Exhibit — A
Livestock Grazing Plan

WHISKEY DICK WILDLIFE AREA

INTRODUCTION

The Whiskey Dick Wildlife Area (WA) is situated approximately 15 miles east of the city of Ellensburg in eastern Kittitas County. The western boundary of the Wildlife Area is the Wild Horse Windpower Project, and the eastern boundary is the Columbia River and Ginkgo Petrified Forest State Park. The Washington Department of Fish and Wildlife (WDFW) purchased 17,027 acres in the Whiskey Dick area in 1966 from private landowners. The funding was provided by the Interagency Committee for Outdoor Recreation (IAC Grant Program) to expand the winter range for the Colockum deer and elk herds and to perpetuate and improve the upland game bird habitat. In addition, Washington Department of Natural Resources (WDNR) owns 11,522 acres and Bureau of Land Management (BLM) owns 1,960 acres within the Wildlife Area boundary. The BLM ownership is managed as part of the Wildlife Area under an MOU between the two agencies.

The grazing management plan for the Whiskey Dick WA is part of a larger Coordinated Resource Management (CRM) planning process. The Wild Horse CRM planning process began in January of 2006; the project area comprises approximately 62,000 acres in northeastern Kittitas County. The CRM process has brought together ranchers, local landowners, Natural Resources Conservation Service and several environmental groups to collaboratively plan to improve management of the CRM area. Ownership is a mixture of public and private landowners, including WDFW, WDNR, BLM, Puget Sound Energy (PSE), and American Minerals. In addition to the Whiskey Dick WA, WDFW ownership within the CRM project area includes 5,441 acres of the Skookumchuck drainage, which was acquired in 2006 and will be managed as part of the Quilomene WA. By spreading the grazing across a larger landscape, the CRM process allows for a reduction in the grazing intensity and the potential for recovery and restoration in the areas of the landscape that have been grazed in the recent past.

The L.T. Murray/Quilomene/Whiskey Dick Wildlife Area Management Plan (Confer et al. 2006), developed with the help of a local citizen's advisory group, identifies the use of livestock grazing as a habitat management strategy to help meet WDFW's objective of protecting, restoring, and enhancing fish and wildlife populations and their habitats. Managed grazing by livestock can change the species composition of plant communities, increase production of selected species, improve the nutritive quality of forage species, and increase habitat diversity by changing plant community structure across the landscape (Vavra 2005). Moderate grazing by livestock removes older, rank grass and increases the availability of the more palatable and nutritious spring or fall regrowth. Properly timed livestock grazing can be used to increase the forb component of plant

communities which in turn provides for increased insect production which may benefit ground nesting birds and small mammals. Large ungulates like cattle and elk do not graze rangelands uniformly due to forage preferences and physiographic features of the landscape. Since cattle and elk have different forage preferences (Stewart et al. 2003), dual use by both species can produce increased plant community structural diversity as a result of forage selection choices by each species and the patchy nature of their use of the landscape.

Although the magnitude of the effects vary with environment, it is clear that herbivores (deer, elk, cattle, horses, etc.) influence plant diversity (i.e., species richness) in grassland communities (Olff and Ritchie 1998, Frank 2005). Changes in plant community species composition mediated by this grazing do not necessarily lead to invasion of unpalatable exotic species (Stohlgren et al. 1999, Augustine and McNaughton 1998). The importance of herbivory in the effective functioning of wildlife habitats has gained increased recognition over the past few decades (Severson and Urness 1994, Lyon and Christensen 2002). Although the effects of poorly managed livestock grazing are well documented (Belsky 1992, Fleischner 1994, Donahue 1999), it is evident that some level of grazing can help maintain healthy and diverse grassland plant communities (Lyon and Christensen 2002, Hayes and Holl 2003, Rambo and Faeth 1999).

The grazing area is fenced into two pastures in the Rocky Coulee drainage as shown in Exhibit B. No livestock grazing will occur on the WA outside of the Lonestar and Rocky Coulee pastures. Only cattle grazing is permitted.

PURPOSE

The purpose of this livestock-grazing permit is to: 1) evaluate the use of managed grazing to improve forage (grasses and forbs) quality and quantity for elk in the Rocky Coulee drainage of the Whiskey Dick WA while maintaining high quality associated shrub-steppe habitat; and, 2) assist in achieving the consensus goal of the Wild Horse CRM.

GOALS

In 2006 the Wild Horse CRM group developed a consensus goal statement for the entire CRM planning area that addresses social, economic, and ecological needs of stakeholders. The goal statement incorporates a description of the desired landscape that includes 1) healthy watersheds that support a variety of native plant communities with few invasive/undesirable species, 2) enhanced habitat for wildlife that use the area, 3) improvements to water sources that improve availability across the area for wildlife and livestock, and 4) properly managed and sustainable grazing practices that balance wildlife and livestock use and result in an upward trend in ecological condition for both uplands and riparian areas.

OBJECTIVES

The objectives of this livestock-grazing permit are:

1. Improve the palatability and forage quality of native bunchgrasses by removing some of the new growth and accumulated standing litter, then allowing adequate time for spring regrowth to occur. This increases the availability of the current year's regrowth for big game, especially elk, during fall and winter.

2. Increase use of certain undesirable plants, thus reducing their vigor and favoring growth of desirable species by manipulating the timing and numbers of livestock in the pastures.

SITE CHARACTERISTICS

The Whiskey Dick WA is characterized by steep, rocky slopes, and a rolling series of ridges and canyons that generally drain west to east. The parent bedrock material in the region consists of basaltic rock, and includes fractured and folded lava flows. The basalt material has weathered down into coarse gravels, cobbles, and boulders, with fine silts and clays. The overlying soil is composed of fine-grained loess, deposits of volcanic ash, sandy loams, and silt loams. Streams and springs provide narrow bands of riparian habitat.

The Lonestar and Rocky Coulee pastures of the Whiskey Dick WA are located about two miles northwest of the town of Vantage in eastern Kittitas County (see Exhibit A). Ranging in elevation from 1,000 to 2,600 feet, the topography of this area is steep along the major drainage, Rocky Coulee, and flat to rolling along the ridge tops. Precipitation averages six to nine inches annually.

The pastures are dominated by sagebrush-steppe and scablands, with a narrow band of riparian habitat occurring along the coulee bottom. A mosaic of sagebrush-steppe and scabland plant communities typically covers north-facing hillsides. The scablands are dominated by rock, stiff sagebrush, buckwheat, and Sandberg's bluegrass while the sagebrush-steppe is dominated by big sagebrush and bluebunch wheatgrass with various other bunchgrass and native forbs. South-facing hillsides are generally an intricate mosaic of rock and scabland, and sagebrush-steppe vegetation. Ridgelines and benches are usually dominated by scablands. The soil surface between plant bases often supports a biological crust composed of mosses, lichens, and a variety of soil algae and bacteria. Basin wildrye, rushes, and deciduous shrubs and trees typically occupy the riparian habitat.

This area provides excellent habitat for chukar, mule deer, and other sagebrush-dependent species in addition to being an important wintering area for deer and the Colockum elk herd.

PASTURE ROTATION SCHEDULE

Forage production estimates for the various pastures were developed using data from a draft soil survey for Kittitas County provided by the local Natural Resources Conservation Service (NRCS) office. During spring and summer 2006, range specialists from WDFW, WDNR, NRCS, and BLM conducted a range inventory on 42,000 acres of the CRM project area, including the Lone Star and Rocky Coulee pastures, to verify the condition and extent of various ecological sites in the grazing area. (An ecological site is a kind of land with specific physical characteristics, which differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation and in its response to management.) The remaining 20,000 acres will be completed in 2007. Information gathered during this effort and field inspection of various ecological sites were used to develop an estimate of forage production for the grazing area. This information was used in developing the grazing schedule presented below.

Under this grazing plan, there are two pastures available for the 2007 and 2008 grazing seasons. These two pastures, Lonestar and Rocky Coulee are located within the Whiskey Dick WA and contain WDFW, WDNR, and BLM ownership (see Exhibit B). These pastures will be available for cattle grazing for a total of 30 days between April 1 and May 15; actual dates of use will be determined each year by the Wildlife Area Manager based on prevailing weather conditions. Lonestar pasture will be used first, then cattle will be moved to the Rocky Coulee pasture. The grazing period, number of animal units (i.e., AUs), and forage use in AUMs (i.e., animal unit months; one animal unit month is the amount of forage required by an animal unit for one month) for each of the pastures is shown in the table below for the 2007 and 2008 grazing seasons. The overall forage utilization (i.e., consumption of the current year's growth) is expected to be about 20 percent.

Pasture	Acres	Animal Units	Grazing Period	AUMs
Lonestar	5,377	160	19 days	100
Rocky Coulee	3,041	160	11 days	58
Total	8,418	—	30 days	158

When the grazing treatment is completed on the Lonestar and Rocky Coulee pastures, the cattle will be trailed across lands owned by WDNR and PSE or loaded into trucks and transported to two additional pastures on lands owned by other CRM participants (viz., WDNR and American Minerals) for the remainder of the grazing period. Separate leasing arrangements have been made to address these other land ownerships.

In 2009, for the third year of grazing, either the Lonestar pasture will be removed from the grazing schedule for the year or both Lonestar and Rocky Coulee pastures will have a shorter, earlier grazing period to ensure compliance with the HB 1309 Ecosystem Standards for State-Owned Agricultural and Grazing Land (ESAC 1994). Under the CRM, PSE will provide grazing on the Wild Horse Wind Project to meet the anticipated AUM needs.

During the term of this permit the Wildlife Area Manager shall determine the "on" and "off" dates. A minimum of one week's notice will be given for these dates. Changes in AUM numbers will be determined by the Wildlife Area Manager.

In addition WDFW shall:

1. Repair and maintain Boundary fence on the Wildlife Area.
2. Provide all fence construction and repair materials and shall retain ownership of these materials.
3. Count livestock on and off of each pasture.
4. Collect fees as cash payment, as range improvements, as services performed or goods provided, as agreed upon by the Permittee and the Wildlife Area Manager. WDFW will determine the form of payment.

The Permittee shall:

1. Provide a telephone number that affords 24-hour, 7 days per week contact.
2. Repair and maintain all perimeter and division fences to contain cattle in desired pastures and keep unauthorized livestock out of lands covered by the permit. This is to include fences in their present condition. All repairs and improvements must be pre-approved by the Wildlife Area Manager.
3. Gather any stray cattle immediately upon notification.
4. Keep livestock well distributed across the pasture using riders, salt, protein blocks, or other means. Salt livestock as far as practical away from watering points to minimize overuse at watering points.
5. Pay annual fees as cash payment, as range improvements, as services performed or goods provided, as agreed upon by the Permittee and the Wildlife Area Manager. WDFW will determine the form of payment.

MONITORING PLAN

The Whiskey Dick Wildlife Area Manager will inspect the grazing area at least twice per year (once shortly after livestock have been removed, and once after the end of the growing season) and complete a grazing evaluation form. The grazing evaluation form documents the livestock grazing objectives, the number of AUMs taken during the grazing period, growing season conditions, degree of forage use, evidence of noxious weed infestations, and general conditions about condition of the grazing area.
The wildlife area manager and livestock operator will develop a schedule to provide as close to daily surveillance as possible to ensure livestock are in specific pastures as called

out in the plan and well distributed within each pasture. Any indications of excessive use, displaced wildlife, or situations where harm is occurring to habitat may result in shortening or altering provisions of this grazing plan.

WDFW staff will use a series of vegetation monitoring plots to track both short-term and long-term effects of livestock grazing on plant communities at the Wildlife Area. Monitoring involves the collection, analysis, and interpretation of data to determine whether progress toward management objectives is occurring. The vegetation monitoring protocol employed is designed to provide quantitative data that can be used to evaluate rangeland health at the Lonestar and Rocky Coulee pastures.

The National Research Council developed the rangeland health model to promote a standard method of evaluating rangelands (NRC 1994). Rangeland health is defined as "the degree to which the integrity of the soil, vegetation, water, and air, as well as the ecological processes of the rangeland ecosystem are balanced and sustained" (Task Group on Unity in Concepts and Terminology 1995). Because direct measures of site integrity and ecological processes are difficult and costly to gather, biological and physical components are used as indicators of these processes. Pellant et al. (2005) developed a standardized, qualitative assessment protocol that focuses on three key ecosystem attributes: soil and site stability, hydrologic function, and biotic integrity.

To provide the quantitative data necessary to evaluate success in achieving the goals of the pilot project, WDFW staff will use a recently developed monitoring approach that provides indicators of the three ecosystem attributes mentioned above (Herrick et al. 2005). This approach includes several long-term methods including photo points (for a visual record of vegetation conditions), line-point intercept (for species cover and composition), and belt transect (for measuring perennial invasive plants), as well as a short-term method (measuring the amount of plant cover remaining after grazing) to monitor rangeland health.

Locations for monitoring will be identified using a stratified random selection process based on pastures and ecological sites. The standard transect layout consists of a radial arrangement of three 50 meter transects that cover an area of approximately one hectare (about 2.5 acres). Transects begin 5 meters from the plot center so that vegetation trampling and soil surface disturbance along the transects (where data is collected) is minimized. Azimuth of the first transect is randomly determined; the remaining two transects are oriented at 120 degree increments. In riparian areas parallel transects will be established perpendicular to the drainage at 20-25 meter spacing. The plot center and beginning and end points of each transect are identified with rebar stakes covered with PVC for safety and visibility. When data are being collected a 50-meter measuring tape is anchored as close to the ground as possible between the beginning and end point stakes. This plot arrangement is used for photo points, for annual forage use monitoring, and for sampling with line-point intercept, basal gap intercept, and belt transect techniques.

Line-point Intercept: For the line-point intercept technique the examiner and recorder begin at the "0" end of the tape (always staying on the same side of the tape). At 1-meter intervals a pin-flag is dropped vertically from a height of about 50 centimeters. Once the pin is flush with the ground surface the PLANTS database species code (http://plants.usda.gov/) of every plant species intercepted (and/or herbaceous litter) is recorded on data form. Each canopy species is recorded only once, even though it may be intercepted more than once. At every fifth sample point vegetation height (in centimeters) is measured and recorded. At each sample point a record is kept of whether the pin flag intercepts a plant base or some other soil surface feature (viz., rock, bedrock, embedded litter, duff, moss, lichen crust, or soil).

Summarization and analysis of the line-point intercept data set provides information on several plant community and ecological site components: plant foliar cover (total as well as by species and plant functional type); plant species composition; average plant height; the amount of bare ground, rock, and bedrock; the amount of soil surface covered by moss, lichen crust, embedded litter, or duff; and the amount of litter covering the soil surface (total litter as well as litter between plant canopies and litter under plant canopies). Effect of the livestock grazing treatment on these parameters will be assessed by comparison of the initial data set with a similar data set gathered after the final year of the grazing treatment. In general, increases in the values that describe foliar and basal cover of desirable species, and a decrease in the amount of bare ground have a positive effect on rangeland health attributes.

Belt Transect: The standard transect layout described above is also used for belt transects for measuring invasive weed species. A 50-meter measuring tape is anchored as close to the ground as possible between the beginning and end point stakes. Beginning at the "0" end of the tape a 4-meter section of PVC pipe is centered directly over the tape. The observer and recorder slowly walk the length of the transect and tally the number of perennial invasive species observed inside the sample area (i.e., 4-meters X 50-meters; 200 m^2). This procedure is repeated on all transects at each monitoring plot. Density of perennial invasive species is calculated by dividing the total count of each species by the transect area. Results can be expressed as number of plants/hectare or number of plants/acre. The density of perennial invasive species is a sensitive indicator of the biotic integrity of individual pastures and ecological sites.

In addition, one transect will be established in each pasture and monitored annually with the Permittee using the Land EKG® monitoring protocol (Orchard 2006). This monitoring method is also based on the National Research Council rangeland health model (NRC 1994), and provides relative indicators of the functional health of the soil and plant communities.

A series of photo monitoring points will be established; photos will be taken at least twice annually to document change in vegetation condition over time. Photo points that were established in 1988 to monitor the recovery from past livestock grazing will be revisited (last monitored in 2003) and photos will be taken at least twice annually.

Forage utilization cages will be placed in each pasture and photo monitored to document wildlife use and livestock use. Cages will be monitored prior to turnout, immediately after livestock removal, and after the end of the growing season.

PROBLEMS AND CONCERNS

Compliance with House Bill 1309*:* An on-site review of the proposed grazing has been conducted to ensure that this grazing plan meets the intent of the HB 1309 Ecosystem Standards for State-Owned Agricultural and Grazing Land. Current resource conditions meet the intent of applicable ecosystem standards. A primary concern is weed control. In particular, non-native species have become established in areas that were historically overgrazed. Slow progress is being made in these areas with the use of herbicides and over seeding with native seed mixes. While grazing is intended to remove residual vegetation to improve new growth accessibility for elk, a poor grazing strategy could result in increases in non-native vegetation. Grazing has to be closely monitored to assure that the balance is not tipped to benefit these non-natives.

Weed Control: Invasion of non-native species of a major concern across the wildlife areas and weed control consumes a large portion of the wildlife area budget each year. Therefore it is important to minimize ground disturbance that could open areas up to invasion by non-natives. Weed control for Russian knapweed, whitetop (hoary cress), perennial pepperweed, foxtail barley, bulbous bluegrass and cheatgrass will continue. These areas will also be monitored to assess whether they are increasing, decreasing or staying stable.

Water quality: Level of use by cattle within the riparian areas will be monitored. If water quality is being impacted then measures will be taken to limit cattle access to these areas and methodology will be developed to quantitatively measure sediment delivery.

Soil compaction*:* This is a potential problem where large numbers of livestock are concentrated for long periods of time on areas such as trails, watering areas, bedding grounds, salt locations, etc. Compaction reduces the soil pore space, and this in turn reduces infiltration. However, soil compaction on this permit should be of little concern with soils in the uplands portion of this permit. The Wildlife Area Manager will evaluate the soil moisture status when determining the start date for grazing.

Priority Habitats and Species*:* Two priority habitats, shrub steppe and riparian, occur within the grazing permit. Fencing of sections of the riparian habitat will be considered if problems with overuse occur. Presently the shrub-steppe habitat is generally in good condition, with a few weedy areas that were overgrazed in the past. The riparian habitat is generally in satisfactory condition, although there are areas where recovery has not yet occurred. If there are specific instances where habitat degradation begins to occur, they will be addressed with fencing and hardened crossings or changes to the timing or duration of the grazing period.

Several priority species occur on or near the permit area. There are regular, large concentrations of mule deer (700-800 animals) and elk (1,500-2,000 animals) that utilize this area during the winter and spring. Sage grouse sightings have also occurred on and near the area, with winter, spring and summer use documented, as well as at least one documented brood of young. Sage grouse are a state threatened species and a federal candidate species and the grazing permit area is within the state identified recovery area. Care will be taken to ensure that grazing doesn't negatively impact this species. The wildlife area is within the largest core habitat for the striped whipsnake, a state candidate species and by far the least abundant of all the snakes in the state. Other shrub steppe dependent species utilizing the site include white-tailed and black-tailed jackrabbits (both state candidate species), sage sparrows (state candidate), sage thrashers (state candidate), and loggerhead shrikes (state candidate species and federal species of concern). In addition, three quarters of all of the snake species in the state occur in this area, as well five known species of lizard and five known species of amphibians, making this an exceptionally diverse area for reptiles and amphibians.

Other Management Considerations

Wildfires are part of the normal processes in shrub-steppe ecosystems. Two fires burned approximately 850 acres on the Whiskey Dick WA along the Vantage Highway in 2003. If a fire occurs within the grazing management area, grazing on portions or all of the pastures may be deferred for up to three years to allow adequate recovery of the vegetation.

This permit will be incorporated into the Wild Horse Coordinated Resource Management Plan.

References

Augustine, D.J., and S.J. McNaughton. 1998. Ungulate effects on the functional species composition of plant communities: Herbivore selectivity and plant tolerance. Journal of Wildlife Management 62:1165-1183.

Belsky, A.J. 1992. Effects of grazing, competition, disturbance and fire on species composition and diversity of grassland communities. Journal of Vegetation Science 3:187-200.

Confer, C., W. Hunt, and L Stream. 2006. Draft L.T. Murray/Quilomene/Whiskey Dick Wildlife Area Management Plan. Washington Department of Fish and Wildlife. [Online.] URL: http://wdfw.wa.gov/lands/wildlife_areas/management_plans/pdfs/draft_lt_murray_plan.pdf

Donahue, D.L. 1999. The western range revisited: removing livestock from public lands to conserve native biodiversity. University of Oklahoma Press, Norman, OK.

ESAC. 1994. Ecosystem Standards Advisory Committee, Ecosystem Standards for State-Owned Agricultural and Grazing Land. P. 88.

Fleischner, T.L. 1994. Ecological costs of livestock grazing in western North America. Conservation Biology 8:629-644.

Frank, D.A. 2005. The interactive effects of grazing ungulates and aboveground production on grassland diversity. Oecologia 143:629-634.

Herrick, J.E., J.W. Van Zee, K.M. Havstad, L.M. Burkett, W.G. Whitford. 2005. Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems. USDA-ARS, Jornada Experimental Range, Las Cruces, NM (Distributed by University of Arizona Press, Tucson, AZ).

Lyon, L.J., and A.G. Christensen. 2002. Elk and land management. Pages 557-581 *in:* D.A. Toweill and J.W. Thomas [eds.]. North American Elk: Ecology and Management. Smithsonian Institution Press, Washington D.C.

National Research Council, Committee on Rangeland Classification. 1994. Rangeland Health: New Ways to Classify, Inventory and Monitor Rangelands. National Academy Press, Washington, D.C.

Olff, H., and M.E. Ritchie. 1998. Effects of herbivores on grassland plant diversity. Trends in Ecology and Evolution 13:261-265.

Orchard, C. 2006. Land EKG® 2006 Field Guide. P. 44.

Pellant, M., P. Shaver, D.A. Pyke, and J.E. Herrick. 2005. Interpreting Indicators of Rangeland Health, Version 4. Technical Reference 1734-6. Bureau of Land Management, Denver, CO.

Severson, K.E., and P.J. Urness. 1994. Livestock grazing: A tool to improve wildlife habitat. Pages 232-249 *in:* M. Vavra, W.A. Laycock, and R.D. Pieper [eds.]. Ecological Implications of Livestock Herbivory in the West. Society for Range Management, Denver, CO.

Stewart, K.M., R.T. Bowyer, J.G. Kie, B.L. Dick, and M. Ben-David. 2003. Niche partitioning among mule deer, elk, and cattle: Do stable isotopes reflect dietary niche? Écoscience 10:297-302.

Stohlgren, T.J., L.D. Schell, and B. Vanden Heuvel. 1999. How grazing and soil quality affect native and exotic plant diversity in Rocky Mountain grasslands. Ecological Applications: 9:45-64.

Task Group on Unity in Concepts and Terminology. 1995. New concepts for assessment of rangeland condition. Journal of Range Management 48:271-282.

Vavra, M. 2005. Livestock grazing and wildlife: Developing compatibilities. Rangeland Ecology and Management 58:128-134.

Exhibit B - Permit Area Map

Whiskey Dick Wildlife Area Pastures

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REGION 3

South Central Washington