ragwort *(Senecio jacobaea*): A Washington State "Class B Designate" noxious weed which is mandatory to control. It invades pastures and open woodlands and is poisonous to cattle and horses. A long-term commitment of removal is needed because the seeds may persist for up to 15 years in the soil.

Canada thistle (description is listed above)

Oak Woodlands

Oak woodlands were also poorly represented by core plots. Only 4 core plots were allocated in oak woodlands and most of these stands were mixed with Douglas-fir. ITAM personnel considered the importance of oak woodlands and decided to establish special-use plots is some of the larger stands. In 1995, 3 plots were allocated in the thinning project and in 1996, 6 plots were allocated in areas were LRAM was removing Scotch broom and small Douglas-fir. *Aster curtus* and *Trillium parviflorium* are found in oak woodlands. Noxious weeds that have been found in oak woodlands are Diffuse knapweed, Tansy ragwort, and Canada thistle.

Land Rehabilitation and Maintenance

The LRAM component promotes the improvements and repairs of disturbed land. The LRAM objective is to implement improvements and repairs of disturbed land, improve vegetation to enhance cover and concealment for training activities, improve vegetation cover for control of runoff to reduce soil loss, protect long-term productivity of riparian resources, control sediment transport to protect wetland resources and comply with water quality standards, and repair other landscape damage for safety and continued availability of land for training. The LRAM mission is met by construction projects designed to maintain, rehabilitate, and repair the land.

1992

LRAM field work began during the summer of 1992 with improvements to training areas in prairie (grassland) ecosystems. This involved Douglas fir slashing and Scotch broom reduction on prairies throughout Fort Lewis. Douglas fir trees of 10" DBH and less were removed from the edges of Lower and Upper Weir Prairies, Johnson Prairie, and 13th Division Prairie.

1993

The 1993 field season involved more Douglas fir slashing and Scotch broom reduction on Upper Weir Prairie and Marion Drop Zone. The Douglas fir trees varied in size from 12" DBH and less in the center and southeast edge of Upper Weir Prairie. Scotch broom was also removed from these sites. The smaller trees were chipped and the larger trees were left for firewood cutters. In addition, the crew replaced culverts and improved the Cabin Creek area.

1994

The 1994 field season did not occur because of lack of funding.

1995

The 1995 field season involved maintenance activities include maintaining training lands, firing points, observation posts, and training areas, by cutting Scotch broom with motorized brush cutters and a tractor and bush-hog, cutting small Douglas fir trees with chainsaws, placing siber stakes and mitigation signs, and implementing restoration actions.

The field crew mechanical removed Scotch broom and cut Douglas fir trees in the 13th Division Prairie RNA, Upper and Lower Weir Prairies, and Johnson Prairie. They emplaced siber stakes and mitigation signs in Training Areas 7S, 13, 14, 15 and Marion Drop Zone, collected graminoid and forb seeds for propagation at IFA Nursery and University of Washington Center of Urban Horticulture. They also completed habitat restoration and revegetation projects on Mortar Point 10 and in Training Area 15, and implemented and conducted a Scotch broom monitoring project for 13th Division Prairie, Johnson Prairie, and Upper and Lower Weir Prairies.

The LRAM component assisted the Forestry Branch with a timber sale in an oak woodland/Douglas fir stand between Upper and Lower Weir Prairies. Commercial grade timber was marked by the Forestry Branch, then felled and limbed with the least amount of damage to oaks by the Private Industry Council/Displaced Loggers. The felled trees were then removed by a commercial operator.

1996

The 1996 field season involved maintenance activities include maintaining training lands, firing points, observation posts, and training areas, by cutting Scotch broom with motorized brush cutters and a tractor and bush-hog, cutting small Douglas fir trees with chainsaws, placing/replacing siber stakes and mitigation signs, and implementing restoration actions.

The field crew mechanical removed Scotch broom and cut Douglas fir trees in the oak woodland enhancement project on Upper Weir Prairie, various firing points and Firing Ranges, Mortar Point 2 Oak woodland, Mortar Point 10 perimeter, Training Area 7S siber staked area, 13th Division Prairie, southeast edge of Upper Weir Prairie, and Johnson Prairie perimeter. They replaced siber stakes and mitigation signs in Training Areas 7S, 13, 14, 15, 21, and 22. They collected graminoid and forb seeds for

propagation at IFA Nursery and University of Washington Center of Urban Horticulture. The crew completed habitat restoration and revegetation projects on Mortar Point 10 and in Training Area 15 and 23. They also continued the Scotch broom monitoring project.

The LRAM component assist the Forestry Branch with a project to enhance the Ponderosa pine stand. Douglas fir between 3" DBH and 8" DBH were felled and left in place unless there was a large concentration of slash. This project was conducted by the Private Industry Council/Displaced Loggers in Training Areas 6, 10, and 12.

Wetlands

The LRAM field crew improved portions of Cabin Creek. The crew replaced culverts, extracted I-beams and culverts that had been washed out, removed Beaver dams, and maintained the road.

Other wetland project that involve the LRAM component include tracked and wheeled vehicles crossing creeks, rivers, and lakes. The projects encompass identifying crossing sites, establishing a hardened crossing, posting the sites, and maintaining the sites.

Riparian Areas

Riparian areas also include tracked and wheeled vehicle access. The LRAM component assists with implementation and maintenance of siber stakes and signs as well as designating the area as off-limits.

The LRAM crew plants oak seedlings, cottonwood, willow, and oregon ash cuttings in the riparian areas along Muck Creek in 13th Division Prairie.

Prairies

The encroachment of Douglas-fir and exotic species such as Scotch broom within south Puget Sound prairie grasslands is a major cause to the loss of a unique habitat. Protection from wildfires has attributed to a loss of the habitat since historically the prairie grasslands were intentionally burned by Native Americans to drive game into hunting range, promote favorable conditions for food and medicinal plants, and provide lush forage for livestock. These prairie areas are now used as Drop Zones, Firing Points, and Training/Maneuver Areas as well as Research Natural Areas.

The LRAM crew improves the prairies for military training as well as keeping a unique ecosystem by assisting with prescribed burning, opening edges, and clearing Scotch broom and Douglas fir.

Oak Woodlands

Many oak woodlands have been degraded throughout Fort Lewis through pest plant invasion and fire suppression. Douglas fir and Scotch broom are the main invaders of these woodlands. Douglas fir trees overtop the oaks resulting in stunted and dead oaks. Scotch broom negatively impacts the understory by shading out native understory and making it impassible to military training. Thus, more training

happens in open high quality prairie areas.

The LRAM crew has mechanically removed Scotch broom with brushcutters and a tractor/bush-hog and removed Douglas fir trees 8" DBH and less.

Environmental Awareness

EA component within ITAM that deals with the education of leaders and troops on environmental and natural resource damage that can result from maneuver and training operations. The problems of environmental and natural resource damage must be addressed by an installation wide comprehensive educational program that informs and convinces all personnel that unnecessary damage to the environment is counterproductive to the training mission. EA can be accomplished by environmental protection handbooks, posters, interpretive trails and centers, and briefings that include slide shows and videotapes.

Training Requirements Integration

TRI component within ITAM that incorporates a connection between training and land management. Land management should not only provide for environmental and natural resource protection, it should also support the training mission. Fort Lewis currently has a similar agreement between Range Control/Area Access, Military Trainers, and the Environmental and Natural Resources Division. Land management should not only provide for environmental and natural resource protection, it should also support the training mission.