THE RATTLESNAKE HILLS (HANFORD) ELK STRATEGIC MANAGEMENT PLAN

Washington Department of Fish and Wildlife
(February 2000)

INTRODUCTION

A rapidly expanding population of Rocky Mountain elk (Cervus elaphus nelsoni) on the Fitzner-Eberhardt Arid Lands Ecology (ALE) Reserve of the Hanford Site, resulted in the Washington Department of Fish and Wildlife's (WDFW) development of this plan. The ALE is a restricted access area with unique habitats and is administered by the U.S. Fish and Wildlife Service (USFWS). The USFWS is currently developing a Comprehensive Conservation Plan (CCP) for the management of the ALE. Conflicting management issues of the elk resource will be an important component of the plan. The CCP draft should be completed by midsummer 2000, and a step-down plan process will be used to more fully describe elk management and other major issues. The step-down plan, generated through the CCP, will prescribe a coordinated effort between the USFWS, Department of Energy (DOE), Tribes, and WDFW for the long term management of the elk resource, (Jeffrey Haas 2000 personal communications). The risks of elk damages to the ALE Reserve's unique habitats and adverse effects of elk to adjacent private lands with high risk of crop and property damages are key factors that require the development and implementation of this plan as soon as possible.

OBJECTIVE

This plan will provide the base information, discuss alternative actions and set the imminent direction for the cooperative management of the elk population on ALE and adjacent lands. Specifically, the purposes of this plan are to:

- Provide background information about the Rattlesnake Hills elk population on the Hanford Site and Game Management Units (GMUs) 371 and 372.
- Identify the issues associated with the Rattlesnake Hills elk population.
- Identify, coordinate and cooperate with all parties including Indian tribes as co-managers; federal, state, local governments and agencies; private landowners; and other parties holding an interest in the management of this resource.
- Discuss various options and alternatives for current and future management of this sub-population of the Yakima Elk Herd.
- Ensure that actions carried out in this plan do not preclude management options in the CCP currently being developed by the USFWS.

BACKGROUND

History and Description

In Washington the Roosevelt elk (Cervus elaphus roosevelti) is indigenous to the Pacific coastal region of Washington and Rocky Mountain elk reside primarily in eastern Washington. Washington ranked sixth in North American continental elk population in 1995 (Bunnell, 1997). The statewide estimate of

62,200 is about equally represented by the two subspecies.

Zooarchaeological evidence suggests elk historically inhabited the arid shrub steppe habitats of the Columbia Basin, but were hunted to extinction by 1850 (McCorquodale 1985, Dixon and Lyman 1996). Elk were reintroduced to various locations throughout the state. In 1913, 50 elk from Montana were released in the Naches River area of Yakima County, resulting in the reestablishment of the Yakima herd (McCall 1997a). Additional transplants between 1913 - 1930 into the Blue Mountains and the Colockum area resulted in the reestablishment of these major elk herds in eastern Washington (Appendix E).

The elk population in Washington was estimated at 15,000 in 1930 and peaked in 1970 at approximately 69,000 (McCall 1997b). More recently, populations have shown a declining trend except the Yakima and northeastern Washington populations. The Rattlesnake Hills elk herd, considered a sub-population of the Yakima herd, has shown a dramatic and continuous increase during its history.

According to Rickard et al. (1977) the Rattlesnake Hills elk herd had its beginning in 1972. We speculate that these animals came from the Yakima population directly west of the ALE some thirty airline miles distant.

WDFW has attempted to control the size of the Rattlesnake Hills elk population through liberal hunting seasons. From 1986 to the present, seasons have varied from thirty to fifty-nine days in length with a mix of either-sex and bulls with visible antlers as legal animals. Harvest has been inconsistent from year to year primarily because of poor hunting access onto private lands and no hunting access onto the ALE. A total of 102 elk were harvested in 1999. This increased harvest has been a direct result of increased cooperation by some landowners.

Description of the site:

The Rattlesnake Hills elk population uses the Fitzner-Eberhardt Arid Lands Ecology (ALE) Reserve; a 330-km² (127 mi²) portion of the U.S. Department of Energy's Hanford Site. McCorquodale et al. (1988) described the site as, *"characterized by shrub-steppe vegetation, primarily grass-shrub associations dominated by big sagebrush (Artemisia tridentata) and blue bunch wheatgrass (Agropyron spicatum), Sandberg bluegrass (Poa sandbergii), or cheatgrass brome (Bromus tectorum) and is surrounded by a 110-cm, 5-strand barbed-wire fence that does not restrict elk movements. Annual precipitation on the arid site varied about a long-term mean (1965-82) of 16 cm."*

Public access to the Hanford Site and the ALE is closed and strictly guarded. The most prominent feature of the region is Rattlesnake Mountain that rises to 1,074m near the southern boundary of the ALE. Rattlesnake Mountain and hills are an east-west trending mountain range located between the cities of Yakima and Richland. The Columbia River and Yakima River intersect at the Tri-cities. Intense agriculture occurs along the Yakima River. The Rosa and Sunnyside canals provide irrigation

water for farming generally below 400m in elevation (Appendix A).

Land ownership:
Most of the area is in private ownership. We recognize the following major ownerships for the area:

DOE	Hanford Site including the Fitzner-Eberhardt Arid Lands Ecology Reserve, Saddle Mountain National Wildlife Refuge, and Wahluke Wildlife Area.
WDFW	Rattlesnake Slope Wildlife Area.
US Army	Yakima Training Center

The Hanford Site is a highly sensitive area because of its former use in nuclear material production. The ALE is an ecological reserve, designated in 1972 as *"Rattlesnake Hills Research Natural Area"* by the Atomic Energy Commission. The ALE is also a *"National Environmental Research Park"* to conduct research, protect natural resources and remains a buffer for the Hanford Site, but is administered by the U.S. Fish and Wildlife Service. The Laser Interferometer Gravitational Wave Observatory and the Gravitation Physics Laboratory are two facilities located on the ALE. They strictly control public access.

The Yakima Training Center is another restricted access area used by the U.S. Army for military training. The military controls public access on this site. They allow limited access for recreational hunting.

Cooperators:
The following federal, state and local governments are cooperating and coordinating with each other and private landowners in the development and implementation of this plan.

Yakama Indian Tribe
Nez Perce Tribe
Umatilla Tribe
Wanapum Tribe
U.S. Department of Energy
U.S. Fish and Wildlife Service
U.S. Army - Yakima Training Center
Benton County
Yakima County
Private landowners
Washington Department of Fish and Wildlife

The Washington Department of Fish and Wildlife, Final Environmental Impact Statement (FEIS) for Washington State Elk Management Plan was approved by the Director on January 29, 1997. The development of the FEIS complied with the State Environmental Policy Act. During the formal public comment period on the Draft EIS, we held four public meetings in the state. We sent copies of the draft to more than 500 organizations, including agencies, sporting groups, counties, environmental

groups, Indian tribes, and private industry for review and comment. We also sent copies to 600 individuals. Input received during this extensive review process helped shape the FEIS. The FEIS contains five alternatives for managing elk populations in Washington, including WDFW's Proposed Action (McCall 1997b).

A statewide elk management plan was written from the preferred alternative, approved by the Fish and Wildlife Commission and implemented as a guidance document for management of the species. The following statewide elk management goals and policies apply to the Rattlesnake Hills elk population:

- Discourage elk numbers from increasing in Benton County.
- Place higher priority on acquiring management control of critical elk habitat and assist private landowners in managing their property for elk.
- Increase involvement in partnerships, interagency cooperation, consultation, and planning to protect and enhance elk habitats.
- Discourage human development in areas critical to elk by working with counties and municipal governments.
- Acknowledge that WDFW manages elk cooperatively with federally recognized treaty tribes where federally secured hunting rights of off-reservation treaties are exercised. Work with tribes, on all levels of elk management within ceded areas where tribal and non-tribal hunting occurs; to report and distribute harvest, identify the geographic extent of treaty rights, enforce tribal hunting activities, and maintain and enhance elk populations.
- Reduce damages caused by elk to human property and inform the public on how to live compatibly with elk.
- Reduce human/elk conflicts in sensitive areas by identifying elk exclusion zones.
- Reduce elk damage to private land by increasing enhancement of habitats on state land.
- Improve hunter ethics to enhance public images of hunters and hunter/landowner relations.
- Use the best scientific information to manage elk populations for sustained yields as long as populations are compatible with tolerance for elk on private land.
- Manage elk for a variety of recreational and educational uses including harvest, hunting, viewing opportunities, and study.
- Maintain and enhance elk habitats to ensure productive populations.
- Cooperate in management of elk with federally recognized treaty tribes where off-reservation hunting rights are exercised.
- Make information on elk management more readily available to the public.

RATTLESNAKE HILLS ELK POPULATION BIOLOGY

Surveys:

The U.S. Department of Energy supported research and monitoring of the Rattlesnake Hills elk soon after elk arrival. Detailed observations of the ALE herd started in 1982-83 winter when DOE initiated a telemetry study, (McCorquodale et. al, 1988). *"Earlier records (1975-81) were based on maximum counts made during approximately weekly aerial security patrols of the ALE Reserve."* (McCorquodale et. al, 1988). Currently, Pacific Northwest National Laboratory (PNNL)

conducts annual elk surveys under contract with the DOE. Management of the Rattlesnake Hills elk herd requires a cooperative effort between the USFWS, Tribes, DOE and WDFW with an annual review of management actions and population status. WDFW will address specific management details further in the Yakima Elk Herd Plan.

Elk distribution and seasonal movements:
Current elk distribution is centered in the ALE on a year-long basis. Movement out of the ALE to adjacent landownership has involved more animals as the population has grown. Elk have also been periodically observed north of the Columbia River on the Wahluke Wildlife Area in Franklin and Grant counties.

Staff have observed several small elk herds south of Highway I-82 in Benton County. Hunter harvest locations provided by WDFW biologists confirm elk were legally harvested in these areas. These southern groups may have been started from animals coming off the ALE. Elk also move out of the ALE into the southeastern portion of the Army's Yakima Training Center (YTC).

In recent years a herd of more than 100 elk has been using the YTC in the Badger Gap area. These animals are believed to have immigrated from the Umtanum and have caused damage in the Badger Pocket area (Stream, 1999 personal communications).

Elk are frequently observed on the Rattlesnake Hills and Yakima Ridge in Yakima and Benton counties. As expected the most frequent observations are next to the ALE western and southern borders. However, not all of these elk observations may be attributed to movements out of the ALE.

Elk movements in and out of the ALE are common occurrences. The core area of distribution has been the ALE and in particular the Cold Creek Valley area. The initiation of hunting on the perimeter of the ALE has generated movements in and out of the ALE and to private lands closed to hunting to escape harassment.

Population estimates:
"The ALE elk population expanded from an estimated eight individuals in 1975 to a documented 89 individuals in 1986." (McCorquodale et al., 1988). Eberhardt et al. (1996) continued with the elk surveys on the ALE and "*at least five aerial counts were conducted annually for the post calving season and post hunting seasons (Dec-Feb) estimates. Maximum counts in each of these survey periods were used as population estimates."* (Table 1). Brett Tiller, Pacific Northwest National Laboratory provided the updated information in Table 1. Eberhardt et al. (1996) Table 1 has some irregularities that we acknowledge. We use this table to show the general increasing and significant population growth trends over the period of years. McCorquodale, (Letter dated 20 January 2000) suggests, *"Year's of lower than average cow:calf ratios immediately precede these years of excess adult cows and strongly suggest counting bias (the recruitment data in some years is particularly suspect)..."*

Elk Herd Trends:

The Rattlesnake Hills elk have shown a consistently high level of productivity over the seventeen years that data has been collected. The average calf/adult cow ratio over the period of measurement was 58/100. The maximum count population estimates have shown an increasing trend since 1983, with a population of more than 800 elk.

Table 1 Maximum (summer count) elk population estimates for the Rattlesnake Hills

Year	Males			Females			Total Calf's	calf/ cow	calf/ adult cow	Total Elk	% increase over previous year
	adult	yrl.	total	adult	yrl.	total					
1983	5	3	8	16	3	19	13	.68	.81	40	
1984	7	12	19	20	1	21	15	.71	.75	55	.38
1985	18	7	25	21	8	29	17	.59	.81	71	.29
1986	22	8	30	29	9	38	21	.55	.72	89	25
1987	14	5	19	32	16	48	27	.56	.84	94	.06
1988	12	13	25	33	14	47	23	.49	.70	95	.01
1989	18	10	28	38	13	51	23	.45	.61	102	.07
1990	22	12	34	49	11	60	21	.35	.43	115	.13
1991	19	12	31	70	9	79	23	.29	.33	133	.16
1992	30	11	41	93	12	105	44	.42	.47	190	.43
1993	33	19	52	102	25	127	59	.46	.58	238	.25
1994	43	21	64	117	37	154	73	.47	.62	291	.22
1995	46	30	76	141	33	174	96	.55	.68	346	.19
1996	58	33	91	179	66	245	119	.49	.66	455	.32
1997	95	59	154	220	60	280	157	.56	.71	591	.30
1998	136	78	214	276	78	354	144	.41	.52	712	.20
1999*	196	72	268	338	72	410	160	.39	.47	838	.18

*May be adjusted after 1999 post-hunting survey results (Brett Tiller, PNNL).

Population Dynamics and projections:

Lou Bender, WDFW's Deer and Elk Specialist, modeled the Rattlesnake Hills elk herd based on PNNL population information provided then. Some adjustments were made in the 1998 data following additional survey information therefore the population data used in this model are not the same as found in Table 1.

Minimum population counts on the Fitzner-Eberhardt Arid Land Ecology Reserve (ALE) elk population showed a growth from forty elk in 1983 to 738 elk in 1998 (Table 1). This rate of population growth is equivalent to an annual rate of increase of ~20%, similar to that modeled by Eberhardt et al. (1996). To evaluate potential management options for the ALE herd, Pop-2 software was used to build a deterministic population model of the ALE herd. The goal for the model was to (1) mimic the minimum population estimates observed on the ALE; (2) mimic mortality rates derived by Eberhardt et al (1996); and (3) mimic observed herd sex and age ratios.
Less emphasis was placed on sex and age ratios than the first two criteria, since these ratios

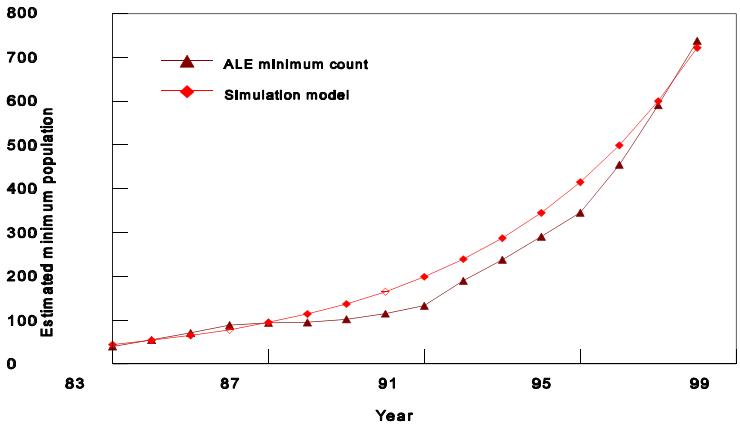

Figure 1 Minimum annual population counts of the ALE herd and simulated population size using the Pop-2 model.

tended to vary substantially in a manner that suggested counting biases rather than a biological phenomenon. The developed Pop-2 model closely mimicked the observed population trends of the ALE herd (Figure 1).

RECREATIONAL ELK HUNTING ADJACENT TO HANFORD SITE

Annual elk hunting seasons have been open adjacent to the Hanford Site for many years. Appendix B

provides a history of the elk hunting season types, dates, and legal animal descriptions authorized by the Fish and Wildlife Commission. No hunting has occurred on the Hanford Site since its establishment. The ALE has also been closed to hunting and trespass. Permission of the U.S. Army authorizes hunting on the Yakima Training Center.

Harvest:
Legal elk harvest for Game Management Unit 372, Kiona has been monitored through an annual harvest questionnaire and through report card returns of successful harvest. Post season hunter activity questionnaires are designed to sample approximately 10% of the licensed hunters. Follow-up notices (three waves) are sent to address non response bias. The report card surveys samples only the successful hunting activity.

At the Game Management Unit level, the accuracy of the harvest information collected is suspect. Appendix C records the post season hunter harvest questionnaire data for GMU 372 from 1980-1998.

The reported harvest in the Kiona Unit has ranged from three to eighty-eight animals for the period 1984-1998, except 1990 when we did not conduct a harvest questionnaire survey. Harvest has varied widely from year to year and over the long term.

Prior to 1995 a single Game Management Unit, GMU 370 (Priest Rapids) was described for the area west of the site. In 1995, GMU 370 was split with the northern portion; The Yakima Training Center to I-90 was described as GMU 371 (Alkali) and south of The Yakima Training Center was described as GMU 372 (Kiona). In an attempt to find out where the harvest of elk was occurring, an analysis of the harvest report cards from thirty-eight successful hunters from 1996-1998 (Appendix D) provided some information on kill locations with inference to elk distribution during the hunting season.

THE ISSUE

The Rattlesnake Hills elk population has shown a typical sigmoidal growth and is currently estimated to be more than 800 animals. Based on the current trend, and without intervention, we expect this population to exceed 1000 animals in the year 2000. As the population has grown, the numbers of animals leaving the ALE site has increased. Based on observations of adjacent landowners, Rattlesnake Hill's elk are also spending increasing amounts of time outside the ALE. A recent population of approximately 120 animals may have established a permanent home on the Sagebrush Ridge area north of the town of Prosser.

Landowners are increasingly fearful of significant damage to crops or destruction of property as elk advance further into high value crop (orchard and vineyard) areas. Only recently have written complaints of damage on farm crops been received. In the vicinity of Cold Creek, near the northwest boundary of the ALE, some elk damage to orchards has occurred and orchardists have installed fencing. These recent agricultural developments are especially susceptible to damage. Once elk become habituated to agricultural crops eliminating damage problems will be more difficult.

WDFW has received most reports of damage to agricultural crops and rangelands verbally. To date we have received one formal damage claim, although more are expected. WDFW records of damage complaints during the past two years show that in Benton County there were six complaints received in 1998 and seven in 1999. In Yakima County there were thirty-five complaints in 1998 and forty-six in 1999. Elk damage to private range lands results from direct competition with domestic livestock and fence destruction. Elk use of grain crops is an increasing concern as more elk have been observed utilizing this crop and for longer periods.

There are also concerns from the public that Rattlesnake Hills elk, unchecked, will damage the natural vegetation within ALE. Evidence for damage is anecdotal, however, damage to natural vegetation on the ALE may become a major issue if elk numbers are not managed. Increasing numbers of elk on the ALE is a threat to the sensitive shrub-steppe habitats of the area.

In 1998, Pacific Northwest National Laboratory (PNNL) and USFWS placed four big-game enclosures on the ALE in sagebrush stands used extensively by elk. Plans are to measure vegetative differences inside versus outside the exclosures in the fall of 1999. PNNL has taken photographs of areas on ALE depicting extensive elk trails through the vegetation. A series of trail density samples throughout ALE was collected the summer of 1999. The Nature Conservancy has mapped element occurrences (high quality plant communities) on the ALE, but there have not yet been any concentrated studies to evaluate the overall use or impacts of elk within those communities. Much of the winter use of elk on ALE occurs in the cheatgrass dominated flats next to Highway 240 (Brett Tiller, 1999 personal communications).

While hunting may be the most economical and effective tool for controlling elk numbers, the ALE and some private lands act as refuges during the hunting season. The efficiency of harvest is greatly reduced because of access limitations and in some circumstance renders hunting unsuccessful. One of the more serious problems occurring on private lands is management of elk hunters. There is a wide range of tolerance or intolerance by landowners for elk, hunters, or both. Landowners view archery hunting to reduce elk numbers as an inefficient method of control. Some landowners expressed concern that we should not view these hunts as recreational opportunity, but as a population control necessity. Some people have suggested that WDFW's harvest strategies in the past have also largely shaped the current situation. More recently, elk hunting seasons and rules for GMU's 371 and 372 have been designed to allow increased harvest by modern firearm hunters with increased seasons for any elk or anterless elk.

One of the biggest problems is that not all private landowners agree with the need to control elk and possibly designating the agricultural areas around Rattlesnake Hills and the south slope of the Rattlesnake Mountain as an elk-free zone. They have often tolerated, even welcomed a few elk and protected them. Increasing numbers of elk in proximity to agriculture or urban developments generally result in damage to private property and the predicted outcome is increasing levels of intolerance.

Elk hunting opportunities have developed with the arrival of elk on private property. Initially they viewed this as a positive event. As the WDFW relaxed regulations to encourage removal of elk, an

interesting culture has developed. Landowners sometimes view elk hunters as worse than the elk. Still, other landowners have vigorously guarded hunting opportunities for themselves and their closest friends. As long as the ALE remains closed to hunting and large acreage of private lands are closed or limited to a few select individuals, we may compromise the effectiveness of recreational hunting to control overall elk numbers in the area. Some concerns were expressed by the PNNL, University of California, and University of Washington scientists associated with the Gravitation Research Laboratory concerning hunting on the ALE . The LIGO Hanford Observatory, The Alliance for the Advancement of Science Through Astronomy, The Nature Conservancy of Washington, and The Lower Columbia Basin Audubon Society have also expressed concerns regarding hunting on the ALE. Many individuals also expressed their opinion about allowing hunting on the ALE.

Local political leaders including the Benton County Commission and State Legislature have expressed concern for the rapidly increasing elk herd in the area. Their expectation is that some elk reduction measures be started as soon as possible to avoid any further elk damage conflicts with the local residents and their property. The Benton County Commission has held public hearings on the issue and have requested immediate action by the responsible parties.

GETTING TO RESOLUTION

The Washington Department of Fish and Wildlife is responsible for the protection and management of resident wildlife including elk. Wildlife damage issues are also the responsibility of WDFW. Damage to private property caused by elk is subject to damage claims submitted by injured parties. Where elk population growth has been allowed to go unchecked, the liability from damage caused by elk also grows. Hunting is a preferred management tool used by WDFW to control wildlife populations. WDFW is directed to maximize public recreational opportunities without impairing the supply of wildlife (RCW 77.12.010).

RATTLESNAKE HILLS ELK MANAGEMENT GOALS AND OBJECTIVES ON THE ALE

Elk residing on the ALE and surrounding areas have had both positive and negative impacts to people and property. Since multiple jurisdictions are involved, it is imperative that an environment of coordination and cooperation exist. Elk are native to the Columbia Basin, but they were not present for many years before 1972. Emigrating elk from adjacent areas have now established a thrifty and productive herd on the ALE and adjacent areas primarily because they have been fully protected from hunting and natural predators are essentially absent.

Elk inhabiting the area must be managed at realistic goal levels. Otherwise, damage and nuisance problems will arise and escalate over time. Maintaining elk on the ALE will require management actions to control growth of populations. The densities of animals on the ALE are now at such a level that most local residents of the area agree that the elk population should be reduced. Some people disagree with the establishment of a minimum goal level of 300-400 elk to be maintained on the ALE. Others disagree that such a goal level is either too low or too high and still others have expressed the view that we should declare the area an elk-free zone and manage accordingly. The USFWS has

stated, "*The intention of the Service is to maintain the elk herd at a level where the integrity of the ALE as a natural area reserve would not be significantly affected. Meeting that objective may also prove to reduce elk damage upon private land.",* Jeffrey Haas, (personal communications 2000).

The elk population goal of 300-400 was selected in consultation between USFWS and WDFW following review of biological information, hunter harvest information, and landowner concerns. Some uncertainty exists whether removing 500 elk will eliminate or significantly reduce damage potential. The specific animals removed may not be the problem animals moving onto private lands. McCorquodale, (personal communications 2000) has suggested that, "*If we remove elk most prone to using private lands...., we may be very successful in meeting our objective."*

POPULATION CONTROL TECHNIQUES (Tactical Options)

Wildlife management techniques used to control population levels are varied in their utility, social acceptance, and success.

Fencing

Restricting elk movements off the ALE to neighboring private lands through fencing is one alternative for addressing damage potential. We roughly estimate that 91 kilometers of elk-proof fencing would be needed to enclose the ALE completely. Current costs estimated for construction of elk-proof fencing is $6.50 - 7.50 per linear foot (Kenneth Nolan, personal communications 2000).

Immunocontraception

This method of population control is still in the experimental stage. Miller et al. (1998) report, "*After 4 decades of research, contraceptive programs for effective wildlife damage control have not been developed and implemented (Kennelly and Converse 1997).*" He concludes, "*Immunocontraception as a technology is available today, but only in laboratory settings, pen studies, and limited field situations with small numbers of animals*." This technique is recognized as a possibility in the future, but it does not meet the objective for short term resolution of this issue.

Lethal removal

Lethal removal is an option that requires few personnel to administer. It is a technique that requires detailed planning to ensure humaneness and social acceptance. Use of trained sharpshooters can accomplish lethal removal.

Shooting with trained sharpshooters - WDF&W, Tribes, and/or U.S. Government (USFWS or APHIS-Animal Damage Control) personnel could harvest the elk. We estimate that a team of four could harvest and process five elk per day. Agency hunters could concentrate efforts after the twenty-three days of elk season to maximize harvest outside ALE.

Overall cost of this option could be reduced by hiring people to care for the meat. The estimate of $250/day/person is based on using enforcement personnel. The estimated cost of removing 475 animals would be $95,000.

Using four “shooters” with many “processors” would decrease the cost. Using a helicopter to remove dead elk out of the field to a processing area may reduce processing time but increase cost.

An important benefit would be the salvage of the carcasses for the needy and for Native American use or sale to help defray cost of the removal program. This method of control often has a serious social stigma that may prevent its application, though a majority express approval.

Hunting - Hunting by licensed hunters is an option that provides recreational opportunity as a primary benefit. Hunting can be managed to maintain populations and provide opportunities for hunting including all citizens’ hunts, special permit hunts, Advanced Hunter Education (AHE) hunts or other special hunting seasons established by Fish and Wildlife Commission authority. As co-managers of the wildlife resources tribal hunting may also be used as an elk population management tool/opportunity.

Using hunting as a tool to reduce current elk numbers on the ALE and surrounding area would require increased hunter access. Hunting on the ALE would require sanctioning by USFWS and obtaining legal authorization. An elk hunting seasons on the ALE would need regulatory approval by the Fish and Wildlife Commission regardless of land ownership.

The planning needed to address all of the concerns to potentially implement a hunting program on the ALE will require close cooperation and coordination with DOE, USFWS, WDFW, and Indian tribes.

Allocating the Rattlesnake Hills elk resource to various non tribal hunter user groups under current policy will be challenging to WDFW since the primary impetus and objective for the immediate management need of this resource is not to provide recreational opportunity but to control the growth of the elk population and lessen the adverse impacts of elk in the area as soon as possible. Hunting safety issues are also of concern since hunting would occur in proximity to human developments. After the initial push to reduce elk numbers is completed, administration of a hunt would be much easier. Provisions for allocation of wildlife resources (elk) between non tribal hunters and tribal hunters are not provided and is beyond the scope of this plan.

Hunting alone is currently not a preferred option in reducing herd size. Permit controlled hunts are not currently allowed within ALE. Hunting within the ALE may move elk into undesirable areas and/or create more potential for damage.

Hunting used as a management tool to maintain control of elk numbers on the ALE could be administered by USFWS pending final approval of their Comprehensive Conservation Plan and a step-down plan for elk management. Once the elk population is reduced to or near objective levels a limited-entry hunting program would be one way to control the number of hunters and the number and sex of animals to be removed through harvest. A liberal general hunting season, longer than currently allowed, on lands adjacent to the ALE would provide significant harvest annually if private landowners cooperate.

Live removal

Permanent corral drive trapping - Live capture removal includes a variety of techniques that can be very effective under certain conditions. Drive trapping is perhaps the least expensive method of capture over the long term. Animals are herded via a helicopter, and guided by wing fences toward a corral. The gate to the corral is closed when animals enter the confines of the pen. Animals that escape while being driven between the wing fences and the corral pen may become "trap shy" and be very difficult, or impossible, to drive into a trap again. The advantage of this method of trapping is the relative low cost of constructing a trap. However, one of the biggest disadvantages is the permanent location of the trap. Large numbers of animals may be captured in a single attempt, although multiple attempts in a single day are not likely. We estimated helicopter rates at $475/hr. WDFW will attempt to select adult cows for live trapping and removal. In some cases' bulls will be inadvertently captured. Captured bulls with antlers will be darted and antlers removed once in the corral.

There are two options in corral trapping - a permanent trap or portable trap. Relative costs of the two options are estimated as follows:

	Permanent Corral	Portable Corral
1) Helicopter contract -	$15,000	$15,000
2) Materials for corral (50 panels) and wing fence -	$ 7,000	$25,000
3) Drugs for darting bulls -	$10,000	$10,000
4) Technical staff including veterinarian-	$ 9,000	$10,000
5) Contract Labor * -	$ 5,000 - $25,000	$ 3,000 - $15,000
6) Transport to new area -	$10,500	$10,500
7) Disease testing for instate transplant	$ 9,500	$ 9,500
Total	$66,000 - $86,000	$83,000 - $95,000

*Low figure using Washington Conservation Corp (WCC), high figure using state engineering.

Estimating the efficiency of this method is difficult. Elk location, group size, cooperation and pilot skill will determine the success of the operation. All costs are probably high. Labor costs could be further reduced with the use of Americorps or volunteers.

There are significant advantages to the use of a portable corral trap. Counting on a single trap location can be risky, especially when animals become trap shy and the element of surprise is lost. An added advantage is that the trap can be moved to a new location and animals will not have to be herded extreme distances to remove specific segments of a population. The cost of manufacturing a portable corral trap is higher than constructing a permanent trap, but the utility of a portable trap and its use in other locations when needs and conditions change, offset the cost differential. Considering other alternatives for live capture, corral trapping is probably most efficient, least costly, and relatively safe technique.

Corral trapping on the ALE required archeological clearance. Sites where historical artifacts are present require more effort and expense for site clearance.

Helicopter net gunning - Net gunning operations provide a great amount of flexibility in capture operations. This technique is the most expensive but requires no trap site clearance and far fewer support personnel to handle animals. Capture locations could be changed daily with little on the ground preparation. With two helicopters working simultaneously, it would be possible to capture approximately 25-30 animals in a single day, but not consecutive days. Carl Meyer (1999 personal communications) of Hawkins and Powers Aviation stated, *"Experience has taught us that the pressure placed on a resident elk herd by the presence of the helicopter will in very short order drive that herd out of a given area, regardless of their normal reluctance to leave."* Given this fact, net gunning operations should be conducted in a spaced out schedule over several weeks or months.

Estimates of cost for net gunning operations ($350-400/elk) from two reputable companies that have considerable experience in net gunning elk capture operations suggest a combination of corral drive trapping and net gunning for remaining animals. A net gun operation could occur after the hunting season, using a professional wildlife capture crew. A conservative cost of $325 per elk was estimated using the aerial net gunning technique. The cost of trucking elk to release locations (assuming volunteers are not available) is estimated to be $1.90 per mile and twenty-five elk per truck. Calculated personnel cost assumes a minimum of four people per day for twelve days.

Net gunning would have the least impact to the soil and vegetation within ALE, but has higher risk to personnel and animals. The operation is very mobile but the most expensive. This technique would allow the targeting of specific elk residing on private lands outside the ALE.

DISPOSITION OF ANIMALS REMOVED

Every effort will be made to salvage animals that die and we will provide carcasses to charitable organizations or Indian tribes. Non-edible parts could be salvaged and provided to native Americans. A tribal representative could provide assistance in salvage of usable parts to meet their needs best. Elk that die after being drugged will not be salvaged for consumption.

Live animals will be used for augmentation within Washington for which site clearance has been approved in advance. Transplant sites within the state will receive priority. Several potential sites have been identified and special requests for augmentation initially as follows:

(1) Blue Mountains - GMU 175 (Lick Creek) in Garfield and Asotin counties.
(2) Pend Oreille - GMU 113 (Selkirk) and GMU 117 (49 Degrees North) in Pend Oreille County.
(3) Nooksack - GMU 418 (Nooksack) in Whatcom County.
(4) Green River Watershed - GMU 485 (Green River) in King County.

Several questions have been raised about the advisability of moving elk from eastern Washington to western Washington. GMUs 418, 478, and 485 are in historical Roosevelt elk range, however, these sites have previously received Rocky Mountain elk and are currently considered genetically mixed. The State of Washington received a total of 412 elk (Appendix E) from Yellowstone National Park from

1912 - 1930, Thomas et al. (1982). No DNA analysis has been done on the existing populations in the potential augmentation sites or on the Hanford Site.

Several states are actively engaged in an elk transplant or augmentation planning and clearance process. Kentucky is currently actively releasing elk and dependent upon outside sources for elk augmentation (Roy Grimes, 1999 personal communications). They have a very ambitious program to restore a wild, population of elk in southeastern Kentucky. They are interested in receiving elk from Washington. The Washington Department of Fish and Wildlife Director has the authority to transfer animals out of state as authorized by RCW 77.12.140. Elk in eastern Washington were reestablished from stock received from Yellowstone National Park and the State of Montana. Restoration efforts often require cooperation between states and sharing of resources.

RELEASE CRITERIA

- The Wildlife Program must write a release site plan, gain clearance from Land Management Agencies and Tribes, and reach consensus among private landowners of the affected area.
- A release site plan will address specific actions to handle damage problems should they arise.
- There must be sufficient biological justification for releasing elk into the proposed site.
- The proposal must meet the tests of good science to achieve the goals and objectives of the release site plan.
  (1) Disease free certification
  (2) Genetic compatibility
- The release is affordable and beneficial

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The Blue Mountains and Pend Oreille release sites are the highest priorities and the only sites identified for receiving elk in March 2000.

RELEASE SITE PLANS

1. BLUE MOUNTAINS ELK AUGMENTATION SITE PLAN - GMU-175 LICK CREEK

A. Background and Justification

The proposed release of Rattlesnake Hills elk into the Blue Mountains would occur in GMU-175 Lick Creek. The elk population management objective for this unit is 1000 elk. The current (spring 1999) population in GMU-175 is 680 elk, which is 320 below the management objective. A transfer of approximately 100 elk from ALE would increase this population's potential to reach the management objective quickly.

B. Site Description

1) Specific release sites: The proposed release site is on WDFW property in the Lick Creek drainage. The area known as the Asotin Wildlife Area is adjacent to the Umatilla National Forest. Access should not be a problem. No alternate site is necessary.

2) Potential dispersal: The elk drift fence borders the Lick Creek unit (GMU-175) on the north. However, the fence ends at the east section line of T9N, R43E, Sec. 2, which does not prevent

elk from occasionally moving around the fence onto agricultural land in GMU-178 Peola. Also, any significant movement of released elk to the east (five air miles) would put them on private agricultural lands. Two major landowners are adjacent to the Asotin Wildlife Area.

3) Land ownership: The U. S. Forest Service, Umatilla National Forest is a major landowner and has been contacted regarding the proposed release. They did not express concern with the WDFW proposed release sites. The WDFW owns the Asotin Wildlife Area, and Department of Natural Resources administered lands. Private lands in agricultural production dominate the lower elevations.

4) Coordination and cooperation: The proposed elk release site, GMU-175 Lick Creek, is within the ceded area of the Nez Perce tribe. The Nez Perce possess hunting rights, guaranteed by treaty, on open and unclaimed lands east of the Tucannon River in southeast Washington. Elk is an extremely significant cultural and spiritual resource for the Nez Perce, and tribal members desire to see the Lick Creek population continue to exist as a healthy herd. WDFW is committed to working with the Tribe cooperatively to manage the Lick Creek herd. The Tribe has expressed support for the augmentation of elk in this site pending radiological clearance. WDFW and the Tribe have also begun discussions that will lead to cooperative monitoring, population assessment and management of the Lick Creek herd.

5) Site Clearance: The proposed release site is in an area where a seasonal road closure is in effect on the Lick Creek Road. Access into the proposed release site is not normally a problem although unusual late winter storms can occur. Access problems are not anticipated.

   The WDFW contacted the following stakeholders to obtain their support and comments on the proposal:

   a) Nez Perce, Umatilla, and Yakama Tribes.
   b) The Pomeroy Ranger District, USFS.
   c) Adjacent landowners

6) Potential conflicts and resolutions: Two issues stand out that need to be addressed. They are; (1) potential for increased damage to agricultural crops on private lands adjacent to the release area on Lick Creek and (2) issues related to harvest of transplanted elk.

A monitoring program has been developed to determine movements of transplanted elk. These monitoring efforts will greatly help in determining potential for damage and quick response to damage issues. WDFW has initiated a contingency action to fund costs of helicopter hazing for controlling potential damage.

Hunting season recommendations for the area of released elk will be considered as a part of the Three Year Hunting Season Recommendation packages. We will also maintain continued negotiations and cooperative management efforts with the Nez Perce Tribe.

C. Biological Considerations

1) Numbers and composition of elk: We propose a minimum of 100 to a maximum of 200 elk for release in GMU-175.
2) Genetics: No genetic concerns have been expressed with releasing Rattlesnake Hills elk into GMU-175 Lick Creek.
3) Transport: Elk will be transported in cattle trucks or large stock trailers. Winter accessability is not a major concern for this area.
4) Timing of capture and release: The capture and release of cows\calves and yearling bulls will occur in March. The Nez Perce Tribe has expressed concern about potential stress-related complications resulting from the capture and transport operations. WDFW will work to minimize stress to animals during capture.

D. Monitoring of Released Animals

1) Marking: Approximately 10% of the animals will be radio collared. We will attempt to mark released elk with plastic, color coded, numbered ear tags depending on processing time.
2) Monitoring: Radio collared elk will be monitored a minimum of twice monthly for approximately twelve months using volunteer(s) and WDFW staff. During the initial release period we will conduct more frequent monitoring until animals settle. Particular attention will be given to movements onto private lands and potential damage conflicts. Department personnel will maintain a record of sightings of marked elk. Radio collared elk will be monitored from the air by fixed-wing aircraft and on a limited basis from ground surveys. Monitoring is estimated to require approximately three hours of flight time per survey and a minimum of thirteen aerial flights. Radio telemetry equipment and other monitoring tools will be purchased. Monitoring costs are estimated at $17,000.

E. Issue Analysis

The financial expenditure to capture and release 100-200 Rattlesnake Hills elk into GMU-175 will be cost effective. The value of elk to the state and local economy was estimated to be as high as $1,945 per harvested elk in the Blue Mountains (Myers 1999). The 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reported that trip and equipment expenditures for big game hunting in 1996 averaged $860 per hunter (U.S. Dept. of Interior, et al. 1996). In 1998 there were 5,501 elk hunters reported hunting the Blue Mountains of Washington. Using the $860 average expenditure per hunter from the National Survey, Blue Mountain elk hunters added $4,730,860 to the local and state economy in 1996. Releasing 100-200 Rattlesnake Hills elk into the Lick Creek elk population will increase the herd's potential to reach management objectives, increase recreational opportunity, increase financial returns to the local economy, and address tribal hunting rights for the Nez Perce Tribe.

The social and political realities of the proposal present some challenges. An augmentation of elk on the Asotin Wildlife Area could potentially be a significant concern to local agricultural producers. A long history of damage related problems exist with elk in this area. The elk proof fence has helped to address this problem, but does not completely prevent elk from occasionally moving onto private land. Agricultural damage complaints could increase if transplanted elk move around the fence or to

agricultural land five miles to the east. Personal contacts will be made with large landowners adjacent to the proposed release site. Agricultural damage complaints resulting from transplanted animals will be handled consistent with established response protocol and procedures. The following control methods are available; herding, hazing, landowner preference permits, hot spot hunts and monetary payment for assessed damage.

For an elk augmentation program to be successful, all hunting may require close monitoring and short term hunting closures may be necessary to take full advantage of increased productivity from released animals. Tribal and all citizens hunting and harvest of elk in the release site should be coordinated and managed cooperatively.

2. PEND OREILLE COUNTY ELK AUGMENTATION SITES PLAN - GMUs 113 and 117

A. Background and Justification

While elk are widely distributed through most of Pend Oreille County, many people feel the area can support greater numbers. There is support for increasing the elk population to improve hunter and watchable wildlife opportunities, and in turn tourism. The WDFW Draft Selkirk Elk Herd Plan also states an objective of increasing the population in the Pend Oreille Population Management Unit (PMU) which includes all of Pend Oreille County.

Augmentation of elk in the south-central portion of Pend Oreille County is suggested. There has been a dramatic increase in the amount of early successional forest stands due to the diversity of landowners and the intensity of forest management activities. Elk are present in small scattered groups throughout this area. We speculate that elk may be unable to break through or beyond the environmental resistance factors limiting population growth. An augmentation of 20-50 animals into a drainage may surge beyond some threshold of the current population dynamics, allow survival to exceed mortality, and give us the desired population growth.

Transplanted elk into the Pend Oreille County area are not considered a threat to the Selkirk Mountains woodland caribou herd augmentation project. The proposed release sites already contain small populations of elk. The caribou release sites are north and east of Sullivan Lake in the Salmo-Priest Wilderness Area on the Colville National Forest. Radio telemetry frequencies have been coordinated to ensure no overlaps while tracking released caribou, elk, or other species that have been collared.

B. Site Description

1) Specific release sites: On the east side of the Pend Oreille River in GMU 113 the target area is the East Branch LeClerc Creek, Mill Creek, and Cee Cee Ah Peak. The best logistical site for release is the WDFW LeClerc Creek Wildlife Area land on the West Branch LeClerc Creek County Road, T35, R44, S6. If access is unavailable (snow, mud) we would prefer to release off the Mill Creek Forest Road 1200 (USFS, Newport Ranger District) or a nearby road into rock pits owned by Stimson Lumber Company near Loop Creek, T35, R44, S33 or T34, R44, S4.

On the west side of the Pend Oreille River in GMU 117 the target area is the Calispell Creek watershed. The best logistical site is off the Flowery Trail County Road or rock pit site at Gletty Creek, (USFS and Stimson) T32, R42, S12. An additional or alternate site is the Bartlett Middle Fork Calispell Road (USFS), T32, R43, S21.

Another site near Indian Creek T32, R45, S17 in GMU 113 holds promise. This site has received considerable RMEF funded habitat project improvements and road closures. At least eleven elk habitat improvement projects in the general areas described for elk release have been funded through RMEF and carried out by USFS, WDFW, Kalispel Tribe, and Pend Oreille County Sportsmen' Club. RMEF has funded at least $50,740 worth of projects and they matched these with $52,520 from cooperators. Completed projects (Power Winchester Habitat Improvement, Dry Canyon Burn, Cee Cee Ah Habitat Improvement, Pend Oreille East Habitat Improvement, LeClerc Creek Habitat Enhancement, July Creek Burn, South Dry Canyon Burn) fall right into the proposed release locations. These projects date from 1989 to 1998.

2) Potential dispersal: Often transplanted animals disperse over many miles and we expect some of these elk to do the same. It is generally expected that released elk will associate with the fragmented groups of elk and use much the same habitats. Some individuals will likely strike out for longer movements but will not be unlike the elk that currently emigrate from the area regularly now.

3) Land ownership: The Colville National Forest, Newport and Sullivan Lake Ranger Districts have been contacted and generally support the effort to increase elk. There are concerns that these particular elk may move to open farm fields more readily than the current local elk and could pose a problem to local hay and cattle ranchers. The USFS livestock grazing permittee was contacted and is supportive of the elk release. The proposed release sites are acceptable but there may be other sites recommended to keep numbers down at a site or to encourage elk dispersal into other areas.

Stimson Lumber Company was contacted and recognizes the local interest in elk viewing and hunting and their role as a major forest landowner in the county in providing elk habitats. They generally support the release of elk, but have some concerns for damage by elk to young conifer plantations and how the WDFW might address a problem if it occurs. They will be supportive with opening roads and identifying parking for release sites.

The Department of Natural Resources has not had any history of problems with elk and does not expect any related to a release on their lands.

Several hay and cattle ranchers near Calispell Lake were contacted by a representative of the local sportsmen's club because they currently have a few elk coming into their fields each spring. They do not oppose a release in the Calispell watershed.

The wildlife biologist with the Kalispel Tribe (KT) was supportive of the proposal and generally agreed to the proposed release sites.

The Pend Oreille County Commissioners have sent letters of support and encouragement for the augmentation proposal.

While many sportsmen indicate a desire to have larger numbers released, there was a common thread to the agencies, KT, and Stimson Lumber Company comments. All recognized that elk exist throughout the area now and they hope new animals do well. There is the lingering question of why the current animals are not doing better if we expect these new animals to flourish. Everyone recognizes the risk of these animals becoming a damage problem. One common recommendation is that WDFW not release more than fifty elk at a single site. There is a consensus that an elk augmentation is something many people in the county want and these major land managers support those wishes.

4) Coordination and cooperation: The primary sportsmen's organizations and agencies involved in this augmentation proposal are:

Pend Oreille County Sportsmen's Club
Inland Northwest Wildlife Council
Rocky Mountain Elk Foundation
Stimson Lumber Company
Washington Department of Natural Resources
Washington Department of Fish and Wildlife
Colville National Forest
Kalispel Tribe of Indians
Pend Oreille County Commissioners
Pend Oreille County Road Department

News releases and media will be coordinated through Madonna Luers, WDFW, Spokane. The local newspaper is the Newport Minor.

5) Site Clearance: Depending on the snow or mud (county restrictions) we may need to coordinate with the Pend Oreille County Road Department. Landowners have said that they would agree to working out arrangements to release elk at the proposed sites if logistically feasible.

6) Potential Conflicts and Resolutions: There is a potential for elk causing damage to farms or forest plantations. WDFW needs to make it clear to those interested in increased elk numbers that elk must be managed within biological and social constraints. Where damage becomes a problem, WDFW will use the tools available, e.g., hot spot hunts, to alleviate these problems. Landowners prefer small releases of elk; the use of smaller transport vehicles; and multiple release sites. Road restriction or access difficulties due to snow or soft roads could present problems. Smaller vehicles and lighter loads are advisable. Soliciting volunteers to plow out

access roads to release sites may be necessary.

C. Biological Considerations:

1) Number and composition of elk: The current plan is to release 100 elk in Pend Oreille County with approximately fifty going to each side of the river. We would prefer more than one site on each side of the river can be used so that the release at each site can be held to less than thirty elk, to alleviate landowner concerns. The age and composition of the released animals are not an issue as they will mix with resident elk.

2) Genetics: Elk in the Selkirk Herd are Rocky Mountain Elk (*Cervus elaphus nelson).* Elk were translocated from the Yakima Herd to Pend Oreille County in 1969 and 1970 and are considered the source of the present population. Rattlesnake Hills elk are probably genetically similar to Selkirk elk.

3) Transport: Conservation groups will organize volunteers with stock trailers or trucks to transport elk. In addition, WDFW has one 6-horse stock trailer that will hold about ten elk.

4) Contingencies: Should there be a need to euthanize an injured animal at a release site, volunteer sportsmen would process and donate the animal to a local food bank. In the event any drugs, not compatible for human consumption, were administered to animals then those elk must be disposed of properly.

   Damage problems caused by elk in central Pend Oreille County has not been a significant concern to date. Agriculture is primarily limited to cattle and grass hay production rather than seed crops or alfalfa. Some elk do frequent farm fields during spring green-up and likely cause damage to fences but formal complaints have not occurred. The Rattlesnake Hills elk will likely mix in with the resident elk and some may be associated with those that show up in agricultural fields but, like the resident elk, we expect they will pull back to the forest cover as spring approaches. Damage caused by released elk will be handled according to WDFW policy. Sportsmen have suggested they would volunteer to help with efforts to haze elk or fix fences to help make this augmentation a success. This augmentation is an experiment that has some potential to cause damage and if serious chronic depredation problems result, they will be addressed with increased harvest strategies over time.

5) Timing of capture and release: The animals would likely adjust best to a release as the snow is melting and the new forage growth is beginning. Some private fields may be used at this time, but there should also be snow-free access to the forested lands and early successional browse areas available for elk use. Primary state and county road restrictions should be off by that time. Soft forest roads will still likely be a problem so that is why we have planned the release sites for low elevations and primary roads.

D. Monitoring of Released Animals

1) Marking: We will attempt to mark released elk with plastic, color coded, numbered ear tags.

At least one in ten elk will be fitted with a radio telemetry collar. At this point the recommendation is to collar only females so that we can gather the most information possible (calving, group movements, lower mortality than bulls).

2) Monitoring: WDFW will provide volunteers with the Pend Oreille Sportsmen's Club, Inland Northwest Wildlife Council (INC), and Rocky Mountain Elk Foundation (Newport Chapter) with radio telemetry equipment and training to monitor movements or mortality. Local wildlife biologists will provide training, assistance, and compile and summarize the data provided.

The INC will provide aerial telemetry tracking of elk as it becomes difficult for the ground crews to find them. About four flights in the first four months and another four flights during the following winter will be conducted.

In the first month or two monitoring will be conducted weekly and supervised by WDFW staff. Valuable information on initial movements, survival and areas used for calving will be gained. During the following winter we expect the collared elk to intermix with the resident elk and provide valuable data for mapping elk winter range. We have never studied elk in northeast Washington and very little is known about their movements or winter use areas. This study will help provide the needed data to target areas for habitat improvement projects such as burns, road closures, and seeding. The public and agency forest workers will be asked to report locations of tagged animals to supplement the data gathered from the radio marked individuals.

We propose that this project use volunteers to monitor radio collared elk movements and habitat selection. This cooperative project will cost about $7,000 for one year.

D. Issue Analysis

Elk are currently widely distributed in Pend Oreille County. An augmentation of approximately 100 elk in the area could have some positive benefits by establishing additional herds and increasing distribution and density of elk throughout the area where currently vacant and under utilized habitats exist.

The local citizens of the area are very supportive of this proposal. They recognize the potential for providing additional hunting and wildlife observation opportunities in the region. The expenditures of funds to achieve this plan are viewed as cost effective and good for the local economy in the long term. The Pend Oreille County Commission has written a letter of support for this project. Natural Resource agencies, Timber Companies, and Tribes have expressed support. There is some concern for released elk causing damage to local agriculture. However, agricultural producers contacted have endorsed the augmentation of elk into the area.

ANIMAL HEALTH AND PROCESSING OF CAPTURED ANIMALS

Disease Testing:

Elk health certification will be achieved by sampling approximately twenty-five animals and testing them

for Brucellosis, Leptospirosis, Anaplasmosis, Johne's, Blue tongue, and other diseases and parasites as needed. WDFW will conduct these disease tests before full scale trap initiation. In future years if we approve animals for shipment out of state, the receiving state will encumber costs of health testing and quarantine before shipment. Disease testing may require holding animals for up to seventy-two hours while tests are completed. A person will be assigned to tend these animals while they are being held.

The cost of testing for disease before releasing animals within the state is about $9,500. The Rocky Mountain Elk Foundation has granted $4,750 matched with $4,750 from the Inland Northwest Wildlife Council to fund the disease testing project. The largest expense for disease testing will be capturing animals for sampling.

Radiological Testing:
There is some concern that elk from the ALE have been exposed to radiation from Department of Energy activities on the Hanford Site. Although frequent monitoring of vegetation, air, water on and adjacent to the Hanford Site has been ongoing there are continued concerns that elk are contaminated. Past testing of deer and other animals, on and near the site, have tested well below radiological threshold concerns.

The PNNL research and monitoring team will continue to sample and test elk from the ALE. Hunter harvested animals adjacent to the Hanford Site were sampled during the 1999 hunting season and an additional five animals were collected from the Hanford Site to test for radiation contamination. The results of past and current tests were provided to the public at open houses in early January. PNNL personnel have participated in additional public meetings to answer questions concerning safety in handling and consuming elk from the Rattlesnake Hills population.

Depending on processing time, we will attempt to mark released elk with plastic, color coded, numbered ear tags. A sample of approximately 10% of the animals will be radio collared for follow-up monitoring on releases made within the state. There will be some unavoidable stress to elk and increased risk of injury to animals as tagging, collaring and blood collection is conducted.

Transportation costs are anticipated to be offset by local conservation organizations. Volunteers who offer their equipment and time to provide transportation of elk will be welcomed.

ELK DAMAGE CONTROL

A damage contingency plan will facilitate acting on any elk damage problems resulting from ALE released animals. The following elements must be carried out:

- An immediate response by WDFW personnel, cooperators and agricultural community is necessary to ensure success in relieving a problem or potential problem. When landowners and others observe released elk on agricultural lands, they must report it to the Wildlife or Enforcement programs without delay. Reports of elk damage and sightings on agricultural crops will be handled as a priority.
- Herding elk out of agricultural lands using a helicopter can be an effective way of avoiding more serious problems in the future. This technique is especially helpful when used to move

wandering elk back behind the elk proof fence in the Blue Mountains.

- **!** Formal damage complaints caused by released elk will be handled expeditiously and according to WDFW policy.
- **!** If serious and chronic depredation problems result, then we will address the problems with kill permits, hot spot hunts, landowner damage hunts, and other harvest strategies as appropriate.
- **!** Contingency funding to address damage must be available to ensure quick response by WDFW. This is especially true about herding elk out of agricultural fields. Using helicopters to haze elk may be the most cost effective method of controlling damage in some cases.
- **!** The elk proof fence in the Lick Creek area of the Blue Mountains must be maintained. Extending of this fence to increase its effectiveness is a high priority.

TIMETABLE

Trapping period:

There is some urgency in carrying out recommended actions of this plan. As the elk population grows, we can expect the potential for significant elk damage problems. The timing of elk removal has several driving issues as follows:

(1) Sufficient lead time is required to implement a plan of action considering the monumental task of coordination and organization. The earliest, elk trapping operations began in February 2000 for disease testing and we will conduct the major effort in early March.

(2) Elk trapping is not advised from April 1 through August 31 in consideration of heat stress, young calves, prenatal stress, and bulls with growing antlers.

(3) Animal condition is a significant issue, especially if elk are to be moved long distances. Normally, animal condition deteriorates rapidly as the winter progresses and probably reaches its lowest point in March-April. Adult cows would be in their third trimester of pregnancy in March with a potential for mortality of fetuses and adults. Local experts say that elk on the Hanford Site are robust and body condition does not deteriorate significantly. The area is mostly snow free during the winter and forage is readily available.

(4) Access to desirable elk release sites may be problematic during the winter months. March-April coincides with the time when road conditions may be at their worst due to thawing and road instability. An earlier time raises the issue of too much snow to allow access by large trucks or truck and trailer hauling elk.

(5) In future years, elk trapping may need to be conducted several times using a variety of techniques. If this is the case, an earlier trapping schedule would be advisable. Also, if animals are to be transported extreme distances and require quarantine for disease testing before release, an early trapping period would be advisable.

Contingencies:

(1) The reliance on volunteers will require advanced planning and follow-up with specific roles assigned in advance. For example elk transport vehicles and trailers, scheduled monitoring of released elk, herding animals to relieve damage issues will be identified in advance.

(2) We view trapping as a management tool to address an immediate need to remove elk. The preferred long term method of controlling elk in the Rattlesnake Hills elk population is an annual

hunting program that removes annual surplus animals to maintain a desired population level.

(3) Populations should be monitored closely following each year's removal program to detect changes. If the population goal of 300-400 animals on the ALE continues to be problematic, a reassessment must be made before further reductions are recommended.

PREFERRED ACTION

Preferred Action: (Hunting and trapping option)

The preferred action uses a combination of recreational hunting and trapping to reduce the Rattlesnake Hills elk population over a period of years rather than a single year. This action proposes to remove a total of 200 elk (February-March, 2000) from the ALE by using corral trapping. The proposal extends the program of herd reduction over a three-year period and makes it more manageable in terms of budget, personnel, and disposition of animals.

The preferred action will implement the following management actions:

- **!** Establish an elk population goal of 300 - 400 for the Rattlesnake Hills elk population on the ALE.
- **!** Maintain liberal elk hunting seasons in GMU 372 (Kiona) and manage for minimum risk in damage areas. There are places where elk, no matter what, would be in conflict with human activities. These areas require substantial amounts of time and resources from WDFW that are difficult to justify using funds collected from hunters.
- **!** Remove no more than 300 elk from the following described areas: GMU 372 north of Interstate Highway 82 and that portion of GMU 371 in Yakima County. The USFWS has suggested that no more than 300 animals should be taken from the ALE and a majority of those animals should be cows and calves, and few bulls if any, Jeffrey Haas (personal communications 2000).

Elk harvest and trapping removal targets				
Year	Target Removal	Hunting Harvest	Trap Removal*	post-removal population
1999-2000	300	102	200	436
2000-2001	250	75	±200	350
2001-2002	50	±50		350

*Trapping removal goals will depend on annual elk production levels and reassessment by cooperators.

- **!** The preferred trapping technique is herding into a portable corral trap and holding facility. Herding is to be accomplished by helicopter.
- **!** The priority use of captured elk is to meet in state needs for augmentation on sites cleared and approved.
- **!** Coordinate and cooperate with federal, state, county and local governments, Indian tribes, private landowners, Rocky Mountain Elk Foundation, and sportsmen in the development and

implementation of this plan.

Justification:
This alternative reduces the number of animals to be removed over a period of years rather than all in one year. The USFWS may implement a hunting program on the ALE when they complete a Comprehensive Conservation Plan and a step-down plan for elk management on the ALE. Some animals may still need to be trapped for transplanting. However, the smaller numbers of animals trapped reduces the total effort significantly.

PUBLIC PROCESS

Public hearings have been held to review the problems and discuss potential solutions. There is a level of expectation that the USFWS, WDFW, tribes, and DOE will coordinate and cooperate to implement a sound, responsible plan to address elk management issues. The public had a 30-day comment period and public meetings were held in Kennewick and near each of the proposed release sites in Newport and Clarkston, Washington.

PLAN APPROVAL AND IMPLEMENTATION

This plan is a guidance document for WDFW. Upon review and approval by the Director of WDFW it will be used as such.

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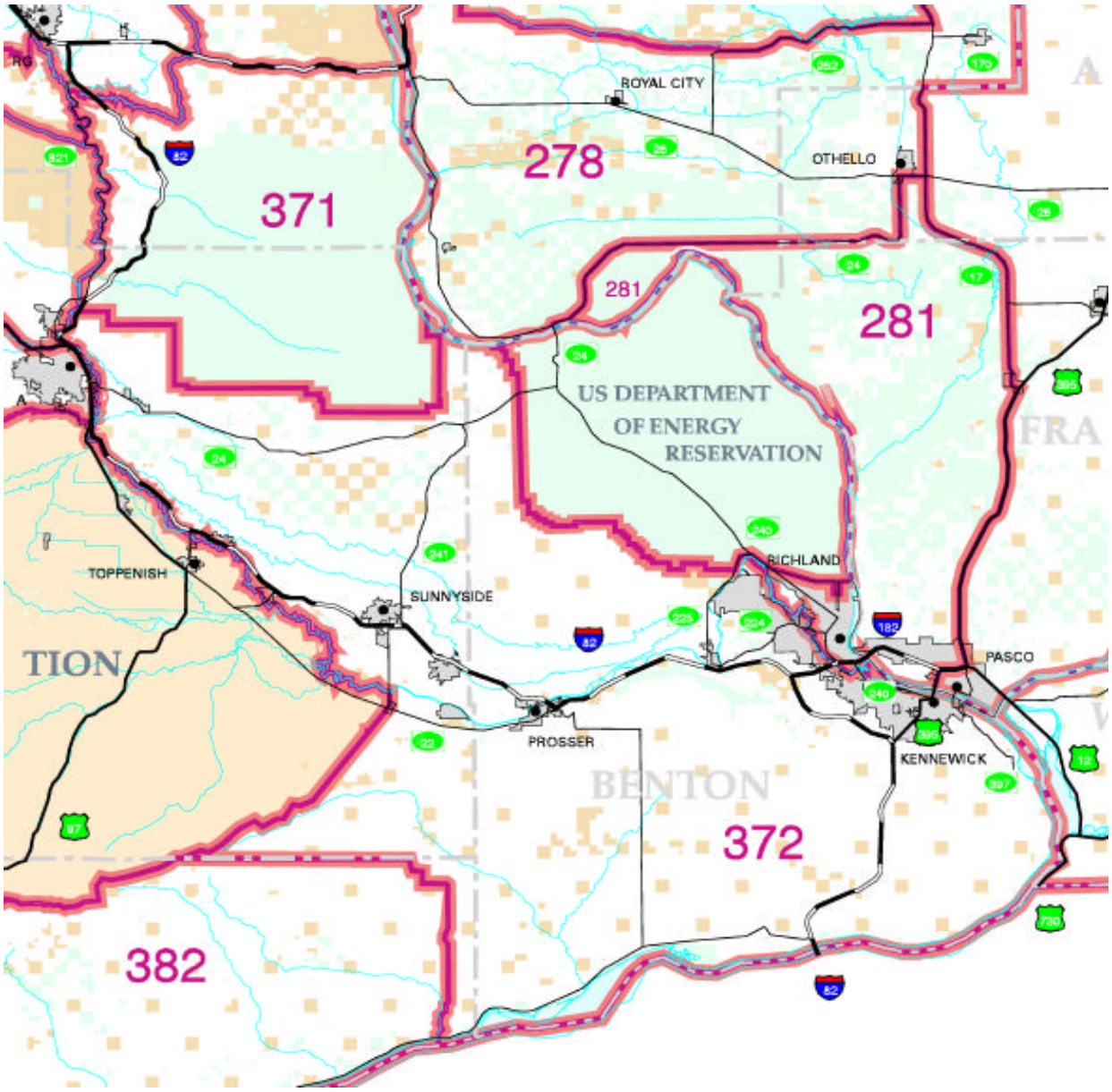
APPENDIX A
LOCATION MAP OF THE RATTLESNAKE HILLS ELK POPULATION
(ALE located west of Highway 24 and 240 on the Hanford Site)



APPENDIX B
ELK HUNTING SEASONS IN GMUs 371 AND 372 WEST AND SOUTH OF HANFORD

YEAR	GMU	DATES	DAYS	LEGAL ANIMAL	TAG TYPE
1999	371 Alkali	09/01 - 14 10/30 -11/07	14 9	Spike or antlerless Any Elk	Archery Modern firearm
	372 Kiona South of Yakima River	09/01 - 14 10/05 - 13 10/30 -11/07 12/09 - 13 10/30 -11/15	14 9 9 5 17	Any elk Antlerless Any elk Antlerless Any elk	Archery Modern firearm Modern firearm Modern firearm Any elk tag by weapon type
1998	371 Alkali	09/01 - 14 10/31 -11/08	14 9	Spike bull or antlerless Spike only	Archery (YA) Modern firearm (YG)
	372 Kiona	09/01 - 14 10/05 -13 10/31 -11/08 12/09 - 13	14 9 9 5	Any elk Antlerless only Any elk Antlerless only	Archery (YA) Modern firearm (any yakima tag) Modern firearm (any yakima tag) Modern firearm (any yakima tag)
1997	371 Alkali	09/01 - 14 10/25 -11/02 10/27 -11/02	14 9 7	Spike bull or antlerless Spike bull only Spike bull only	Archery (YA) Modern firearm (YG) Modern firearm (YP) unsuccessful permit applicant
	372 Kiona	09/01 - 14 10/25 -11/02 10/27 -11/02 11/01 - 15	14 9 7 15	Any elk Any bull Any bull Any elk	Archery (YA) Modern firearm (YG) Modern firearm (YP) Any elk tag
1996	371 Alkali	09/01 - 14 11/05 - 15 11/08 - 15	14 11 8	Spike bull only Spike bull only Spike bull only	Archery (YA) Modern firearm (YG) Modern firearm (YP)
	372 Kiona	09/01 - 14 11/05 - 15 11/08 - 15 11/05 -15	14 11 8 11	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YG) Modern firearm (YP) CM,YG,YP,YM tag holders by weapon type
1995	371 Alkali	09/01 - 14 11/05 - 15 11/08 - 15	14 11 9	Either-sex Male/visible antler Male/visible antler	Archery (YA) Modern firearm (YB) Modern firearm (YC)
	372 Kiona (former GMU 370 split into 2 units)	09/01 - 14 11/05 - 15 11/08 - 15	14 11 9	Either-sex Either-sex Male/visible antler	Archery (YB) Modern firearm (YC) CM,YB,YC,YM tag holders by weapon type
1994	370 Priests Rapids	09/01 - 14 11/05 - 15 11/08 - 15 11/05 - 13	14 11 9 9	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YE) Modern firearm (YL) CM,YE,YL,YM tag holders by weapon type
1993	370 Priests Rapids	10/01 - 14 11/05 - 13 11/08 - 13 11/05 - 13	14 9 6 9	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YE) Modern firearm (YL) CM,YE,YL,YM tag holders by weapon type
1992	370 Priests Rapids	10/01 - 14 11/05 - 13 11/08 - 13 11/01 - 30	14 9 6 30	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YE) Modern firearm (YL) unsuccessful permit applicant CM,YE,YL,YM tag holders by weapon type

APPENDIX B (continued)

YEAR	GMU	DATES	DAYS	LEGAL ANIMAL	TAG TYPE
1991	370 Priests Rapids	09/28 -10/11 11/05 - 13 11/08 - 13 11/01 - 30	14 9 6 30	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YE) Modern firearm (YL) unsuccessful permit applicant CM,YE,YL,YM tag holders by weapon type
1990	370 Priests Rapids	09/29 -10/12 11/05 - 13 11/08 - 13 11/01 - 30	14 9 6 30	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YE) Modern firearm (YL) unsuccessful permit applicant CM,YE,YL,YM tag holders by weapon type
1989	370 Priests Rapids	09/30 -10/13 11/05 - 13 11/08 - 13 11/01 - 30	14 9 6 30	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YE) Modern firearm (YL) unsuccessful permit applicant CM,YE,YL,YM tag holders by weapon type
1988	370 Priests Rapids	10/01 - 14 11/01 - 12 11/04 - 12 11/01 - 30	14 12 9 30	Either-sex Male/visible antler Male/visible antler Either-sex	Archery (YA) Modern firearm (YE) Modern firearm (YL) unsuccessful permit applicant CM,YE,YL,YM tag holders by weapon type
1987	370 Priests Rapids	11/01 - 12 11/04 - 12 11/01 - 30	12 9 30	Male/visible antler Male/visible antler Either-sex	Modern firearm (YE) Modern firearm (YL) unsuccessful permit applicant CM,YE,YL,YM tag holders by weapon type
1986	348 Squaw (Kittitas), 372 Moxee & 376 Horse Heaven 348 Squaw & 372 Moxee	11/05 - 16 11/08 - 16 11/08 - 16	12 9 9	Either-sex Either-sex Either-sex	Modern firearm (YE) Modern firearm (YL) Modern firearm (YE or YL)
1985	348 Squaw, 372 Moxee, & 376 Horse Heaven 348 Squaw, 372 Moxee	11/05 - 17 11/09 - 17 11/09 - 17	13 9 9	Bull/visible antler Bull/visible antler Either-sex	Modern firearm (YE) Modern firearm (YL) Modern firearm (YE or YL)
1984	348 Squaw & 372 Moxee	11/01 - 18 11/10 - 18 11/10 - 18	18 9 9	Bull/visible antler Either-sex Either-sex	Modern firearm (YE) Modern firearm (YL) Modern firearm (YE or YL)
1983	348 Squaw & 372 Moxee	11/06 - 20 11/12 - 20 11/12 - 18	15 9 7	Bull/visible antler Bull/visible antler Either-sex	Modern firearm (X) Modern firearm (Y) Modern firearm (X or Y)
1982	348 Squaw, 372 Moxee, & 376 Horse Heaven 348 Squaw and 372 Moxee	11/07 - 21 11/13 - 21 11/13 - 19	15 9 7	Bull only Bull only Either-sex	Modern firearm (X) Modern firearm (Y) Modern firearm (X or Y)
1981	348 Squaw, 372 Moxee, & 376 Horse Heaven	11/01 - 15 11/07 - 15	15 9	Bull only Bull only	Modern firearm (X) Modern firearm (Y)
1980	348 Squaw, 372 Moxee, & 376 Horse Heaven	11/02 - 16 11/08 - 16	15 9	Bull only Bull only	Modern firearm (X) Modern firearm (Y)

APPENDIX C

ELK HARVEST ADJACENT TO THE ALE RESERVE ACCORDING TO HUNTER QUESTIONNAIRE DATA.

YEAR	BULL KILL	COW KILL	TOTAL	% SUCCESS	# HUNTERS	HUNTER DAYS
1998	59	23	82	.19	429	1562
1997	5	0	5	.02	208	973
1996	8	8	16	.04	374	781
1995	23	11	34	.08	404	858
1994	15	13	28	.10	290	919
1993	14	5	19	.12	154	727
1992	5	0	5	.03	191	704
1991	10	3	13	.04	306	1424
1990	NO DATA					
1989	16	5	21	.05	459	1126
1988	13	43	56	.14	389	1577
1987	16	72	88	.11	813	2576
1986	20	8	28	.12	229	768
1985	6	18	24	.08	299	799
1984	0	3	3	.01	251	1191
1983	0	0	0	0	0	0
1982	0	0	0	0	0	0
1981	0	0	0	0	0	0
1980	0	0	0	0	0	0

APPENDIX D
RATTLESNAKE HILLS ELK HARVEST REPORT CARD KILL LOCATIONS (1996-1998)

OBSERVATION	YEAR	GMU	SEX	LOCAL
1	96	372	BULL	?
2	96	372	COW	RATTLESNAKE
3	96	372	BULL	RATTLESNAKE
4	96	372	CALF	RATTLESNAKE
5	96	372	BULL	RATTLESNAKE RIDGE
6	97	371	COW	?
7	97	371	COW	?
8	97	371	BULL	?
9	97	371	COW	EATON RANCH
10	97	371	COW	?
11	97	371	BULL	LMUMA
12	97	371	COW	MANASTASH
13	97	371	COW	YAKIMA CANYON EATON PROPERTY
14	97	371	CALF	YAKIMA TRAINING CENTER
15	97	371	BULL	COLUMBIA RIVER RATTLE SNAKE
16	97	371	BULL	RATTLESNAKE RIDGE
17	98	371	BULL	?
18	98	371	CALF	?
19	98	371	BULL	?
20	98	371	BULL	?
21	98	371	BULL	?
22	98	372	BULL	?
23	98	372	COW	?
24	98	372	BULL	?
25	98	372	COW	ANDERSON RANCH
26	98	372	COW	COLD CREEK
27	98	372	BULL	COLD CREEK
28	98	372	COW	HORSE HEAVEN
29	98	372	BULL	RATTLESNAKE
30	98	372	COW	RATTLESNAKE
31	98	372	BULL	RATTLESNAKE
32	98	372	COW	RATTLESNAKE HILLS
33	98	372	BULL	RATTLESNAKE HILLS
34	98	372	COW	RATTLESNAKE
35	98	372	BULL	ROBERTS RANCH
36	98	372	COW	ROBERT RANCH
37	98	372	COW	ROBERT RANCH
38	98	372	BULL	SILVER DOLLAR

Appendix E

Number of live elk trapped and shipped to Washington State from Yellowstone National Park

YEAR	STATE	TOTAL	RELEASE LOCATION
1912	Washington	186	Snohomish Co (60) Skagit Co. (46) King Co. (80)
1913	Washington	121	Yakima Co. (50) City of Spokane (6) Walla Walla Co. (25) Garfield Co. (40)
1914	Washington	25	Stevens Co. (25)
1916	Washington	50	Kittitas Co. (50)
1930	Washington	30	Columbia Co. (50) Izaak Walton League - Dayton
TOTAL		412	9 Releases excluding City of Spokane.