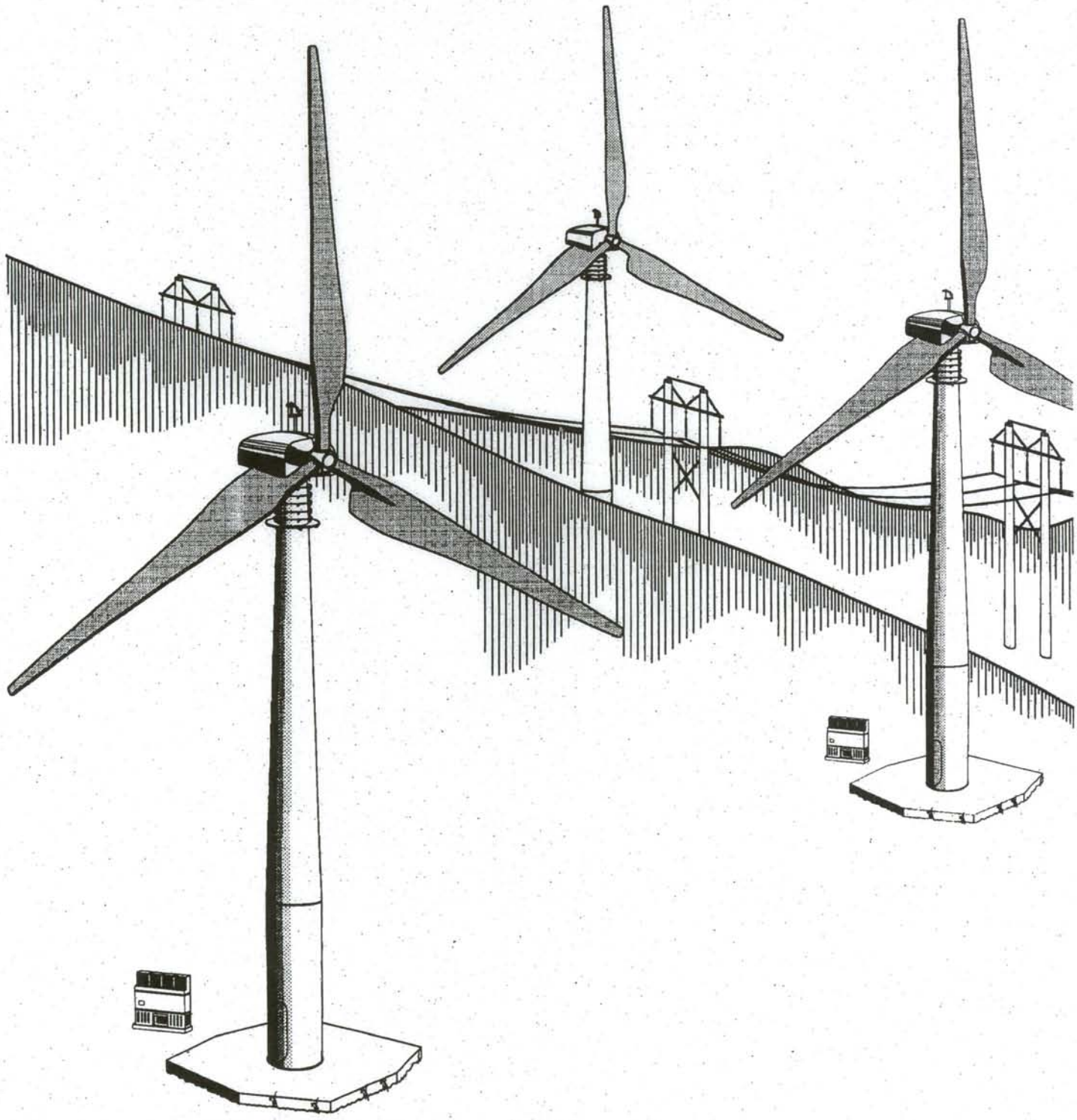
U.S. Department of the Interior
Bureau of Land Management
Rawlins District

August 1995

FINAL
KENETECH/PacifiCorp Windpower Project Environmental Impact Statement



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FES-95-29

FINAL ENVIRONMENTAL IMPACT STATEMENT
KENETECH/PACIFICORP WINDPOWER PROJECT
CARBON COUNTY, WYOMING

Prepared for

Great Divide Resource Area
Rawlins District
Bureau of Land Management
Rawlins, Wyoming

By

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August 1995

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE KENETECH/PACIFICORP WINDPOWER PROJECT CARBON COUNTY, WYOMING

( ) Draft (X) Final

U.S. Department of the Interior
Bureau of Land Management

Abstract:

The Draft and Final Environmental Impact Statements (DEIS and FEIS) assess the environmental consequences of a proposed windpower energy development in the area between Arlington and Hanna, Carbon County, Wyoming. This abbreviated FEIS revises and supplements the DEIS for the KENETECH/PacifiCorp Windpower Project (DES-95-2) and addresses comments and concerns expressed during the public comment period for the DEIS. The DEIS was made available to the U.S. Environmental Protection Agency (EPA) and the public on January 13, 1995, and a Notice of Availability was published in the Federal Register on January 27, 1995. Two public meetings were held, one in Rawlins, Wyoming on February 8, and one in Laramie, Wyoming, on February 9, 1995. Comments on the DEIS were accepted until April 18, 1995.

Public and agency comments on Chapters 1.0 through 4.0, 6.0 and 7.0 and Appendices A and B of the DEIS are incorporated into this document as errata. Section 3.2 of the DEIS is reproduced in its entirety because an additional 3.5 months of field data, which were not available at the time the DEIS was prepared, were incorporated into the FEIS and because a substantial number of comments were received on this section. Chapter 5.0 was reorganized and expanded to define applicant-committed, project-wide, and resource-specific mitigation measures. All mitigations described in the DEIS and FEIS are recapitulated in Chapter 5.0 and summarized in Table 2.11 in the FEIS. Chapter 8.0 in the FEIS presents a summary of comments received at the public meetings and discusses 12 major issues raised during the public comment period. All comments are reproduced in Chapter 8.0, and Bureau of Land Management (BLM) responses are presented.

Revisions made to the DEIS, while extensive, do not warrant preparation of a supplemental DEIS because

- the BLM did not make substantial changes to the proposed action that are relevant to environmental concerns, and
- there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 C.F.R. 1502.9).

The proposed project entails the erection of approximately 1,390 wind turbine generators and associated facilities (e.g., roads, substations, distribution and communications lines) by KENETECH Windpower, Inc. A 230-kV transmission line would be built by PacifiCorp, Inc. to connect a proposed substation on Foote Creek Rim near Arlington to the Miner's substation near Hanna. The proposed project would use standard procedures as currently employed by other right-of-way projects, plus additional project-specific and site-specific mitigation measures to ensure that project impacts are minimized on all important resources. Impacts to most resources would be negligible to moderate during the life-of-project. Potentially significant impacts resulting from the project include avian mortality; declining avian populations; threatened, endangered, candidate, and/or state sensitive species mortality and/or habitat loss; disturbance to nearby residents due to noise; changes in visual resources; disturbance of important Native American traditional sites; changes in plant community species composition due to snow redistribution; displacement of big game due to windfarm operation; and loss of sage grouse nesting habitat. The proposed project could also have numerous beneficial impacts including increased revenues generated by taxes, increased employment, and benefits derived from using a nonpolluting resource for electric power generation.

Comments on this EIS should be directed to:

Walter George, Project Leader
Rawlins District Office
Bureau of Land Management
1300 3rd Street North
Rawlins, Wyoming 82301

For further information contact Walter George at the Rawlins District Office, (307) 324-7171.

United States Department of the Interior

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In Reply Refer To:

1793
WYW-130382
Kenetech Windpower
(930JJohnson)
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FAX NO: 307-775-6082

Dear Reviewer:

This abbreviated Final Environmental Impact Statement (FEIS) on the Kenetech/PacifiCorp Windpower Project, located in eastern Carbon County, Wyoming, is provided for your information and use. This FEIS is a supplement to the Draft Environmental Impact Statement (DEIS), published in January 1995. The FEIS incorporates by reference the material presented in the DEIS and identifies changes to the DEIS as a result of additional information and public comment subsequent to the publishing of the DEIS. It also contains comments received on the DEIS and responses to those comments. The DEIS was not reprinted as an economy measure. Changes made to DEIS materials do not significantly alter the proposed action or outcome of the analysis. The DEIS must accompany this final document because only the modification, corrections, and additions are provided.

This FEIS is not a decision document. A Record of Decision (ROD) will be prepared and made available to the public, but not until at least 30 days after the Environmental Protection Agency (EPA) has published the FEIS Notice of Availability in the Federal Register. During the 30-day period, written comments on the FEIS or concerns that should be considered in the decision process will be accepted by writing or faxing to: **Walter E. George, Project Leader, Rawlins District Office, 1300 Third Street, Rawlins, WY 82301, (fax) 307-328-1474, (telephone) 307-324-7171.** Comments received during this period will be considered in the decisionmaking process. The date by which comments must be received is October 2, 1995.

Please retain this volume of the EIS for future reference. A copy of the FEIS has been sent to affected Government agencies and to those persons who responded to scoping or otherwise indicated to BLM that they wished to receive a copy of the FEIS. Copies of the EIS are available for public inspection at the following locations:

Bureau of Land Management Great Divide Resource Area Office 812 E. Murray Rawlins, Wyoming 82301	Bureau of Land Management Rawlins District Office 1300 Third N. Street Rawlins, Wyoming 82301	Bureau of Land Management Wyoming State Office 2515 Warren Avenue Cheyenne, Wyoming 82001

The BLM would like to thank the individuals and organizations who provided suggestions and comments on the DEIS. Their help has been invaluable in preparing this FEIS.

Sincerely,

Alan R. Pierson
State Director

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PREFACE

The Draft Environmental Impact Statement (DEIS) for the KENETECH/PacifiCorp Windpower project was released for public review on January 13, 1995. The Notice of Availability was published by the Bureau of Land Management (BLM) in the Federal Register on the same date (60 FR 3256). A Notice of Availability was published in the Federal Register by the Environmental Protection Agency on January 27, 1995 (60 FR 5388). A 60-day comment period, closing on March 28, 1995, was provided. Two public meeting on the DEIS were held. The first was held in Rawlins, Wyoming at the Jeffrey Center on February 8, 1995. The second meeting was held in Laramie, Wyoming at the Albany County Library on February 9, 1995. Comments received through April 18, 1995 were considered in this FEIS.

A total of 47 comment letters was received. Twenty-two (22) commenters supported the project. Twelve (12) of the support comments represented units of county or local governments and the governor of Wyoming. Other support for the project came from one environmental group and individuals. Eight comments provided information and did not state a position on the project. Three comments were concerned with a potential conflict with coal resources. One commenter expressed concern with the economic rationale for the project. One comment addressed compliance with cultural resource laws. Thirteen commenters expressed opposition to the project or wide concern about potential impacts and completeness of the environmental analysis. These comments were made by one state agency, one federal agency, one environmental group, and individuals.

Over 460 individual comments on the DEIS were identified. Many comments address the same concern each time it appeared in the text of the DEIS. BLM categorized and consolidated the comments and identified 12 encompassing, broad issues, each of which is addressed in the introductory section of Chapter 8.0 of this FEIS.

Each comment received has been reproduced in Section 8.2.13. Each comment letter has been assigned a letter or pair of letters and each comment within a letter has been assigned a number. For example, the Wyoming Game and Fish Department comment letter is designated AE. There are 164 individual comments within this letter labeled AE-1 through AE-164.

Where comments could be responded to in brief text, the response is printed beside the reproduced text of the letter. Comments that are addressed under the consolidated category responses are referenced to each consolidated category. As a cross reference, individual comments addressed under the consolidated category response are identified at the beginning of each discussion.

This abbreviated FEIS revises and supplements the DEIS for this project. Public and agency comments on Chapters 1.0 through 4.0, 6.0 and 7.0, and Appendices A and B in the DEIS are incorporated into this document as errata. The DEIS will be required to accompany this FEIS because only the modifications, corrections, and additions are provided in the following material (with the exceptions of the Executive Summary, Section 3.2, part of Chapter 5.0, and Chapter 8.0). Section 3.2 of the DEIS is reproduced in its entirety because an additional 3.5 months of field data, which were not available at the time of the DEIS was prepared, were incorporated into the FEIS and because a substantial number of comments were received on this section. Chapter 5.0 was reorganized to define applicant-committed, project-wide, and resource-specific mitigation measures. All mitigations described in the DEIS and FEIS are recapitulated in Chapter 5.0 and summarized in Table 2.11 in the FEIS. Chapter 8.0 in the FEIS presents a summary of comments received at public meetings and discusses 12 major issues raised during the public comment period. All comments are reproduced in Chapter 8.0, and BLM responses are presented.

Revisions made to the DEIS, while extensive, do not warrant preparation of a supplemental DEIS because

- the BLM did not make substantial changes to the proposed action that are relevant to environmental concerns, and
- there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 C.F.R. 1502.9).

For ease of reference, modifications to the DEIS are presented under the chapter numbers and headings by page number, column, paragraph, and line with information as to inserts, deletions, and other modifications as appropriate.

EXECUTIVE SUMMARY

The Draft and Final Environmental Impact Statements were prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, to consider potential environmental consequences (both positive and negative) of a proposed 500-megawatt (MW) Windplant™ in the Foote Creek Rim - Simpson Ridge area between the towns of Hanna and Arlington in southeastern Wyoming. The proposed KENETECH Windpower, Inc. (KENETECH)/PacifiCorp, Inc. (PacifiCorp) project area (KPPA) is defined as the Foote Creek Rim and Simpson Ridge project areas plus three alternate transmission line routes. Under the Proposed Action, the Bureau of Land Management (BLM) would issue a 30-year renewable right-of-way (ROW) grant to KENETECH for construction of the full 500-MW Windplant and a ROW grant to PacifiCorp to construct a 230-kilovolt (kV) transmission line along one of the three alternate routes. The Proposed Action is the BLM preferred alternative for the project. Alternative transmission line Route No. 3 is the BLM preferred alternate. The BLM is the lead agency for Environmental Impact Statement (EIS) preparation; the Bonneville Power Administration (BPA), which would buy a portion of the electric power, is a cooperating agency. Two alternatives (Alternative A and a No Action Alternative) were analyzed. Alternative A would involve construction of a 300-MW Windplant plus the 230-kV transmission line. Under the No Action Alternative, BLM would deny the ROW grant and BPA would not execute a power purchase agreement with PacifiCorp. The No Action Alternative is not expected to result in direct development of another energy source within the KPPA, the Great Divide Resource Area, or the area serviced by Bonneville Power Administration, PacifiCorp, Tri-State Generation and Transmission Company, Public Service Company of Colorado, or Eugene Water and Electric Board. A scoping statement was mailed to potentially interested parties and the media in January 1994. Issues and concerns identified by the public, BLM, and other governmental organizations regarding the Proposed Action and analyzed in this EIS are as follows:

Key issues

- wind turbine effects on birds,
- direct and indirect wildlife habitat loss,
- big game winter range and migrations,
- threatened, endangered, candidate, and state sensitive (TEC&S) and priority plants and animals and their habitats,
- cultural resources and Native American spiritual values, and
- reasonable access to public land.

Other issues and concerns raised during public scoping

- visual resources and aesthetics,
- benefits/disadvantages of wind energy vs. other energy sources,
- noxious weed control,
- highly erodible and unstable soils,
- wetlands and riparian areas,
- paleontological resources,
- reclamation potential,
- surface and groundwater,
- conformance with current and future land uses,
- compatibility with management plans and objectives,
- noise impacts on residents and wildlife,
- displacement and reduced habitat effectiveness to wildlife from turbine noise and motion effects,
- impacts to recreation (e.g., hunting and access),
- social and economic effects on local communities,
- revenue generation and job availability,
- areawide transmission capabilities,
- impacts to existing pipelines,
- impacts to other potential wind developers,
- compatibility with other energy industries,
- increased traffic on roads and increased human activity, and
- public safety, law enforcement, and travel management.

All written and verbal comments received on the proposed project were considered in the preparation of the DEIS and FEIS. The proposed project, as planned, is in conformance with the BLM Great Divide Resource Area Resource Management Plan, BPA's Resource Supply Expansion Program, the State of Wyoming Land Use Plan, and the Carbon County Land Use Plan.

The purposes of the Proposed Action, or project, are to provide wind-generated electricity from a site in Wyoming; test the ability of wind energy to provide a reliable, economical, and environmentally acceptable energy resource in the region; and develop a further market for Wyoming-sourced wind-generated electricity. Utilities providing electrical power to Rocky Mountain and southwestern states have forecast that greater than 9,000 MW of new generating capacity will be needed during the next 20 years to meet base load and peak load electricity demands.

The project, as proposed by KENETECH, is to construct and operate wind turbines and associated facilities in phases on approximately 60,619 acres (ac) of federal (28%), state (10%), and private (62%) lands within R78W-R82W, T19N-T22N, in Carbon County of southcentral Wyoming. Southern Wyoming has some of the most consistent high wind speeds in the conterminous United States [U.S. wind speeds average 10-17 miles per hour (mph) (4.5-7.8 meters per second [m/s])]. The KPPA is located within a unique gap in the Rocky Mountains which accelerates winds to an annual average of 21.5 mph (9.6 m/s). The Windplant (including turbines and operations, maintenance, communications, and transmission facilities) would be developed in phases, beginning with approximately 201 wind turbines to generate 70.5 MW along the Foote Creek Rim area and a 230-kV transmission line from Foote Creek Rim to the existing Miner's substation near Hanna. PacifiCorp would own the first phase of the Windplant and would construct the 230-kV transmission line. KENETECH proposes to use Model KVS-33 wind turbine generators supported by 80-120 ft (24-37 m) tall tubular towers spaced approximately 162-216 ft (49-66 m) apart within rows and approximately 1,080-1,620 ft (329-494 m) between rows. Additional turbines and facilities would be erected in 50 to 100-MW phases over the next 10-12 years as utilities in the western United States seek additional capacity to satisfy base load and peak electrical power demands. The complete Windplant would consist of approximately 1,390 turbines, with up to 575 turbines (generating 200 MW) at the Foote Creek Rim area and 815 turbines (generating 300 MW) in the Simpson Ridge area.

Considered in this EIS are the Proposed Action, an alternative representing a 40% reduction in the Proposed Action, and a No Action Alternative. Three alternate transmission line routes are also analyzed in this DEIS, as part of the Proposed Action and Alternative A. Four other alternatives to the Proposed Action (i.e., selecting an alternate project location, expanding or reducing the project area size, constructing the project in one phase, and generating the 500 MW of power via other energy sources) were considered but rejected because they did not meet the purpose and need or were not reasonably feasible.

The proposed project would initially disturb 319 ac for Phase I and 1,787 ac for the 500-MW Windplant, including the Windplant (136-1,595 ac), substations (4-13 ac), and the 230-kV transmission line route (148-179 ac, depending on which of three alternate routes selected). Under Alternative A, 1,146 ac of initial disturbance would occur, including the Windplant (957 ac), substations (10 ac), and the 230-kV transmission line (156-179 ac). Approximately 439 ac of existing disturbance from roads (166 ac), pipeline (241 ac), telephone cables (22 ac) and oil and gas wells (10 ac) is already present in the area. Nearly 70% of initially disturbed lands will be in the predominantly sagebrush shrubland and mixed grass sagebrush shrubland vegetation types. Planned mitigation measures would reduce the life-of-project (LOP) disturbance area to 68 ac for Phase I and 715 ac for the 500-MW Windplant, or 431 ac for Alternative A.

It is anticipated that 126 people per day would be required during construction of the first phase of development, with most construction work to be completed between April and September in a given year. Road construction may commence during the 1995-1996 winter. Additional phases would employ 86 to 172 people, depending on the size of the phase being constructed. Operation and maintenance (O&M) of the Windplant would require up to nine Windsmiths (specially trained O&M personnel) for the first phase of development and an additional 20 Windsmiths to operate and maintain the full 500-MW Windplant. During construction, the average number of daily vehicle trips to the site would range from 30-70, while the average number of vehicles actually working on-site would be 15-40. During normal O&M, daily traffic to and on the site would include five 4-wheel drive pickups for the first phase of development and 10 pickups for the full 500-MW Windplant.

The KPPA is located in an area characterized by steep and flat-topped ridges bounded on the south by the Medicine Bow Mountains; on the north by the Seminoe, Shirley, and Freezeout Mountains; and on the west and east by the Hanna and Laramie Basins, respectively. Climate in the area is classified as continental, semiarid, cold desert with an average annual precipitation of 10-14 inches (25-35 cm). Air quality is generally good with suspended particulates comprising the principal air quality pollutant. The area is cut by several perennial and numerous ephemeral streams. Groundwater and surface water are variable in quality. Major land uses within and adjacent to the KPPA are agriculture (primarily cattle and sheep grazing); wildlife habitat; oil and gas exploration, development, and transportation; and dispersed outdoor recreation. No developed recreation resources exist within the KPPA; however, the Wick Brothers Wildlife Habitat Area, which includes approximately 77% of the Foote Creek Rim area, is managed by the Wyoming Game and Fish Department (WGFD) for recreational purposes.

No coal or uranium development and only limited oil and gas development are presently occurring within the KPPA and the potential for development of these resources in the foreseeable future is moderate to low. Salable minerals are being excavated from local sources within the project area. There is one known fossil locality in the area, and local rock formations are known to contain important and abundant fossils, both locally and in other parts of Wyoming.

A wide variety of soils occurs within the KPPA due to varying parent materials, topographic position, local hydrology, vegetation, and other factors. On top of Foote Creek Rim, soils are predominantly gravels and are well suited to the type of development proposed. In other parts of the KPPA, particularly in the Simpson Ridge area, soils exhibit sensitivity to disturbance from development activities, having moderate to high water erosion and severe wind erosion potentials. Vegetation is predominantly a mixed grassland/sagebrush shrubland comprised of big sagebrush and other shrubby species and a variety of shortgrass and forb species. The density of the vegetation varies greatly from one location to another, and is controlled by extremes in soils, available nutrients, pH, and soil moisture. Livestock annual range productivity varies from near 0 lbs/ac (on extreme sites) to 3,500 lbs/ac on meadow/riparian areas in excellent condition during years with normal precipitation. The latter type occupies $<1\%$ of the KPPA. Potential wetlands are sparsely scattered throughout the project area and are commonly associated with ephemeral drainages, impoundments, and major stream channels.

Four big game mammal species commonly occur within or adjacent to the project area: pronghorn antelope, mule deer, elk, and white-tailed deer. Nearly all of the wildlife habitat on the Foote Creek Rim area and two-thirds of the habitat on the Simpson Ridge area is considered winter/yearlong range for all but white-tailed deer. Seven percent of the wildlife habitat in the Simpson Ridge area is considered crucial winter/yearlong range for pronghorn. The entire

KPPA is considered suitable habitat for raptor hunting, foraging, and perching, and these, along with other nonraptor bird species, are considered vulnerable to collisions with wind towers. Also of concern are 44 sage grouse breeding areas known to exist within the KPPA. A number of threatened, endangered, candidate, and sensitive plant and animal species are known to occur or could occur in the KPPA. Of primary concern among those known to occur are the bald eagle, peregrine falcon, mountain plover, and ferruginous hawk. The mountain plover, a candidate for threatened and endangered (T&E) listing, has been frequently observed in the Foote Creek Rim area. Approximately 35% of the Simpson Ridge area is classified as a primary management zone (PMZ) for the reintroduction of black-footed ferrets (BFFs).

The negative impacts on air quality, topography, mineral/gas and oil development, geologic hazards, paleontological resources, surface water and groundwater resources, odor, vegetation (with the possible exception of changes in plant community composition due to snow redistribution and potential unsuccessful reclamation), wetlands, socioeconomics, land use, and hazardous materials are expected to be negligible. Impacts could be negligible to beneficial for air quality (by replacing a proportion of the electrical generation and associated pollutants, which would otherwise come from the burning of fossil fuels), for socioeconomics (through increased federal, state, and local revenues), and for land use (potential increased tourism). Moderate negative impacts are expected in terms of increased soil erosion potentials, increased noise levels within important wildlife habitats during critical periods, and for land use (possible changes in recreational use of the KPPA) due to the construction and presence of facilities. Potentially significant impacts resulting from the proposed project include:

- direct losses of big game crucial habitat;
- indirect displacement and/or stress of big game due to noise, movement, or human activity associated with construction and/or operation of proposed facilities;
- raptor mortality due to collisions with wind towers or power lines;
- declining raptor populations;
- loss of sage grouse nesting habitat;
- mortality or displacement of any listed or candidate T&E species or disturbance of their critical habitat;
- possible unsuccessful long-term (5-year) revegetation on some sites;
- disturbance of important Native American traditional sites;
- increased noise levels near residences; and
- modification of the basic elements (form, line, color, or texture) of visual resources by presence of Windplant facilities.

A number of other potential impacts to wildlife (e.g., declines in common nonraptor species), cultural resources (e.g., disturbance/destruction of important sites, loss of important cultural materials due to private collection or vandalism), and socioeconomics (e.g., increase in population, increase in demand for local services) were considered, but were estimated to be negligible.

A number of project-wide mitigation measures are proposed to avoid, reduce, or eliminate project impacts. Because wildlife impacts of wind energy generation are not completely understood for this area at this time, an extensive monitoring program has been proposed as an integral part of the mitigation package. Data from early phases of this study program will be utilized by the BLM, KENETECH, and a technical advisory committee involving other cooperating agencies to adjust facility operations and to further reduce project impacts in later phases of development, if necessary. The 22 project-wide mitigation measures to be implemented from the outset may be summarized as follows:

1) Mitigation measures would be adhered to on federal and state lands, and on private lands, subject to landowner preferences.

2) Windplant facilities (e.g., turbine towers, roads, power lines) would be placed to minimize or avoid disturbance in areas

with high value wildlife habitat (e.g., crucial winter range, wetlands, and riparian areas).

3) Areas with high erosion potential and/or rugged topography (i.e., steep slopes, dunes, floodplains, unstable soils) would be avoided, where feasible. If disturbance in these areas is necessary, stringent erosion control and soil stabilization measures would be implemented immediately.

4) Surface disturbance or occupancy would not occur on slopes in excess of 25%, where feasible, nor would construction occur when soils are wet or frozen, whenever feasible.

5) Removal or disturbance of vegetation would be kept to a minimum through construction site management (e.g., utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, scalping, etc.).

6) Topsoil disturbance would be kept to a minimum through construction site management. Topsoil would be salvaged prior to construction to facilitate revegetation. After construction, all salvaged topsoil would be spread evenly over all surfaces to be revegetated and seeded. All seeding would use an approved mixture of native and/or introduced species. Because of the extended LOP, no topsoil would be stockpiled beyond completion of post-construction reclamation.

7) Revegetation methods would include:
   a) deep ripping of compacted soil prior to reseeding, where necessary;
   b) broadcast or drill seeding, depending on site conditions;
   c) fall seeding (September 15 to freeze-up), where feasible;
   d) spring reseeding (after the ground thaws and prior to April 15) if fall seeding is not feasible;
   e) utilization of native cool season grasses, forbs, and shrubs in a mixture specified by KENETECH and PacifiCorp and approved by the landowner or BLM;
   f) addition of BLM-approved introduced species (e.g., crested wheatgrass, Russian wildrye) to the seed mixture if attempts at revegetation with native species are unsuccessful;
   g) installation of waterbars on disturbed slopes with grades of 6% or greater to reduce erosion (waterbars may be installed on disturbed slopes with grades less than 6% in areas with unstable soils); and
   h) possible fencing of sensitive reclamation sites.

8) Vegetation and soil removal would be accomplished in a manner that would minimize erosion and sedimentation.

9) Construction would be avoided within 500.0 ft (152.4 m) of surface water or wetland areas where feasible. Where wetlands, riparian areas, or ephemeral stream channels must be disturbed, the following measures would be employed:
   a) Wetland areas would be crossed during dry conditions (i.e., late summer, fall, or dry winters).
   b) Streambeds would be crossed perpendicular to flow, where feasible.
   c) Streams, wetlands, and riparian areas disturbed during project construction would be restored to pre-project conditions. If impermeable soils contributed to wetland formation, soils would be compacted to restore impermeability.
   d) Recontouring and appropriate/adapted species would be used to revegetate the banks to aid in soil stabilization.

e) Revegetation operations would begin on impacted areas immediately after completion of project construction activities.

10) Intermittent and ephemeral drainages would be protected from surface disturbance within 75.0 ft (22.9 m) of the channel or the inner gorge, whichever is closer, where feasible.

11) Temporary erosion control measures such as mulch, jute netting, sediment traps, or other appropriate methods would be used on unstable soils, steep slopes, and wetland areas to prevent erosion and sedimentation until vegetation becomes established.

12) 230-kV transmission line structures would be located at least 40.0 ft (12.2 m) from pipelines where feasible, and conductors would be at least 30.0 ft (9.1 m) above ground level at all pipeline and road crossings. Structures would be located at least 100.0 ft (30.5 m) from all streams where feasible. Stream crossings would be avoided during materials-hauling and structure assembly and erection by using existing roads to access the ROW, where feasible. Where conductors must be strung across perennial streams, ropes would be used to haul the conductors across the stream. Intermittent or ephemeral channels would be crossed during periods of no flow.

13) Surface disturbance within 0.75 mi (1.2 km) of active raptor nest sites (i.e., used within the last three years) would be avoided during the nesting season (February 1 through July 31). If the area must be impacted, project activities would occur outside the nesting season. Extensive raptor nesting studies are being completed as part of the baseline avifauna studies and would continue as part of the monitoring program for the project.

14) Windplant facilities would be designed or equipped to prevent raptor perching (e.g., using tubular rather than lattice towers, equipping power poles within the Windplant with raptor antiperching devices).

15) All poles for collection and transmission lines located within 0.25 mi (0.4 km) of sage grouse leks would be equipped with raptor antiperching devices to minimize the opportunities for raptors to prey on sage grouse. All poles located near prairie dog colonies within the BFF PMZ also would be equipped with raptor antiperching devices to minimize the take of prairie dogs or the potential take of BFFs by birds of prey.

16) To protect important big game winter habitat, construction activities would not be allowed from November 15 to April 30 within certain areas encompassed by the ROW grant. The same criterion would apply to defined big game birthing areas from May 1 to June 30.

17) Known active sage grouse leks and adjacent areas [2.0 mi (3.2 km) radius from lek centers] would be avoided during the breeding and nesting seasons from March 1 through June 30. No construction activities would be conducted on public lands within 0.25 mi (0.4 km) of known lek sites; and project activities, other than those required for O&M along existing roads within 0.25 mi (0.4 km) would be curtailed during the period from

1 hr before daylight to 9:00 a.m. from March 1 through April 30.

18) All substations and other areas that would be hazardous to wildlife would be fenced as directed by the BLM.

19) Paleontological and archaeological surveys would be completed prior to disturbance, with monitoring as necessary during disturbance of impacted areas with high resource potential. Paleontological or cultural resource sites would be avoided or mitigated, as necessary, prior to disturbance. Any cultural or paleontological resource discovered by the operator or any person working on his or her behalf would be immediately reported to the BLM. All construction operations within 50.0 ft (15.2 m) of such a discovery would be suspended as required by BLM regulations until written authorization to proceed is issued by the Authorized Officer (AO). An evaluation of the discovery would be made by the AO to determine appropriate actions to prevent the loss of significant cultural or scientific values.

20) Approval from the BLM AO in consultation with other agency personnel [e.g., WGFD, U.S. Fish and Wildlife Service (USFWS)] would be required prior to construction in areas (e.g., crucial winter ranges, near raptor nests) where federal regulations are applied to protect sensitive resources (e.g., wildlife). This action would allow project activities to proceed in restricted areas and/or during periods of restriction (e.g., mild winters, abandoned raptor nest sites, etc.), if deemed appropriate.

21) KENETECH would continue to work with BLM and Native American tribes on mitigative measures for cultural resources through each phase of the project.

22) All livestock control fences would conform to BLM Manual Handbook H-1741-1 for the passage of wildlife.

GENERAL NOTES

1. Since the DEIS was issued, KENETECH has changed the turbine model number from "33M-VS" to "KVS-33".
2. On August 11, 1995, the bald eagle was downlisted from endangered to threatened in Wyoming.

1.0 INTRODUCTION

Page 1-1, column 1, paragraph 2, line 21. Replace "PacificCorp" with "PacifiCorp".

Page 1-1, column 1, paragraph 2, line 15. Replace "will" with "would".

Page 1-4, column 1, paragraph 1, line 12. After "phases." insert "In response to comments received on the DEIS, BLM would also complete a formal NEPA analysis for each subsequent phase (see Section 8.2.6 in the FEIS). Therefore, this EIS is programmatic for the entire project, and includes site-specific environmental analyses for Phase I of the development."

Page 1-4, column 2, paragraph 2, line 1. Delete "BPA and".

Page 1-5, column 1. Replace paragraph 3 with the following paragraph:

1.1 PURPOSE AND NEED

The primary purpose of the Proposed Action is to provide wind-generated electricity from a site in Wyoming and to develop a further market for Wyoming-sourced wind-generated electricity. BPA's purposes of the Proposed Action are:

- to test the ability of wind energy to provide a reliable, economical, and environmentally acceptable energy resource;
- to assure consistency with BPA's statutory responsibilities, including the Pacific Northwest Electric Power Planning and Conservation Act, the Northwest Power Planning Council's Conservation and Electric Power Plan, and its Fish and Wildlife Program (Section 1.2.1); and
- to assure consistency with BPA's Resource Programs. The acquisition of a wind resource is consistent with BPA's Resource Programs EIS (BPA 1993a), and the EIS for the proposed windpower project is tiered to the Resource Programs EIS. (Tiering is a way to incorporate by reference a discussion of issues that have been covered in a previous EIS).

BPA will decide whether to execute a power purchase agreement with PacifiCorp and other utilities participating in the project.

Page 1-5, column 2, paragraph 3, line 3. Insert "of some utilities" after "facilities".

Page 1-5, column 2, paragraph 3, line 4. Delete "BPA 1993a;".

Page 1-6, column 1. Replace paragraph 2 with the following paragraph: "In the Pacific Northwest, additional non-power requirements aimed at improving salmon survival in the Columbia River Basin (primarily spill and flow requirements) have reduced the generating capacity of the federal hydrosystem. The closure of the Trojan Nuclear Power Plant in early 1993 contributed to further losses of generating capacity. BPA presently has a surplus of generating capacity, but developing small-scale wind demonstration projects will test the ability of wind resources to meet future needs.

1.1.2 The Wyoming Wind Resource

Page 1-6, column 2, paragraph 3, line 10. Add "The annual capacity factor for the entire Windplant is expected to average 25-35%." after "capacity)."

Page 1-7. Add the following footnote to Table 1.2: "Note: Estimated costs (cents/kWh) reflect costs to the utilities, not to consumers.

Page 1-8, column 1, paragraph 1, line 3. Replace "Resource Management Plan (RMP)" with "Resource Management Plan/EIS (RMP/EIS)"

Page 1-8, column 1, paragraph 2, line 11. Replace last sentence of paragraph ("Every two . . .") with "This EIS is also tiered to BPA's 1993 Resource Programs Environmental Impact Statement (BPA 1993a)."

1.3 AUTHORIZING ACTIONS

Page 1-8, column 2, paragraph 3, line 13. Insert the following paragraph as a new paragraph prior to "Common stipulations . . .".

The ROW Grant for this project would authorize KENETECH to use public lands for wind generation, for the collection and transmission of electric power, and for related activities. If the project is approved, BLM is committed to governing Windplant development, operation, and maintenance in a manner that would minimize impacts to the human environment on public land and on private land subject to landowner consent. Stipulations necessary for minimizing impacts, many of which would be taken directly from the EIS, would be included in the ROW grant. Other stipulations may be developed during preparation of the ROD for the project and also included in the ROW grant.

Page 1-9, Table 1.3. Under the U.S. Bureau of Land Management, list the following Action: "Hazardous Materials Summary" and Authority: "BLM Instruction Memoranda Nos. WY-93-344 and WY-94-059."

Page 1-9, Table 1.3. Under the U.S. Fish and Wildlife Service, add to Action column: "Issue take permits and/or other approvals under MBTA, BEPA, and ESA."

Page 1-9, Table 1.3. Under Wyoming Department of Environmental Quality-Water Quality Division, list the following Action: "Stormwater Pollution Prevention Plan" and Authority: "Clean Water Act of 1977, amended 1987 (33 U.S.C. Sections 1251-1376); Wyoming Water Quality Rules and Regulations Chapter XVIII."

Page 1-9, Table 1.3, third column, line 10. Replace "Conversation" with "Conservation"

Page 1-9, Table 1.3, column 3, lines 22 and 24. Change "U.S.E." to "U.S.C.".

Page 1-10, column 1. Insert the following two paragraphs after "• visual resources."

BLM has the authority to terminate the ROW grant if a material default in the performance of KENETECH's obligations under the ROW agreement occurs and remains in default. If KENETECH fails to adhere to any stipulation promulgated in the ROW grant, BLM would notify KENETECH in writing of the default, and specify the means to correct the default and a deadline for implementing the correction and regaining compliance with the ROW grant. For example, if the ROW grant stipulates that KENETECH will relocate individual towers associated with high collision-related mortality, BLM has the authority to require relocation or terminate the ROW grant if the specified tower(s) are not moved within a certain time period.

Upon termination of the ROW grant, KENETECH would remove all aboveground windpower facilities from public land and reclaim all disturbed areas as specified in the reclamation plans included in the PODs.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

2.1.1 Overview

Page 2-2, Table 2.1(a), caption. Insert "Surface" after "Proposed". Insert the following before "Assumptions . . ." in footnote 1: "At this time the BLM is unable to quantify displacement effects or loss of habitat function from project activities. Monitoring studies are designed to detect gross changes of habitat use around windplant facilities. The need for mitigation tied to displacement will be addressed in environmental analysis for subsequent phases."

Page 2-4, Table 2.1(c), caption. Insert "Surface" after "Comparison of".

2.1.2 Plan of Development

Page 2-5, column 1, paragraph 3, line 8. After "Whereas the" insert "programmatic".

Page 2-5, column 2, paragraph 1, line 3. Replace "the BLM has included provisions in the EIS for agency consultation and public involvement during POD development and monitoring (Figure 2.1). The process of POD development, agency consultation, construction, and monitoring illustrated in Figure 2.1 would be a binding provision of the NEPA document (i.e., a programmatic project-wide mitigation measure)." with "the BLM would also complete a formal NEPA analysis of each subsequent phase, including agency consultation and public involvement (Figure 2.1)(see Section 8.2.6 in the FEIS). The POD for each phase would include information from the site-specific environmental analysis completed for the NEPA document plus site-specific engineering information. Mitigations developed during the NEPA analysis and prescribed in the POD would become a binding part of the ROW grant."

Page 2-5, column 2, paragraph 3. Replace the entire paragraph with "A description of the existing environment in each proposed development area would be included in the POD using information from the programmatic EIS and subsequent NEPA documents. Commensurate with the NEPA documents, potential impacts would be described and appropriate site-specific mitigation measures would be defined. Sufficient data would be collected during preparation of subsequent NEPA documents and PODs to address BLM's, other agencies', and the public's resource concerns. Cumulative impacts on wildlife from previous phases would be documented and assessed.

Page 2-6. Replace Map 2.1 in the DEIS with Map 2.1 in the FEIS.

Page 2-7, Figure 2.1. Replace Figure 2.1 in the DEIS with Figure 2.1 in the FEIS.

2.1.3 The Windplant

Page 2-8, column 2, paragraph 3, line 5. After "environmental analysis in the" insert "programmatic". Line 6, after "future" insert "NEPA documents and".

Page 2-8, column 2, paragraph 3, line 10. Replace "(Section 4.6)" with "(Appendix F)".

Page 2-8, column 2, paragraph 3, line 16. Replace "Further environmental analysis may be required for the PODs for subsequent phases in the Simpson Ridge area." with "Further environmental analysis would be conducted for the NEPA documents and PODs for subsequent phases in the Simpson Ridge area."

Page 2-9. Replace Figure 2.2 in the DEIS with Figure 2.2 in the FEIS.

Page 2-10. Replace Figure 2.3 in the DEIS with Figure 2.3 in the FEIS.

Page 2-12. Replace Figure 2.4 in the DEIS with Figure 2.4 in the FEIS.

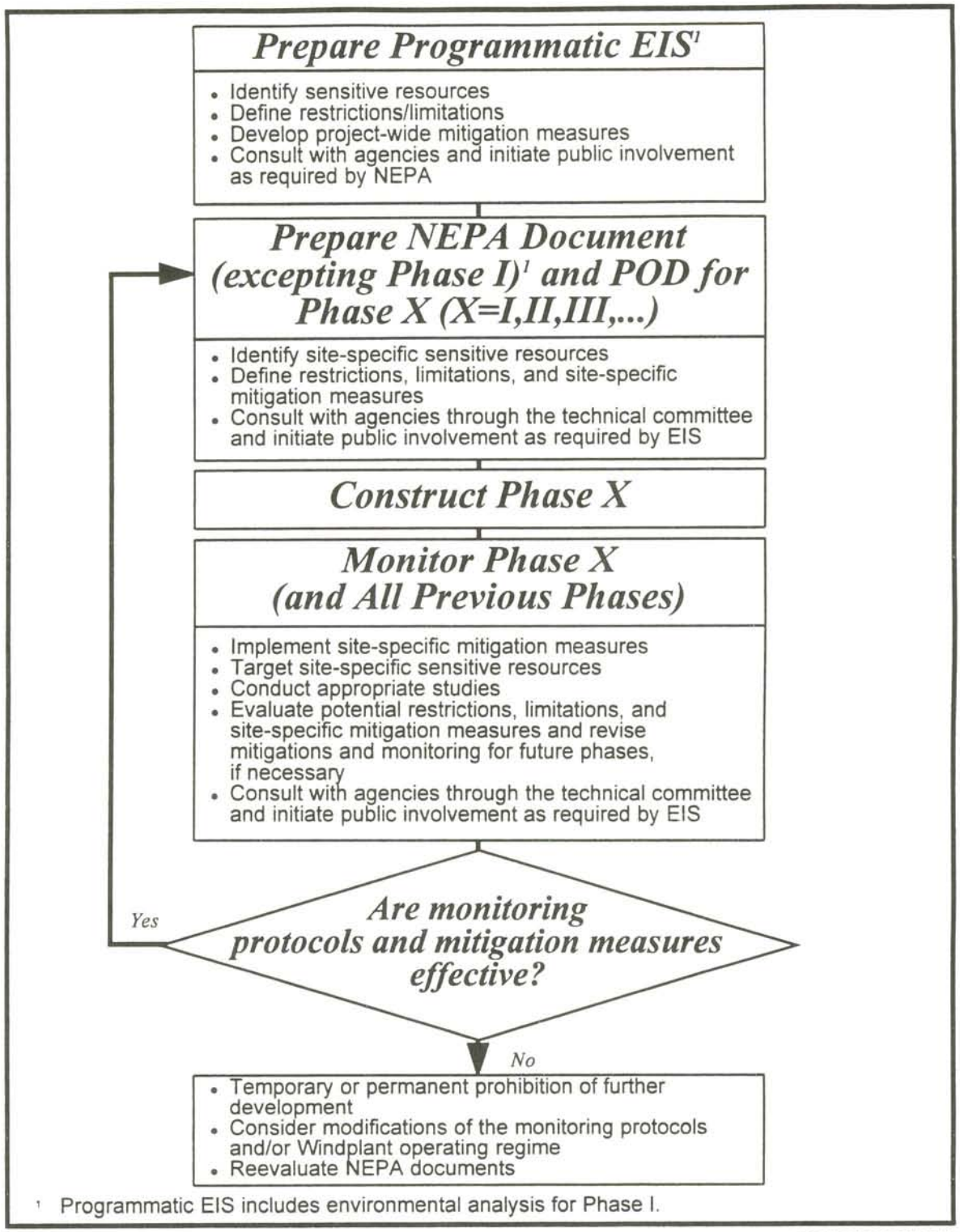
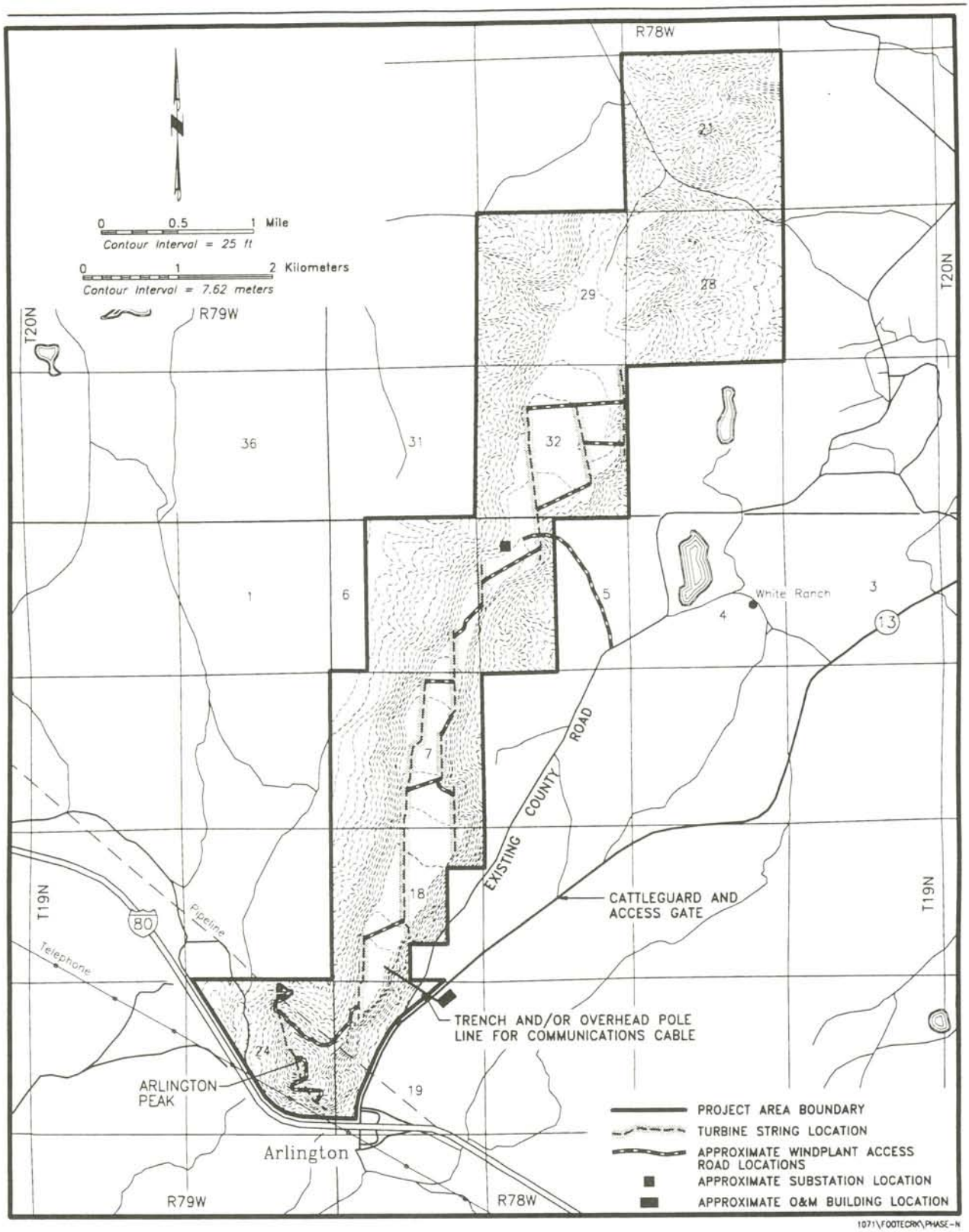


Figure 2.1 Flow Chart Showing Environmental Review Process and Agency and Public Consultation.



Map 2.1 Proposed Locations of Turbine Strings and Access Roads for the First Phase of Windplant Development on Foote Creek Rim.

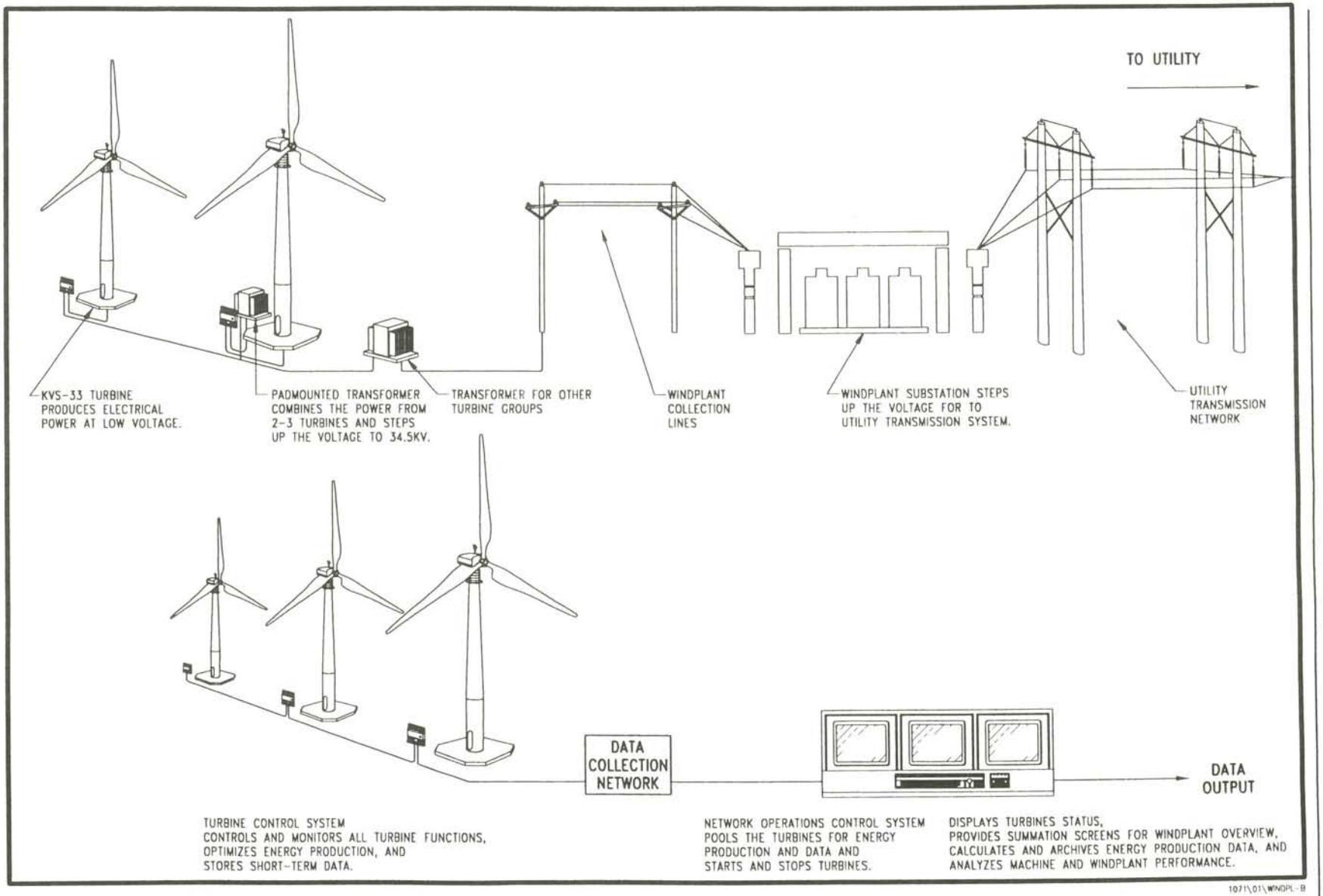


Figure 2.2 Components of a Typical KVS-33 Windplant.

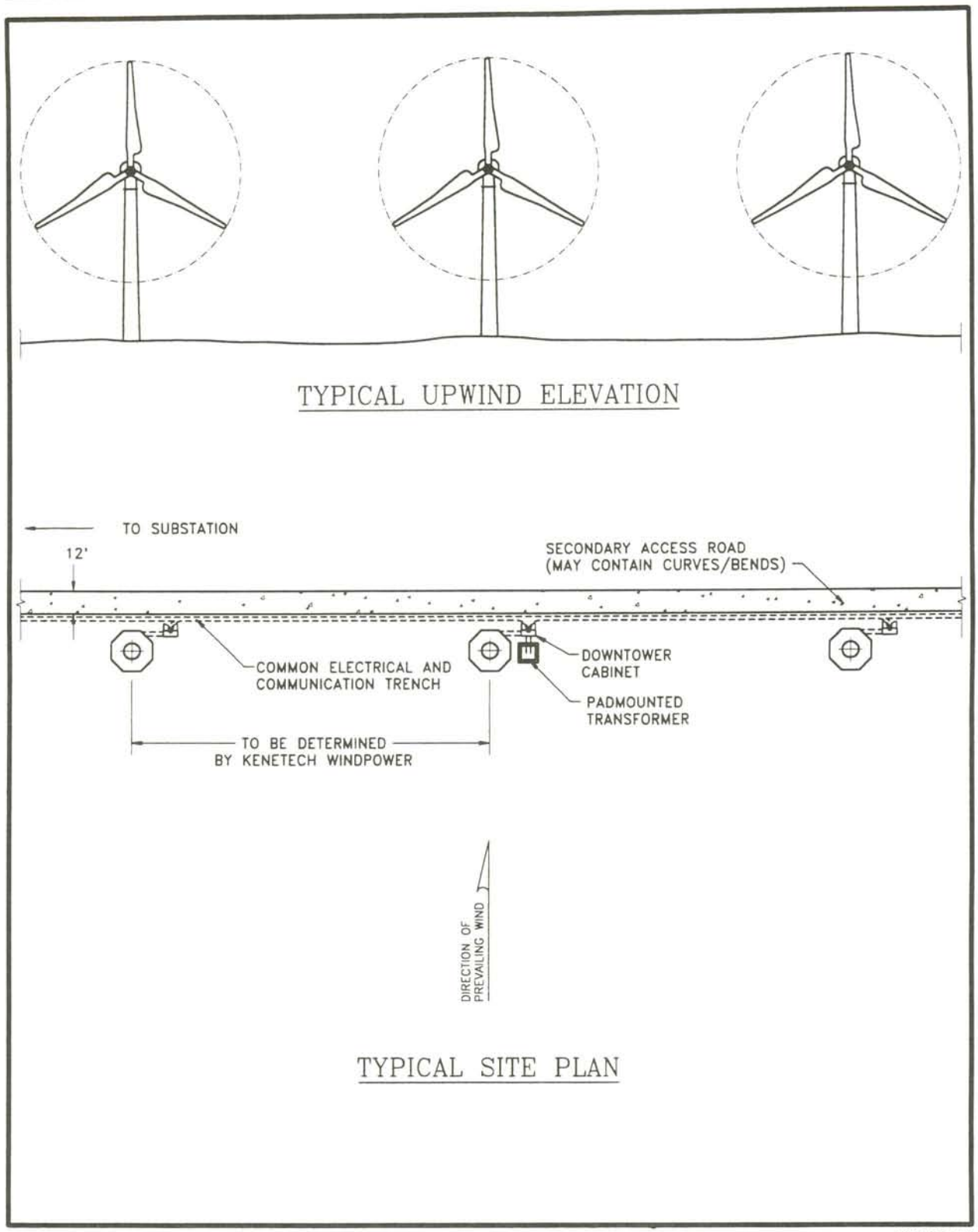


Figure 2.3 Typical Site Plan of Turbine String Corridors and Roads.

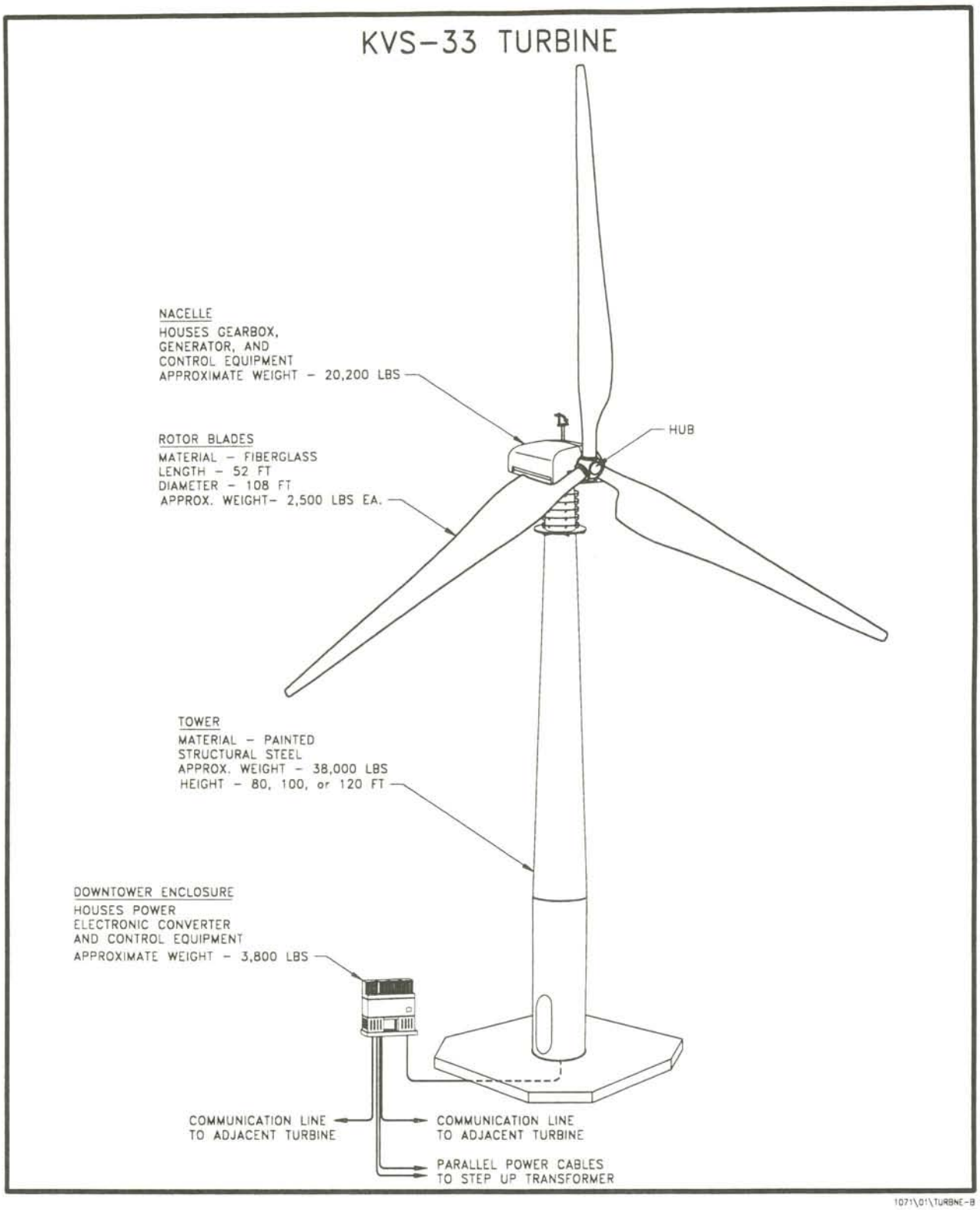


Figure 2.4 Diagram of a Typical Tubular Tower-supported KVS-33 Wind Turbine Generator.

2.1.3.4 Access

Page 2-14, column 1, paragraph 2, line 4. Replace "will" with "would".

2.1.4 Construction

Page 2-15, column 2, paragraph 1, line 10. Insert a line between the last bullet sentence and the sentence beginning "Table 2.2 presents . . .".

2.1.4.1 Road and Pad Construction

Page 2-18, column 1, paragraph 1, line 3. Delete "as possible" and insert "as feasible" after "road construction.".

2.1.4.2 Foundations and Tower Erection

Page 2-18, column 1. Replace paragraph 5 with the following paragraph: "Foundations would consist of footings and slabs which would vary in configuration depending on soil characteristics. Foundations would consist of steel reinforcements and poured concrete. Anchor bolts would be embedded in concrete and used to secure the tower. Foundations would be allowed to cure prior to tower erection."

2.1.4.4 Overhead Electric Power and Communications Construction

Page 2-19, column 1, paragraph 3, line 11. After "175-ft (53.3-m)" add "to 250-ft (76.2-m)" and add "(in accordance with NESC loading criteria)" after "substation".

Page 2-19, column 1, paragraph 3, line 12. Delete "Temporary disturbance width would average 20.0-ft (6.1-m), and". Line 13. Capitalize "All".

Page 2-19, column 1, paragraph 3, line 15. Delete "Approximately 175 structures and 5.0 mi (8.0 km) of overhead collection lines would be erected for the first phase of the project. The 200-MW/Foote Creek Rim portion of the Windplant would require 11.0 mi (17.7 km) of overhead collection lines and 492 structures. The 500-MW would require an estimated 55.0 mi (88.5 km) of overhead collection lines and 2,550 structures."

2.1.5 Public Access and Safety

Page 2-22, column 2, paragraph 1, line 13. Add the following to the end of the paragraph: "The KVS-33 machine proposed for this project is not likely to cause wildfires. In older machines, the yaw system could not be controlled and after several revolutions, electrical cables running down the towers would become twisted and break, causing sparks and sometimes fires. The yaw system on the KVS-33 is programmed to shut down the turbine and unwind after three revolutions, thereby preventing cables from twisting and breaking."

2.1.6 Operations and Maintenance

Page 2-23, column 1, paragraph 1, line 18. Replace "(i.e., without using a crane to remove the turbine from the tower)." with "(i.e., Windsmiths would climb the tower to service the turbine so that a crane usually would not be necessary to remove the turbine)."

2.1.9 Hazardous Materials

Page 2-27, column 1, paragraph 2, line 8. Replace "the possibility for accidental leakage is minimal" with "accidental leakage is highly unlikely".

Page 2-27, column 1, paragraph 2, line 17. Replace "All vehicular maintenance would be performed off-site at an appropriate facility." with "Whenever feasible, vehicular maintenance would be performed off-site at an appropriate facility. When equipment breakdowns necessitate on-site repairs, proper procedures would be utilized to prevent fluid spills."

2.1.10 Reclamation and Abandonment

Page 2-28, column 1, paragraph 2, line 3. Change "(BLM 1990a)" to "(BLM 1990b)". Line 5. Replace "possible" with "it is feasible".

2.1.11 Project-wide Mitigation Measures

Page 2-29, column 1, paragraph 1, line 8. Insert "collision-related" before "avian mortality".

Page 2-29, column 1, bullet item 2, line 9. Replace "as much as possible" with "if feasible".

Page 2-29, column 2, bullet item 1, line 4. Insert "collision-related" before "mortality".

Page 2-29, column 2, paragraph 3, line 1. Insert "Collision-related" before "Mortality" and drop "Mortality" to lower case. Line 10. Add "NEPA document and" before "POD for".

Page 2-29, column 2, paragraph 3, line 5. Insert "BLM would consult with state and federal wildlife agencies as to the monitoring results and their application to future phases." after "upon request."

Page 2-29, column 2, paragraph 4, line 3. Replace "Retrofit of prior phases would not include replacement of capital items (e.g., rotors, towers, nacelles), but could include removing the rotor from turbines associated with high mortality rates, painting turbine rotors, or other measures not requiring capital expenditure." with "Retrofit of prior phases could include but is not limited to relocating turbines, painting blades, and installing warning devices. If the operations of the project causes an asserted violation of federal law (e.g., MBTA, ESA, or BEPA), the USFWS (in conjunction with other federal agencies) can initiate legal proceedings to enforce the provisions of such law. These proceedings may lead to a court order limiting or enjoining project operation until specified actions are taken or other conditions met. If project operations cause a violation of stipulations promulgated in the ROW grant, BLM may require KENETECH to take measures to correct the violation and may revoke the ROW grant for use of public land if KENETECH fails to correct the violation.

Page 2-30, column 1, item 6, line 1. Insert "Topsoil disturbance would be kept to a minimum through construction site management." before "Topsoil would be salvaged.."

Page 2-30, column 2, item 8, line 3. Replace the word "prevent" with "minimize".

Page 2-31, column 2, item 15, lines 1 and 6. Insert "All" at the beginning of the first two sentences of item 15.

Page 2-31, column 2, item 17, line 9. Replace "nest" with "lek".

Page 2-32, column 1, item 18, line 1. Insert "All" at the beginning of the sentence.

Page 2-32, column 1, item 2, line 6. Replace "water" with "winter".

2.2 ALTERNATIVE A

Page 2-32, column 2, paragraph 3, line 8. After ". . . power grid.", insert "Because the wind regime on the Foote Creek Rim area is superior to that on the Simpson Ridge area, Windplant development on the Foote Creek Rim area would probably proceed to or near the full 200 MW, unless restricted by the BLM due to environmental concerns. Under this scenario, by reducing the overall size of the Windplant to 300 MW, only about 100 MW (275 turbines) would be constructed in the Simpson Ridge area. Alternatively, if construction is prohibited on the Foote Creek Rim area due to environmental concerns (e.g., loss of mountain plover habitat), the 300-MW Windplant would be constructed entirely within the Simpson Ridge area.

Page 2-32, column 2, paragraph 5, line 11. Insert "A NEPA document and" before "A POD".

2.3 NO ACTION ALTERNATIVE

Page 2-33, column 1, paragraph 2, line 16. Delete "BPA or".

Page 2-33, column 1, paragraph 2, line 17. Add the following sentence to the end of the paragraph: "If BPA does not purchase the energy output associated with this project, then BPA would forego the opportunity to address regional barriers to cost-effective wind development and gain hands-on experience with the operation and integration of commercial windfarms."

2.4 ALTERNATIVES CONSIDERED BUT REJECTED

Page 2-33, column 1, paragraph 3, line 3. Add the following sentence after "feasible.": "A conservation alternative was analyzed by BPA (BPA 1993a), and this EIS is tiered to the BPA EIS."

Page 2-33, column 1, paragraph 4, line 8. Insert "[See Section 1.1]" before the closing parenthesis.

Page 2-33, column 2. Replace paragraph 2 with the following paragraph: With appropriate meteorological data, power output can be estimated and used to compare generating potential among different sites. Expected power output data (Table 2.9) show that Foote Creek Rim would have a net output of 1,300 MWh per turbine per year. Turbines in the Simpson Ridge area are predicted to produce 1,175 MWh per turbine per year. Expected output from other locations in southern Wyoming range from 945 to 460 MWh per turbine per year (i.e., other locations would have 35% to 65% less output per turbine than Foote Creek Rim). As power output decreases, the cost to utilities (computed over a 25-year period) increases. For example, at the next best site outside of the proposed project area (Medicine Bow), costs would be 126% of expected costs for power from Foote Creek Rim. At other sites, the additional costs borne by the utilities would range from 132% to 276% higher than costs from Foote Creek Rim. Section 8.2.1 in the FEIS presents the results of an independent evaluation of this analysis.

Page 2-34, Table 2.9. Replace Table 2.9 in the DEIS with Table 2.9 in the FEIS.

Page 2-35, column 2, paragraph 3, line 8. Replace "(BPA 1993)" with "(BPA 1993a)".

2.5 SUMMARY OF ENVIRONMENTAL IMPACTS

Pages 2-38 through 2-45. Replace Table 2.11 in the DEIS with 2.11 in the FEIS.

Table 2.9 Estimated Power Output and Cost for Alternative Sites.[1]

Area	Annual Per Turbine Net Output (MWh)[2]	Estimated Output as % of Output from Foote Creek Rim	Real Levelized Cost as % of Real Levelized Cost from Foote Creek Rim[3]
Foote Creek Rim	1,300	100%	100%
Simpson Ridge	1,175	90%	104%
Chugwater	850	65%	141%
Kemmerer	870	67%	138%
Medicine Bow	945	73%	126%
Rock River South	900	69%	133%
Rock Springs	460	35%	250%
Rawlins	830	64%	143%
Coyote Springs	800	62%	148%
Bridger Butte	675	52%	173%
Rock River North	880	68%	135%
Medicine Bow SW	880	68%	137%
Medicine Bow SE	850	65%	139%
Wheatland Reservoir 1	850	65%	139%
Fish Hatchery	840	65%	132%
Medicine Bow Airport	790	61%	149%
Wheatland Reservoir 2	770	59%	154%
Casper	650	50%	179%
Laramie	580	45%	202%
Cheyenne	530	41%	220%
Ferris	575	44%	205%
Buzzard Ranch	575	44%	208%
Red Desert	460	35%	276%

1 Source: KENETECH Windpower, Inc. All costs for each site include cost of transmission line construction which was estimated to be $170,000 per mile.

2 Estimated output uses current wind data collected through December 1994. Confidence is 90-95%.

3 Real Levelized Cost = real levelized cost of delivered energy to the purchasing utility over 25 years of project operation, calculated using PacifiCorp's financial analysis of the project. Assumes 201 KENETECH Windpower, Inc. Model KVS-33 variable speed wind turbines.

Table 2.11 Summary of Impact Analysis for the Proposed Action, Alternative A, and No Action.

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		CLIMATE AND AIR QUALITY		
Snow redistribution and subsequent impacts on wildlife, vegetation, soils, hydrology, and geologic hazards	Negligible to moderate - facilities could cause local changes in snow deposition patterns	Negligible to moderate; may be some reduction in impacts compared with Proposed Action, depending on facilities	No impact	Avoid fencing facilities where feasible; place downtower boxes within modified tubular towers where feasible; avoid snow accumulation areas.
Airborne particulates and emissions will increase but remain within state and federal standard.	Negligible - small increases in dust and emissions adjacent to turbine locations, roads, and ancillary facilities; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Regularly maintain roads and equipment.
No additional pollutant emissions due to fossil fuel burning for electricity generation	Beneficial[1] (national or global scale); LOP and beyond	Beneficial (national or global scale); adverse and beneficial effects reduced by approximately 40% from Proposed Action	Electric power may be generated by a polluting resource; negligible; LOP	None.
		TOPOGRAPHY/PHYSIOGRAPHY		
Cuts and fills along turbine corridors, roads, substations, transmission line ROWs	Negligible - no major landscape alterations; site-specific; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid significant features.
Alteration of surface drainages	Negligible - no long-term modifications to drainages; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid drainages where feasible; reestablish and reclaim drainages; use appropriate road and culvert design; acquire 404 Permits as appropriate.
		MINERALS/GAS AND OIL		
Localized temporary loss of access to oil and gas reserves	Negligible-wind, oil, and gas development may be compatible	Negligible and reduced 40% from Proposed Action	Possible negative impacts on oil and gas reserves	Avoid potential future gas and oil development areas, if possible.
Localized temporary loss of access to mineral reserves	Low to moderate impacts to coal if mining becomes economical during the LOP; negligible impacts to uranium	Low to moderate impacts to coal if mining becomes economical during the LOP and reduced approximately 40% from the Proposed Action; negligible impacts to uranium	Possible negative impact on coal reserves	Avoid gravel quarries and potential future coal and uranium mine sites, where feasible.

Table 2.11 (Continued)

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		GEOLOGIC HAZARDS		
Flood damage to facilities	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid floodplains and flood prone areas, where feasible.
Increased landslide potential due to snow accumulation	Negligible; LOP	Negligible; LOP	No impact	Locate facilities to avoid snow deposition on landslide prone areas, where feasible.
Reactivation of dunes due to ground cover removal	Negligible - no dunes and only a few windblown deposits in the KPPA; LOP	Negligible; LOP	No impact	Avoid windblown deposits where feasible; implement appropriate and timely reclamation, erosion control, and revegetation.
Earthquake damage to facilities	Negligible - very low earthquake potential; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Construct turbines and power lines to withstand moderate earthquakes.
Landslides and slumping at construction sites	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid unstable areas where feasible; implement appropriate and timely reclamation and erosion control.
Subsidence during or after construction	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid mined out areas, where feasible.
Subsidence, gas, and fires associated with abandoned coal mines	Negligible; site-specific; LOP	Negligible and reduced by approximately 40% from the Proposed Action	No impact	Avoid abandoned mine areas.
		PALEONTOLOGICAL RESOURCES		
Disturbance/destruction of important fossils	Negligible during construction and LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid, recover, and/or monitor as determined during preconstruction BLM paleontological surveys; educate employees.
Loss of important fossil materials due to private collection or vandalism	Negligible during construction and LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid, recover, and/or monitor as determined during preconstruction BLM paleontological surveys; educate employees.
Discovery of previously unknown fossils	Beneficial during construction	Same as Proposed Action but reduced by approximately 40% from Proposed Action	Negligible - no new fossil discovery	None.

Table 2.11 (Continued)

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		SOILS		
Disturbance and erosional loss of soils	Moderate during construction and negligible for the LOP; 1,787 ac initial disturbance and 715 ac new disturbance for LOP	Same as Proposed Action and reduced to 1,146 ac initial disturbance and 431 ac of new disturbance for LOP	No impact	Avoid erosion-prone areas where feasible; implement appropriate and timely use of erosion and sedimentation control techniques/devices; adhere to NEPA documents and PODs.
Increased soil moisture due to snow accumulation	Beneficial - increased productivity; LOP	Beneficial; reduced from Proposed Action; LOP	No impact	None.
Increased erosion potential due to saturated soils in snow accumulation areas	Moderate on steeper slopes; LOP	Moderate on steeper slopes, reduced approximately 40% from Proposed Action; LOP	No impact	Avoid steep slopes and erosion-prone soils, where feasible; implement appropriate and timely use of erosion and sediment control techniques/devices; adhere to NEPA documents and PODs.
Soil compaction and decreased productivity	Moderate during construction; negligible for the LOP	Reduced by approximately 40% from Proposed Action	No impact	Use appropriate reclamation techniques; restrict off-road vehicle travel.
Contamination due to accidental hazardous material spills	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Adhere to hazardous materials management and spill prevention and control countermeasure plans.
		SURFACE WATER RESOURCES		
Increased turbidity, salinity, and sedimentation of surface waters due to runoff from disturbed areas	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Use appropriate erosion and sedimentation control techniques/devices; adhere to NEPA documents and PODs.
Contamination of surface waters from accidental hazardous material spills	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Adhere to hazardous materials management and spill prevention and control countermeasure plans.
Alteration of surface water runoff patterns due to snow redistribution	Negligible; LOP	Negligible and reduced from Proposed Action, depending on facilities placement	No impact	Avoid snow accumulation areas, where feasible.
		GROUNDWATER RESOURCES		
Contamination of groundwater from accidental hazardous material spills	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Adhere to hazardous materials management and spill prevention and control countermeasure plans.

Table 2.11 (Continued)

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		NOISE		
Increased noise levels near residences and within crucial wildlife habitats during critical periods	Moderate during construction; negligible for Phase I; possibly significant for the Foote Creek Rim 200-MW phase; probably negligible for future phases	Moderate during construction; negligible for the first phase; possibly significant for the Foote Creek Rim 200-MW phase; probably negligible for future phases; incidences reduced by approximately 40% from Proposed Action	No impact	Avoid residences; no construction activities within crucial wildlife habitats during critical periods; use equipment mufflers; ensure regular maintenance of WTGs; avoid crucial and/or breeding and nesting habitats where feasible; design road use specifications to keep traffic to a minimum.
		ODOR		
Presence of offensive odors proximal to facilities and roads	Negligible; LOP	Negligible and incidences reduced by approximately 40% from Proposed Action	No impact	Ensure regular equipment maintenance.
		ELECTRIC AND MAGNETIC FIELDS		
Adverse human health effects	Negligible; LOP	Same as Proposed Action	No impact	None necessary.
Television (TV) or radio interference	Negligible; LOP	Same as Proposed Action	No impact	Fiberglass rotors on wind turbines.
		VEGETATION		
Removal of vegetation	Negligible - 1,787 ac initial disturbance and 715 ac for LOP	Negligible and reduced to 1,146 ac new initial disturbance and 431 ac new disturbance for LOP	No impact	Minimize number and size of disturbance areas; implement appropriate and timely reclamation, erosion control, and revegetation; adhere to NEPA documents and PODs.
Changes in vegetation diversity following reclamation (i.e., shrubland to grassland) and potential weed infestation	Negligible - 1,787 ac initial disturbance and 715 ac for LOP	Negligible and reduced to 1,146 ac new initial disturbance and 431 ac new disturbance for LOP	No impact	Use appropriate weed control; restrict off-road vehicle travel; revegetate with native/approved species.
Disturbance of wetlands	Negligible - no net loss of wetlands; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid wetlands where feasible; limit development of crossings to dry periods; obtain Army Corps of Engineers (COE) 404 Permits as necessary; adhere to NEPA documents and PODs.
Reclamation unsuccessful after five years	Negligible to significant; LOP and beyond	Negligible to significant and reduced by approximately 40% from Proposed Action	No impact	Implement further BLM-approved reclamation efforts until successful revegetation achieved.

Table 2.11 (Continued)

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		VEGETATION (Continued)		
Changes in plant community composition due to snow redistribution	Negligible to potentially significant; LOP	Negligible to potentially significant, reduced depending on facilities placement; LOP	No impact	Avoid snow accumulation areas; use proper snow removal techniques.
Wetland loss	Negligible; LOP	Negligible; LOP	No impact	Avoid wetlands, where feasible; mitigate all wetland disturbance.
Riparian area disturbance	Negligible; LOP	Negligible; LOP	No impact	Avoid riparian areas, where feasible; use best management practices during construction adjacent to riparian areas.
		WILDLIFE		
Loss of big game crucial habitat	Moderate; initial disturbance of 140 ac pronghorn crucial range and 42 ac mule deer crucial range	Moderate; initial disturbance of 106 ac pronghorn crucial range and 42 ac mule deer crucial range	No impact	Minimize project activities in these areas; implement appropriate reclamation with shrub species.
Big game displacement and/or stress	Negligible (white-tailed deer) to potentially significant (elk); variable responses noted in literature; LOP	Same as Proposed Action	No impact	Avoid construction and minimize other activities within crucial habitats during crucial periods; during winter, provide escape openings along access roads; properly muffle all equipment; fence Windplant substations to prevent big game access.
Overall wildlife (i.e., small mammals, amphibians, and reptiles) habitat degradation	Negligible - 1,787 ac initial disturbance and 715 ac for LOP	Negligible and reduced to 1,146 ac new initial disturbance and 431 ac new disturbance for LOP	No impact	Use appropriate erosion control and reclamation techniques; appropriate monitoring, containment, and disposal of hazardous material.
Increased nonavian wildlife mortality from activities of man	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Use appropriate road design; adhere to posted speed limits; educate employees; appropriately contain and dispose of hazardous material; avoid snow accumulation areas.
Potential violation of federal and state laws protecting avifauna due to collision-related mortality	Significant; LOP	Significant; LOP	No impact	Comply with stipulations upon which issuance of permits or other agreements are contingent.
Declining raptor populations	Potentially significant; LOP	Possibly significant; reduced from Proposed Action depending on facilities placement	No impact	Design and place Windplant facilities to minimize avian mortality; use monitoring to improve designs to further mitigate impacts and to determine population trends; avoid construction within a 0.75-mi radius of active raptor nests.

Table 2.11 (Continued)

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		WILDLIFE (Continued)		
Potential destruction of big game movement patterns and reduction of habitat effectiveness	Moderate for pronghorn and mule deer; potentially significant for elk	Moderate for pronghorn and mule deer; potentially significant for elk	No impact	Minimize disturbance, use appropriate erosion control and reclamation techniques; train O&M personnel to minimize disturbance to wildlife.
Loss of sage grouse nesting habitat	Potentially significant; initial disturbance of 1,185 ac probable nesting habitat	Potentially significant; reduced to 754 ac new disturbance from Proposed Action	No impact	Minimize project activities in these areas, especially during breeding season on lek sites; implement appropriate reclamation with shrub species; equip power lines within 0.25 mi of sage grouse leks with raptor antiperching devices.
Declining nonraptor populations	Potentially significant for mountain plover and horned lark; probably negligible for other nonraptor species; LOP	Potentially significant for mountain plover and horned lark; probably negligible for other nonraptor species; LOP	No impact	Design and place Windplant facilities to minimize avian mortality; use monitoring to improve designs to further mitigate impacts and to determine population trends.
Degradation of surface waters resulting in fish population reductions	Negligible; LOP	Negligible; LOP	No impact	Avoid riparian areas and implement proper erosion control techniques.
		THREATENED AND ENDANGERED SPECIES/STATE SENSITIVE SPECIES		
Mortality or disturbance of any listed or candidate T&E species or disturbance of critical habitat for listed and candidate T&E species	Significant- bald eagle, peregrine falcon, and ferruginous hawk known to use the area, mountain plover known to nest on Foote Creek Rim; negligible- no confirmed black-footed ferret or swift fox sightings; no surface water withdrawal; LOP	Significant; LOP	No impact	Design and place Windplant facilities to minimize avian mortality; use monitoring to improve designs to further mitigate impacts; minimize habitat disturbance; avoid prairie dog colonies where feasible; implement black-footed ferret surveys as required; equip power poles near prairie dog colonies with raptor antiperching devices; implement appropriate and timely reclamation and revegetation.
Reduction in state sensitive species due to mortality or habitat removal	Negligible; LOP	Negligible; LOP	No impact	Avoid habitats of potential occurrence, where feasible.
Destruction of TEC&S plant species or their habitat	Negligible; LOP	Negligible; LOP	No impact	Pre-disturbance surveys for TEC&S; avoidance of individuals or habitat, where feasible.

Table 2.11 (Continued)

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		CULTURAL RESOURCES		
Disturbance/destruction of important sites	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Complete cultural surveys and data recovery as required; avoid cultural sites where feasible; avoid areas adjacent to perennial water and aeolian deposits.
Loss of important cultural materials due to private collection or vandalism	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Ensure employee education; use disciplinary action as appropriate.
Disturbance of important Native American religious or culturally significant sites	Possibly significant for Phase I; unknown for future phases	Possibly significant for Phase I; unknown for future phases	No impact	Continue consultations with Native American groups to mitigate impacts. Complete Section 106 process prior to issuing the ROD.
		SOCIOECONOMICS		
Increase in population	Negligible - adequate infrastructure exists; LOP	Negligible; LOP	No impact	Employ as many local personnel as possible; distribute impact assistance funds.
Increase in demand for temporary housing	Negligible to beneficial - numerous vacancies exist; LOP	Negligible; LOP	No impact	Employ as many local personnel as possible; distribute impact assistance funds.
Increase in demand for local government facilities or services	Negligible - adequate infrastructure exists and increased revenues will be available; LOP	Negligible; LOP	No impact	Employ as many local personnel as possible; distribute impact assistance funds.
Increase in demand for school services	Negligible - adequate classroom space available	Negligible; LOP	No impact	Employ as many local personnel as possible.
Disruption or change of character of communities	Negligible - towns developed during boom and bust cycles; LOP	Negligible; LOP	No impact	Employ as many local personnel as possible; distribute impact assistance funds.
Increase in tax revenue and royalties and stimulation of local economy	Beneficial - increased federal, state, and local revenues; LOP	Beneficial; LOP	Moderate- no increased revenues	None.
Increased employment	Beneficial; LOP	Beneficial; LOP	No impact	None.
		LAND USE		
Reduction of animal unit months (AUMs) for livestock and forage for wildlife	Negligible - initial reduction of 243 AUMs and LOP loss of 93 AUMs	Negligible - initial reduction of 40 AUMs and LOP loss of 8 AUMs	No impact	Implement appropriate and timely reclamation; revegetate with palatable and productive species.
Loss of forage and/or wildlife due to fires started by the Windplant	Negligible; facilities monitored daily by O&M personnel and continually via communications systems; LOP	Negligible and reduced by approximately 40% from Proposed Action	Negligible- no early warning	Maintain WTGs in proper working condition at all times; prohibit outdoor smoking during high fire hazard periods; restrict vehicular traffic to approved roads.

Table 2.11 (Continued)

Impact by Environmental Resource	Post-mitigation Impacts			
	Proposed Action	Alternative A	No Action	Mitigation(s)
		LAND USE (Continued)		
Temporary loss of mineral development opportunities	Low to moderate impacts to coal and possibly to salable minerals if mining/quarrying becomes economical during the LOP; negligible impacts to uranium	Low to moderate impacts to coal and possibly to salable minerals if mining/quarrying becomes economical during the LOP; negligible impacts to uranium; reduced by approximately 40% from the Proposed Action	No impact	Avoid quarries and potential coal development areas, where feasible.
Temporary loss of oil and gas development opportunities	Negligible - wind, oil, and gas may be compatible land uses	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid potential development areas, if possible.
Changes in character and recreational uses of the area due to construction, presence of facilities, noise, dust, odor, and increased human activities	Moderate - no developed recreation areas occur on KPPA; LOP	Moderate and reduced from Proposed Action depending on facilities placement	No impact	Maintain roads as appropriate; use equipment mufflers; minimize disturbance areas; implement appropriate and timely reclamation.
Potential increased tourism opportunities	Beneficial to local businesses	Beneficial but reduced approximately 40% from Proposed Action	No impact	Minimize disturbance areas; implement appropriate and timely reclamation.
Infringement on prior rights	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Avoid existing ROWs where feasible; use appropriate construction at ROW crossings.
		VISUAL RESOURCES		
Modification in the basic elements (form, line, color, or texture) of visual resources by presence of facilities and equipment	Significant; LOP	Significant, but reduced by approximately 40% from Proposed Action, depending on facilities placement	No impact	Paint facilities with standard environmental colors and, where feasible, locate to blend with surrounding landscape; minimize cuts and fills and other visible landscape alterations; implement appropriate and timely reclamation and revegetation.
		HAZARDOUS MATERIALS		
Soil, surface water, and groundwater contamination and wildlife exposure	Negligible; LOP	Negligible and reduced by approximately 40% from Proposed Action	No impact	Adhere to hazardous materials management and spill prevention and control countermeasure plans; implement appropriate monitoring, containment, and disposal of hazardous material.

[1] The term "beneficial" is used to describe the favorable impact of using a nonpolluting resource to generate electricity; it is not intended to reflect proactive air quality improvement (i.e., cleanup).

3.0 AFFECTED ENVIRONMENT

Page 3-1, column 1, paragraph 1, line 5. After "100-ft" insert "(30.5-m)".

Page 3-1, column 1, paragraph 2, line 1. Replace "(BLM 1988a)" with "(BLM 1988)".

3.1 PHYSICAL RESOURCES

3.1.1 Climate and Air Quality

Page 3-1, column 1, paragraph 4, line 2. Delete "Mean" and capitalize "Annual".

Page 3-2, column 1, paragraph 2, line 3. Insert "NEPA documents and" before "the PODs".

3.1.3 Geology

3.1.3.1 Mineral Resources

Page 3-5, column 2, paragraph 3, line 1. Insert "federal" before "coal".

Page 3-5, column 2, paragraph 3, line 3. Add "In February 1995, the SE 1/4 of Section 16, T21N, R80W was leased for coal by the State of Wyoming." after "(. . . BLM, Rawlins)".

Page 3-5, column 2, paragraph 3, line 4. Replace "The Simpson Ridge project area lies on the eastern side of the Hanna Coal Field" with "The Simpson Ridge project area lies to the east of the Hanna Basin Known Recoverable Coal Resource Area (KRCRA) and the southeastern portion of the project area lies within the boundaries of the Carbon Basin KRCRA."

Page 3-5, column 2, paragraph 3, line 7. Replace "Although there are areas of known thick or abundant coal underlying portions of the project area, only the northwestern portion of the Simpson Ridge area has coal development potential (BLM 1987:120-121)." with "Although the project area is underlain by numerous coal seams of various thicknesses, only the southeastern portion of the Simpson Ridge area has coal development potential (personal communication, April 1995, with Brenda Vosika, Mining Engineer, BLM, Rawlins)."

Page 3-5, column 2, paragraph 3, line 12. Replace "In-place coal reserves in the Hanna Coal Field are estimated at 3.27 billion tons (2.97 billion metric tons) (Wood and Bour 1988). As of 1979, the estimated remaining strippable reserve was 648.29 million tons (588.12 million metric tons) (Glass and Roberts 1979), primarily from the Hanna, Ferris, Mesaverde, and Medicine Bow Formations (Glass and Jones 1991)." with "Economically strippable reserves in the Hanna Basin are being depleted. The Seminoe No. 2 and Medicine Bow Mines will have exhausted their economically recoverable reserve base as of 1998. Much of the remaining strippable reserves are lower in quality (low BTU, high sulfur) than most contracts now existing in the basin allow. Carbon Basin coal could help meet contracts requiring high BTU, low sulfur coal."

Page 3-5, column 2, paragraph 3, line 20. Insert "recently" after "has".

Page 3-6, column 1, paragraph 1, line 4. Replace "Hanna" with "Carbon".

Page 3-6, column 1, paragraph 1, line 5. Replace "Hanna" with "Carbon".

Page 3-6, column 1, paragraph 1, line 6. Replace "compared with coal in the Powder River Basin, and" with "and generally much thinner than the thick coals mined in the Powder River Basin (personal communication, January 26, 1995, with Gary Glass, State Geologist, Wyoming State Geological Survey);".

Page 3-6, column 1, paragraph 1, line 8. Add the following sentence to the end of the paragraph: "However, Carbon Basin coal could become attractive to developers contracting with utilities that require certain quality parameters that cannot be filled by Powder River Basin coals."

Page 3-6, column 1, paragraph 2, line 14. Replace "Harris" with "Ferris".

Page 3-6, column 2, paragraph 2, line 6. Insert "Several known gold placer deposits occur in gravels along Rock Creek, but none are currently being mined (Hausel et al. 1992, 1994)" after "(BLM 1987:126)."

3.1.3.2 Geologic Hazards

Page 3-7, column 2, paragraph 1, line 6. Replace "but no surface subsidence is known to have occurred within the KPPA" with "and extensive coal mine subsidence has occurred in Sections 26 and 35, T22N R80W (personal communication, January 26, 1995, with Gary Glass, State Geologist, Wyoming Geological Survey). There was also a fire in the underground structures of a mine in this area."

3.1.3.3 Paleontological Resources

Page 3-7, column 2, paragraph 4. Replace "A Class I paleontological survey is currently being completed by a BLM-approved paleontologist (Dr. Gus Winterfeld) and will be included in the FEIS for this project." with "Results of a Class I paleontological survey are included as Appendix G in the FEIS."

Page 3-7, column 2, paragraph 4, line 6. Replace "1992" with "1993a".

3.1.5 Water Resources

3.1.5.2 Groundwater

Page 3-16, column 2, paragraph 3, line 4. Replace "only minimally" with "insignificantly".

3.1.6 Noise and Odor

Page 3-18, column 2, paragraph 3, line 10. Insert "(courtship and breeding areas)" after "sage grouse leks".

Page 3-18, column 2, paragraph 4, line 7. Replace "(55 dBA)" with "(60 dBA)".

3.1.7 Electric and Magnetic Fields

Page 3-21, column 2, paragraph 2, line 1. Replace "Electric and magnetic fields" with "EMFs".

Page 3-21, column 2, paragraph 3, line 4. Replace "Zanfanella" with "Zaffanella".

Page 3-23, Table 3.7, footnote 1. Replace "(n.d.)" with "(BPA n.d.)".

3.2.1 Vegetation

Page 3-24, column 1, paragraph 2, line 15. Replace "Additional vegetation mapping of the Simpson Ridge area and the selected transmission line route would be completed, if necessary, as part of a future POD prior to construction of future phases." with "Additional vegetation mapping of future development areas would be completed as part of the NEPA analysis and POD for future phases."

Page 3-28, Table 3.9, caption. After "Acreage", insert "[1]". Add the following footnote to the bottom of the table: [1] Multiply acres by 0.4047 to compute number of hectares."

3.2.2 Wildlife and Fisheries and
3.2.3 Threatened and Endangered/State Sensitive Species

Due to the large number of changes made to incorporate additional data and respond to comments, Sections 3.2.2 Wildlife and Fisheries and 3.2.3 Threatened and Endangered/State Sensitive Species have been replaced in their entirety.

3.2.2 Wildlife and Fisheries

The topography, soils, water resources, and vegetation within the KPPA provide habitats used by numerous wildlife species as discussed below.

In general, wildlife field observation data for the KPPA included in this FEIS were collected between February 13 (Simpson Ridge) or February 16 (Foote Creek Rim), 1994, and March 17, 1995. Appendix D in the DEIS and corrections to Appendix D in the FEIS contain the common and scientific names of animal species known to occur or potentially occurring within or adjacent to the project area. Quantitative and qualitative wildlife observations were initiated within the KPPA in October 1993. The types of data collected, methods used, and observation periods are presented for each species or group of species in the following sections and in Appendix A of the DEIS.

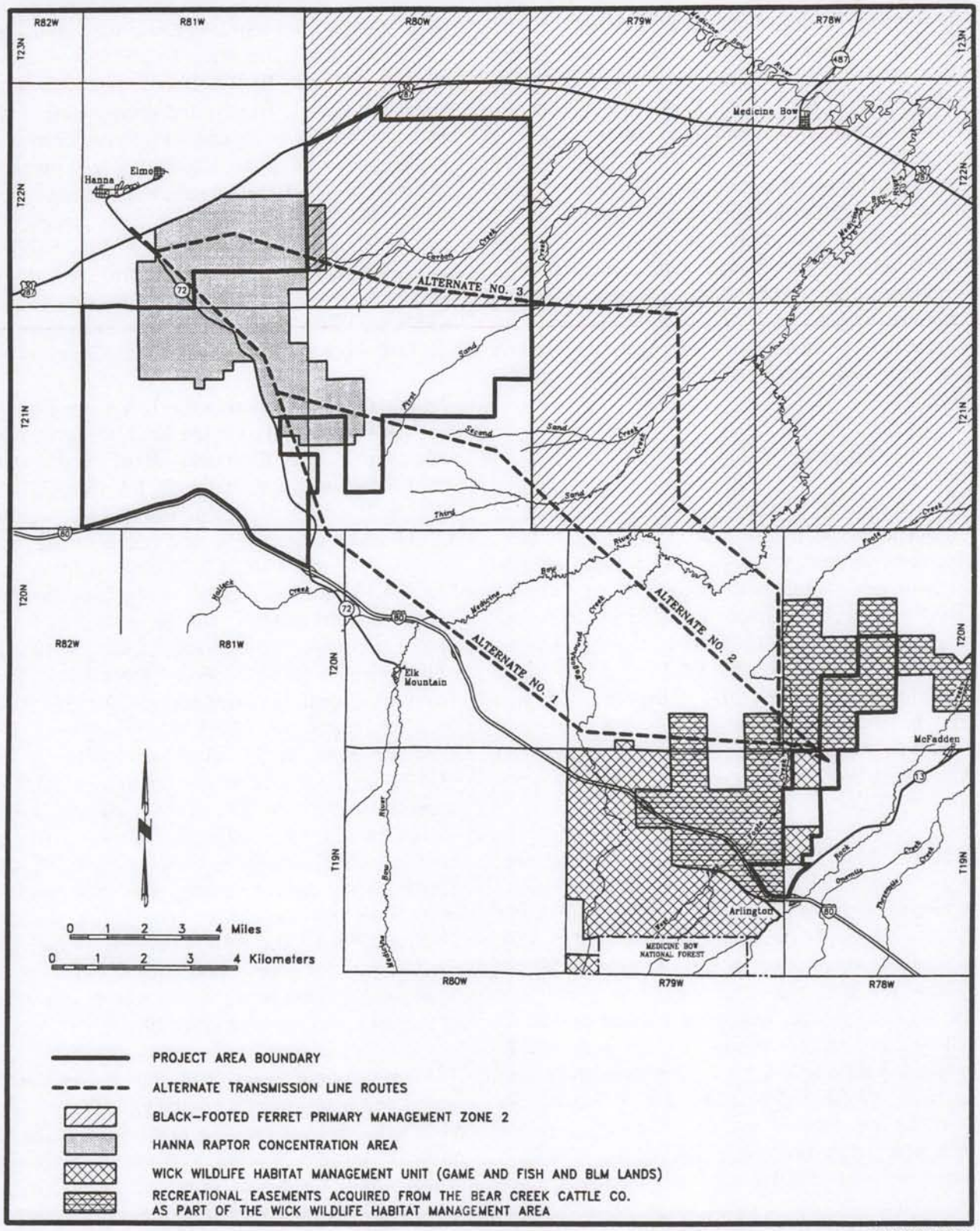
3.2.2.1 Big Game

Four big game mammal species occur within or adjacent to the KPPA: pronghorn, mule deer, white-tailed deer, and elk. Moose, although they may be rare visitors to drainages in the area (e.g., Rock Creek, Medicine Bow River), do not regularly occur within the KPPA (written communication, March 1994, Pat Hnilicka, Wildlife Biologist, WGFD). Therefore, they will not be addressed further in this EIS. Specific information concerning big game hunting and harvest in the KPPA is described in Section 3.5.4 of the DEIS.

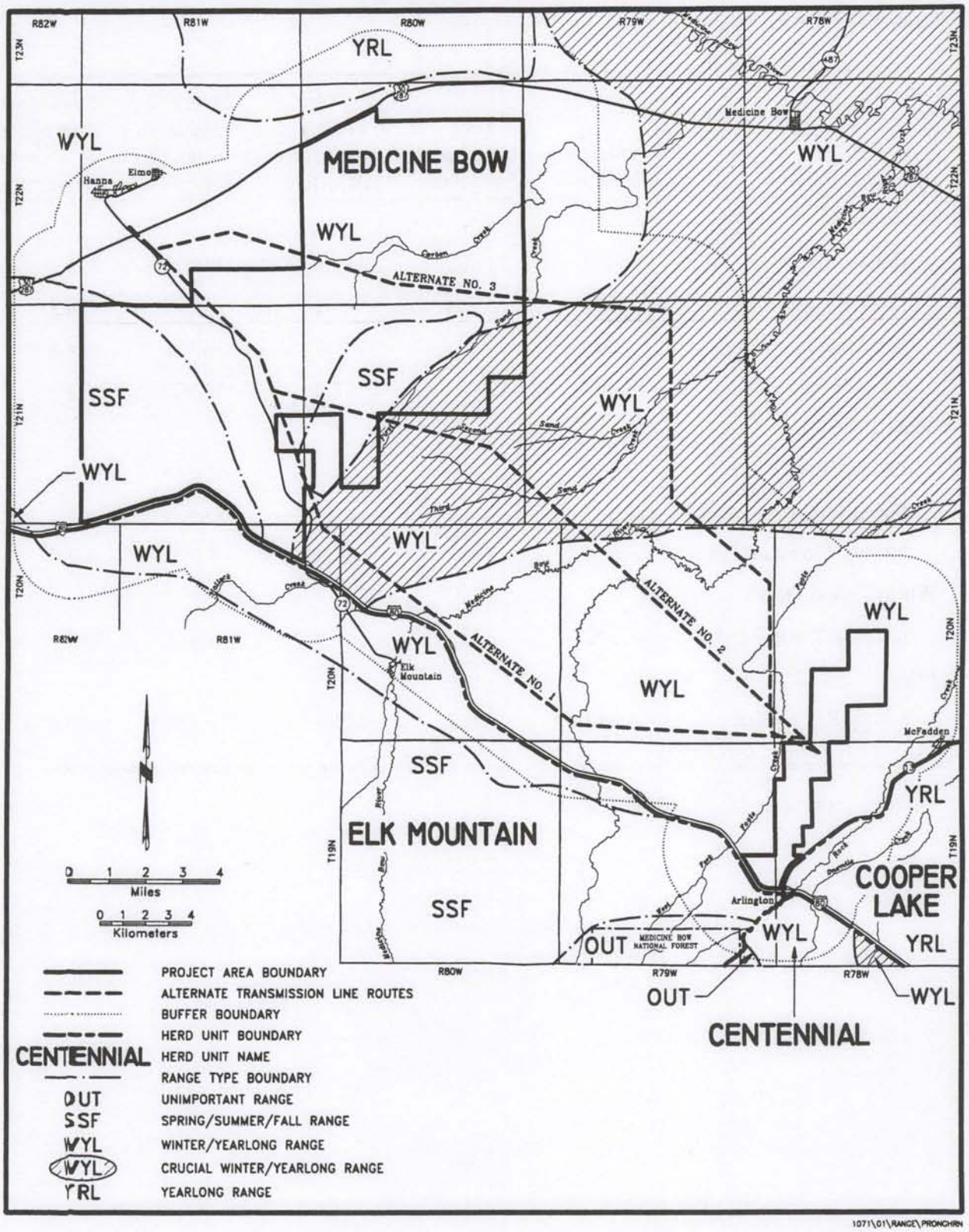
The 10,344-ac Wick Wildlife Habitat Management Unit (Wick Unit) and Management Area covers approximately 6.4% (3,854.4 ac) of the KPPA and 77.1% of the Foote Creek Rim area (Map 3.9). Originally established in 1964 to provide winter range for elk, the Unit and Area are "now managed to provide quality year-round habitat for all wildlife species which use the area and to provide public access for quality experience with wildlife" (WGFD 1990). The Wick Unit and Area provide important winter and yearlong range for elk, deer, and pronghorn. Much of the Wick Unit south of I-80 is designated as crucial range for mule deer and elk. Crucial range "describes that component which is the determining factor in a population's ability to maintain and reproduce itself at population objectives over the long term" (WGFD 1990). The Wick Unit and Area are a mixture of deeded WGFD land, leased state land, federal land (i.e., BLM), and private land made available through a cooperative agreement between WGFD and the Bear Creek Cattle Company (WGFD 1990). A memorandum of understanding between the BLM and WGFD reserves grazing use on the 286 ac of BLM-managed land for wildlife on BLM-managed lands (BLM 1987:201). Portions of the Wick Management Area that occur within the KPPA consist of recreational easements acquired from the Bear Creek Cattle Company.

Pronghorn. Pronghorn in the KPPA are part of the Medicine Bow Herd; the Centennial, Cooper Lake, and Elk Mountain Herd Units are immediately adjacent to the KPPA (Map 3.10). The Medicine Bow Herd Unit includes Hunt Areas 41, 42, and 46 through 48, and occurs on the area north of I-80 and west of Wyoming Highway 13. The WGFD current population objective for this herd is 45,000 animals, and the estimated post-season population in 1993 was 25,761, or 57.2% of the objective (WGFD 1994a) (Table 3.10). The five-year population average (1989-1993) was 34,873 animals, or 77.5% of objective. The Medicine Bow Herd was most recently at its highest population level (approximately 39,000 animals) in 1990 and 1991, and has since declined to 1993 levels. A combination of severe winter kill (i.e., 30% mortality in winter of 1992-93) and higher hunter harvest during the 1993 season contributed to the recent population decline (WGFD 1994a). The WGFD reduced the number of licenses for the 1994 season, and it is anticipated that the herd will increase to objective in four to seven years (WGFD 1994a).

The entire Foote Creek Rim area is considered winter/yearlong pronghorn range (Table 3.10, Map 3.10). Winter/yearlong range is that range of which a portion is used yearlong, but during winter has a substantial influx of animals from other seasonal ranges (WGFD n.d.). No crucial range for pronghorn occurs on or within 2 mi (3 km) of the Foote Creek Rim area.



Map 3.9 State and Federal Wildlife Management Areas.



Map 3.10 Pronghorn Herd Units and Range Types.

Table 3.10 Selected Big Game Herd Unit Attributes[1].

Species/Herd Unit	Population Objective	1993 Post-season Population	1993 Population as % of Objective	Five-Year Population Average (1989-1993)	Population Average as % of Objective
Pronghorn					
Centennial Herd	6,000	11,362	189.4	14,113	235.2
Cooper Lake Herd	3,000	2,584	86.1	5,048	168.3
Elk Mountain Herd	5,000	5,160	103.2	6,738	134.8
Medicine Bow Herd	45,000	25,761	57.2	34,873	77.5
Mule Deer					
Platte Valley Herd	20,000	16,289	81.4	18,685	93.4
Sheep Mountain Herd	15,000	11,360	75.7	13,428	89.5
Shirley Mountain Herd	10,000	7,091	70.9	9,202	92.0
White-Tailed Deer					
Laramie River Herd	1,000	1,022	102.2	1,189	118.9
Elk					
Snowy Range Herd	4,900	6,888	140.6	6,188	126.3

[1] Information taken from WGFD (1994a).

The majority of the Simpson Ridge area (61.8%) is pronghorn winter/yearlong range (Table 3.11, Map 3.10). Pronghorn crucial winter/yearlong range occurs in the southeastern portion of the area and covers about 7.0% (3,841 ac) of the Simpson Ridge area. The remaining 31.2% (17,110 ac) of the Simpson Ridge area is pronghorn spring-summer-fall range, which is generally used between May 1 and November 30 (WGFD n.d.).

The majority of pronghorn crucial winter/yearlong range within the KPPA occurs in the central area between the Foote Creek Rim and Simpson Ridge areas (Map 3.10). All three alternate transmission line routes [i.e., 100-ft (30.5-m) ROWs] pass through pronghorn crucial winter/yearlong range (Table 3.11). Alternate 1 crosses the least amount of pronghorn crucial range (42 ac); Alternate 3 crosses the greatest amount of the three (107 ac). The majority of pronghorn range crossed by the three routes is winter/yearlong range.

The 4,072 ac of pronghorn crucial winter/yearlong range within the KPPA represents approximately 1.8% of the total crucial winter/yearlong range for the Medicine Bow Herd. Approximately 6.5% (39,437 ac) of the winter/yearlong range for the Medicine Bow Herd is contained within the KPPA. The KPPA encompasses approximately 6.1% (17,111 ac) of the spring-summer-fall range for the Medicine Bow Herd.

Pronghorn have been observed throughout the Foote Creek Rim area during passerine and raptor surveys; 4,680 incidental pronghorn observations were recorded within 1 mi (1.6 km) of the Foote Creek Rim area between March 16, 1994 and March 17, 1995 (Mariah 1994a, 1995). The majority of these observations (62.9%) were made between July and September. Of the 2,489 pronghorn observations on Foote Creek Rim between July 1, 1994 and March 17, 1995 for which sex and age was recorded, approximately 57% were adults; 86.8% of these adults were females.

Most pronghorn observations in early/mid-spring (i.e., March and April) occurred in the northern portion of the Foote Creek Rim area. Pronghorn were observed most frequently along the top of the rim and associated ridges. By May and June, pronghorn occurred throughout the rim, both on top and along both slopes. Pronghorn were frequently observed in the hayfields east of Foote Creek Rim during these months. Pronghorn were observed more frequently along the base and sides of Foote Creek Rim during July. In August, most pronghorn were observed along Foote Creek and its tributaries on the western side of the rim, in the hayfields at the base of the rim on the eastern side, and on the northern and western slopes of Arlington Peak; it is likely that these areas were the last to contain green and/or palatable vegetation. From September through November, pronghorn were again observed along the top of the rim and the western slope. During the hunting season (i.e., late September to late October), pronghorn moved into the less accessible areas at the northern end of the rim; some continued to frequent the top and western slope. Between December 1, 1994 and March 17, 1995, only 177 pronghorn were observed within 1 mi (1.6 km) of the Foote Creek Rim area; 127 of these observations occurred during March. It is possible that the mild winter of 1994-1995 resulted in less rimtop use by pronghorn and other big game than was observed during 1994.

Pronghorn have been observed throughout those portions of Simpson Ridge surveyed for passerines and raptors (Mariah 1994a, 1995). Six hundred and eighteen pronghorn observations were recorded in the Simpson Ridge area between February 13 and November 30, 1994 (i.e., approximately 20 survey days). Of the 448 observations for which age and sex information was recorded, 278 observations (62.1%) were adult females, 52 (11.6%) were adult males, and 118 (26.3%) were fawns. Pronghorn were not observed between December 1, 1994 and March 12, 1995 (i.e., 9 survey days) along the passerine survey routes; however, access was

Table 3.11 Acreage and Percentage of Wildlife Habitats Within the KPPA, 1994.

Wildlife Resources	Acreage of Wildlife Habitat Within the Foote Creek Rim Area	%[1]	Acreage of Wildlife Habitat Within the Simpson Ridge Area	%[1]	Acreage of Wildlife Habitat Along Alternate 1	%[1]	Acreage of Wildlife Habitat Along Alternate 2	%[1]	Acreage of Wildlife Habitat Along Alternate 3	%[1]
Pronghorn Antelope										
Medicine Bow Herd										
Crucial winter/yearlong range	0	0	3,841	7.0	42	13.5	82	27.7	107	30.1
Spring-summer-fall range	0	0	17,110	31.2	11	3.5	22	7.4	0	0
Winter/yearlong range	5,000	100.0	33,943	61.8	257	82.9	192	65.0	249	69.9
Mule Deer										
Platte Valley Herd										
Winter/yearlong range	--[2]	--	7,299	13.3	--	--	--	--	--	--
Yearlong range	--	--	10,414	19.0	--	--	--	--	--	--
Sheep Mountain Herd										
Crucial winter/yearlong range	0	0	0	0	112	36.1	66	22.3	83	23.3
Winter/yearlong range	5,000	100.0	37,179	67.7	195	62.9	227	76.7	270	75.8
Shirley Mountain Herd										
Yearlong range	--	--	--	--	4	1.3	4	1.4	4	1.1
White-tailed Deer										
Laramie River Herd										
Winter/yearlong range	149	3.0	0	0	0	0	0	0	0	0
Yearlong range	0	0	0	0	23	7.4	28	9.5	30	8.4
Elk										
Snowy Range Herd										
Winter/yearlong range	5,000	100.0	36,147	65.8	308	99.4	293	99.0	354	99.4

Table 3.11 (Continued)

Wildlife Resources	Acreage of Wildlife Habitat Within the Foote Creek Rim Area	%[1]	Acreage of Wildlife Habitat Within the Simpson Ridge Area	%[1]	Acreage of Wildlife Habitat Along Alternate 1	%[1]	Acreage of Wildlife Habitat Along Alternate 2	%[1]	Acreage of Wildlife Habitat Along Alternate 3	%[1]
Raptors										
Potential habitat[3]	5,000	100.0	54,893	100.0	310	100.0	296	100.0	356	100.0
Nesting buffers[4]	2,771	55.4	36,170	65.9	211	68.1	177	59.8	229	64.3
Sage Grouse										
Probable nesting habitat[5]	98	2.0	47,549	86.6	182	58.7	195	65.9	212	59.6
Potential breeding habitat[6]	0	0	3,110	5.7	10	3.2	5	1.7	9	2.5

[1] % = Percentage of total specified area (i.e., Foote Creek Rim area, Simpson Ridge area, Alternates 1-3).
[2] -- = Herd unit not present within specified portion of project area.
[3] Assumes that the entire KPPA is suitable raptor habitat.
[4] Areas within 0.75 mi (1.2 km) of all known raptor nests on or adjacent to the KPPA.
[5] Areas within 2.0 mi (3.2 km) of known lek sites on or adjacent to the KPPA.
[6] Areas within 0.25 mi (0.4 km) of known lek sites on or adjacent to the KPPA.

limited primarily to Highway 72 throughout most of this period. Approximately 200 pronghorn were observed on March 13, 1995, near the old Carbon townsite in an area not routinely surveyed.

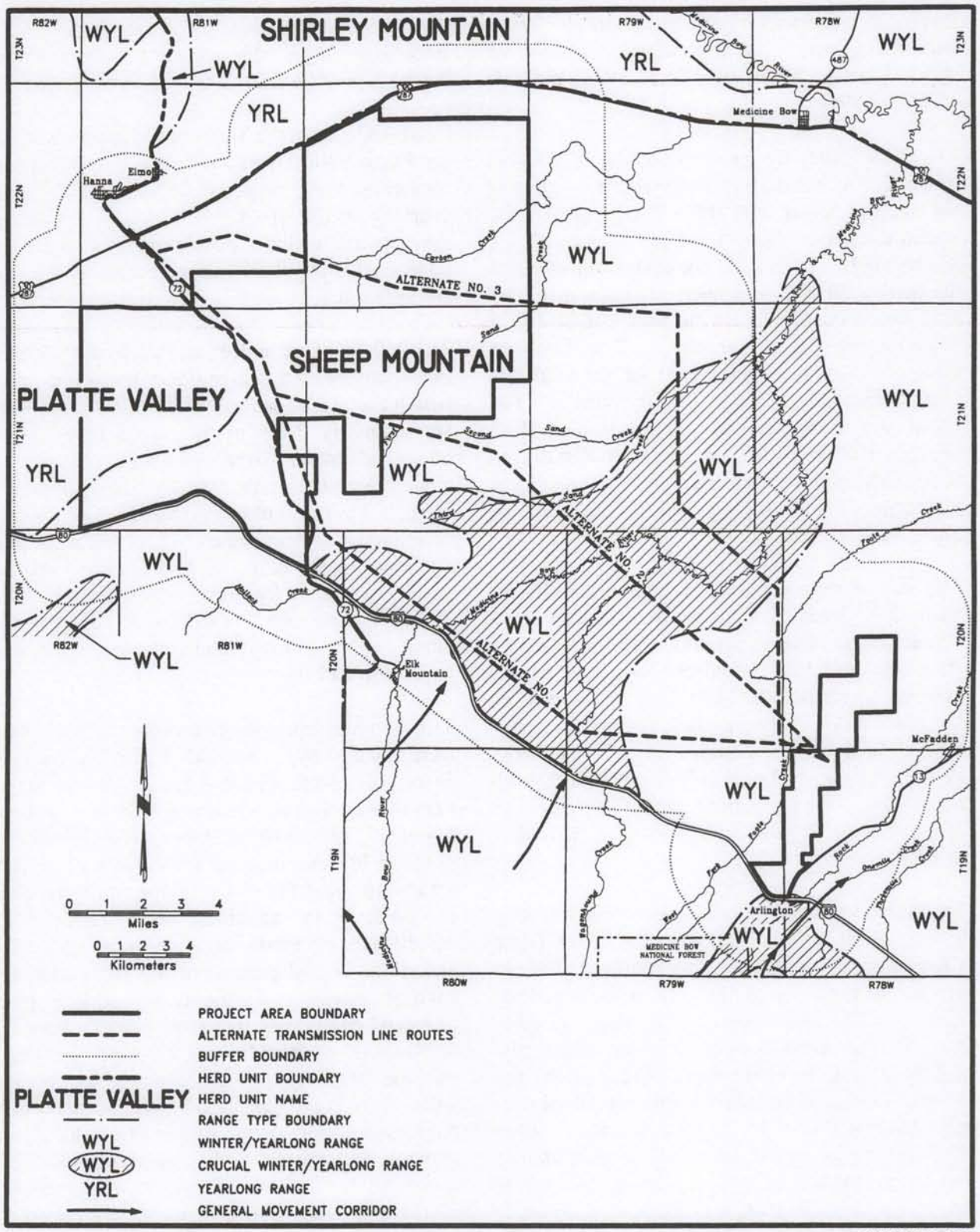
No specific seasonal movement patterns for pronghorn within the KPPA have been delineated by the WGFD. The timing of seasonal movements and the extent to which crucial winter/yearlong range is used are dependent on weather and snow depth (Yoakum 1978, Guenzel 1986, Deblinger 1988). It is likely that pronghorn move to the crucial winter/yearlong range in the central KPPA during severe winters and during periods of severe weather within otherwise normal winters. Ryder and Irwin (1987) determined that winter habitat selection by pronghorn in southcentral Wyoming was dependent on the density and height of big sagebrush and black greasewood in protected terrain. High pronghorn densities occurred 1) in habitats containing an average of 0.5 big sagebrush per 10 ft^2 (1 m^2) on northwestern ridges and benches and 2) in those habitats containing black greasewood mixed with big sagebrush in stands averaging 0.4 shrubs per 10 ft^2 (1 m^2) in draws and lowland flats. The sagebrush shrubland and greasewood vegetation types cover much of the western KPPA, including most of the Simpson Ridge area (Table 3.9), and likely provide areas of appropriate winter habitat for pronghorn. Pronghorn may use habitats with less dense and lower sagebrush (e.g., top and slopes of Foote Creek Rim) only when snow depths prevent foraging in more protected areas; however, prolonged use of these windblown sites may stress pronghorn (Ryder and Irwin 1987). Pronghorn collared as part of a seasonal movement study for an earlier wind turbine project immediately north of the KPPA moved seasonally within the immediate area of the Medicine Bow River (Yeo et al. 1984). Some pronghorn also moved east into the Foote Creek drainage during the winter months and returned again to the Medicine Bow River in spring. Pronghorn tended to make circular movements through the northern and central portions of the KPPA, selecting habitats based on weather and vegetative structure (Yeo et al. 1984).

The majority of roads within the KPPA are unimproved two-tracks that are only occasionally used by landowners or, seasonally, by hunters. It is unlikely that these unimproved roads impede pronghorn movement within the KPPA. Two improved roads, State Highway 72 (paved) and a county road (gravel), traverse the KPPA from north to south; it is possible that these roads occasionally limit pronghorn movement due to periods of heavy traffic or, during the winter, deep snow in adjacent ditches (Bruns 1977).

Fences can impede pronghorn movement (Autenrieth 1983, Deblinger 1988). Deep snow and poor fence design (e.g., low bottom wire, sheep mesh), in combination, have been reported as significant sources of winter mortality (Yoakum 1978, Deblinger 1988). The fenced ROW along State Highway 72, although passable for most of the year, may impede pronghorn during periods of heavy snowfall in the winter. Some fences within the KPPA likely impede local and seasonal movements of pronghorn; however, no specific problem fences have been reported by the BLM or WGFD.

Mule Deer. Mule deer in the KPPA are part of three herd units: the Platte Valley, Sheep Mountain, and Shirley Mountain Herds (Map 3.11).

The Sheep Mountain Herd occurs on a majority of the KPPA, including all of the Foote Creek Rim area, more than half of the Simpson Ridge area, and in the area between Foote Creek Rim and Simpson Ridge. This herd unit contains Hunt Areas 61 and 74 through 77 (WGFD 1994a). The WGFD population objective for the Sheep Mountain Herd is 15,000 animals, and the estimated post-season population in 1993 was 11,360 animals, or 75.7% of objective (Table 3.10). The five-year population average (1989-1993) was 13,428 animals, or 89.5% of objective. Population estimates for the Sheep Mountain Herd increased from 1986 to 1992, then declined to the 1993 level (WGFD 1994a). Reasons for the decline included high mortality during the winter of 1992-93 and the 1993 harvest



Map 3.11 Mule Deer Herd Units and Range Types.

level. A conservative hunting season in 1994 is expected to result in a population increase of approximately 17% over the 1993 estimate (WGFD 1994a).

The Platte Valley Herd occurs on 29% (17,714 ac) of the KPPA, exclusively in the western portion of the Simpson Ridge area (Map 3.11). Hunt areas within the Platte Valley Herd are 78 through 81, 83, and 161. The WGFD population objective for the herd is 20,000 mule deer; the estimated 1993 post-season population for the herd was 81.4% of objective, or 16,289 animals. The five-year population average (1989-1993) for the herd was 18,685 deer, or 93.4% of objective. The population trend for the Platte Valley Herd between 1989 and 1993 was similar to that for the Sheep Mountain Herd; the 1994 population is anticipated to be slightly more than 96% of objective (i.e., 19,242 deer) (WGFD 1994a).

The Shirley Mountain Herd is located immediately north of Highway 30 and covers the northernmost 4.9 ac of the three transmission line routes near Hanna (Map 3.11). Population attributes of this herd are described in Table 3.10. The Shirley Mountain Herd peaked in 1991 at approximately 11,000 animals, and declined in 1992 and 1993 (WGFD 1994a). The WGFD anticipates that the population of this herd will increase to approximately 85% of objective (i.e., 8,537 deer) in 1994.

The Sheep Mountain Herd covers approximately 71% (42,890 ac) of the KPPA. All of the Foote Creek Rim area (5,000 ac) and 68% (37,179 ac) of the Simpson Ridge area are winter/yearlong range for this herd (Map 3.11). The only mule deer crucial winter/yearlong range within the KPPA occurs between Foote Creek Rim and Simpson Ridge in dissected terrain associated with the Medicine Bow River. Oedekoven and Lindzey (1987) determined that mule deer in southwestern Wyoming tended to use sagebrush habitats at lower elevations in areas with the least snow depth and cover during winter. Mule deer generally avoid areas where snow depth is greater than 18 inches (50 cm) (Gilbert et al. 1970).

All three transmission line routes cross crucial mule deer range, with acreage traversed ranging from 66 ac (Alternate 2) to 112 ac (Alternate 1).

The remainder of the Simpson Ridge area is within the Platte Valley Herd Unit, and is split between winter/yearlong range [7,299 ac (13%)] and yearlong range [10,414 ac (19%)]. Yearlong range is that which a population or a substantial portion of a population uses throughout the year (WGFD n.d.).

The 260 ac of mule deer crucial winter/yearlong range crossed by the three transmission line routes within the central portion of the KPPA represents approximately 0.2% of this range type for the Sheep Mountain Herd. About 6% of the winter/yearlong range for the Sheep Mountain Herd is located within the KPPA. The KPPA encompasses approximately 1% of the mule deer winter/yearlong range and about 5% of the yearlong range for the Platte River Herd. Virtually none (i.e., <0.1%) of the yearlong range for the Shirley Mountain Herd is located within the KPPA.

Two hundred and one observations of mule deer were incidentally recorded during raptor and passerine surveys within 0.5 mi (0.8 km) of the Foote Creek Rim area between April 20, 1994 and March 17, 1995 (Mariah 1994a, 1995). Nearly all of the mule deer observed in the Foote Creek Rim area were along the eastern slope and were close to trees. In addition, three bucks were consistently observed crossing back and forth across the central portion of the rim during the summer months. Excluding the cushion plant grassland community that covers most of the top of Foote Creek Rim (Map 3.7), mule deer likely use the majority of communities within and adjacent to Foote Creek Rim. Of 96 mule deer observations within the Foote Creek Rim area between September 1, 1994 and March 17, 1995, for which age and sex information was recorded, 49 (51.0%) were adult females, 14 (14.6%) were adult males, and 33 (34.4%) were fawns.

Eighty-five mule deer observations were incidentally recorded during avian surveys within or immediately adjacent to the Simpson Ridge area between March 10,1994 and March 13, 1995 (Mariah 1994a, 1995). Mule deer were observed in several locations along the various survey routes, but were invariably seen in areas of relatively dense sagebrush cover and/or steep terrain; many were also observed close to stands of trees (e.g., aspen). Of 65 observations within the Simpson Ridge area between February 13, 1994 and March 13, 1995, 47 (72.3%) were adult females, 2 (3.1%) were adult males, and 16 (24.6%) were fawns.

Based on general movement patterns delineated by the WGFD, mule deer generally migrate onto crucial ranges within the KPPA from the south (i.e., across I-80) (Map 3.11). Crucial winter/yearlong range within the KPPA is associated with the riparian habitat along the Medicine Bow River. Although specific mule deer movement patterns within the KPPA are unknown, it is likely, especially during severe winters, that mule deer move out of the Simpson Ridge and Foote Creek Rim areas and into this range.

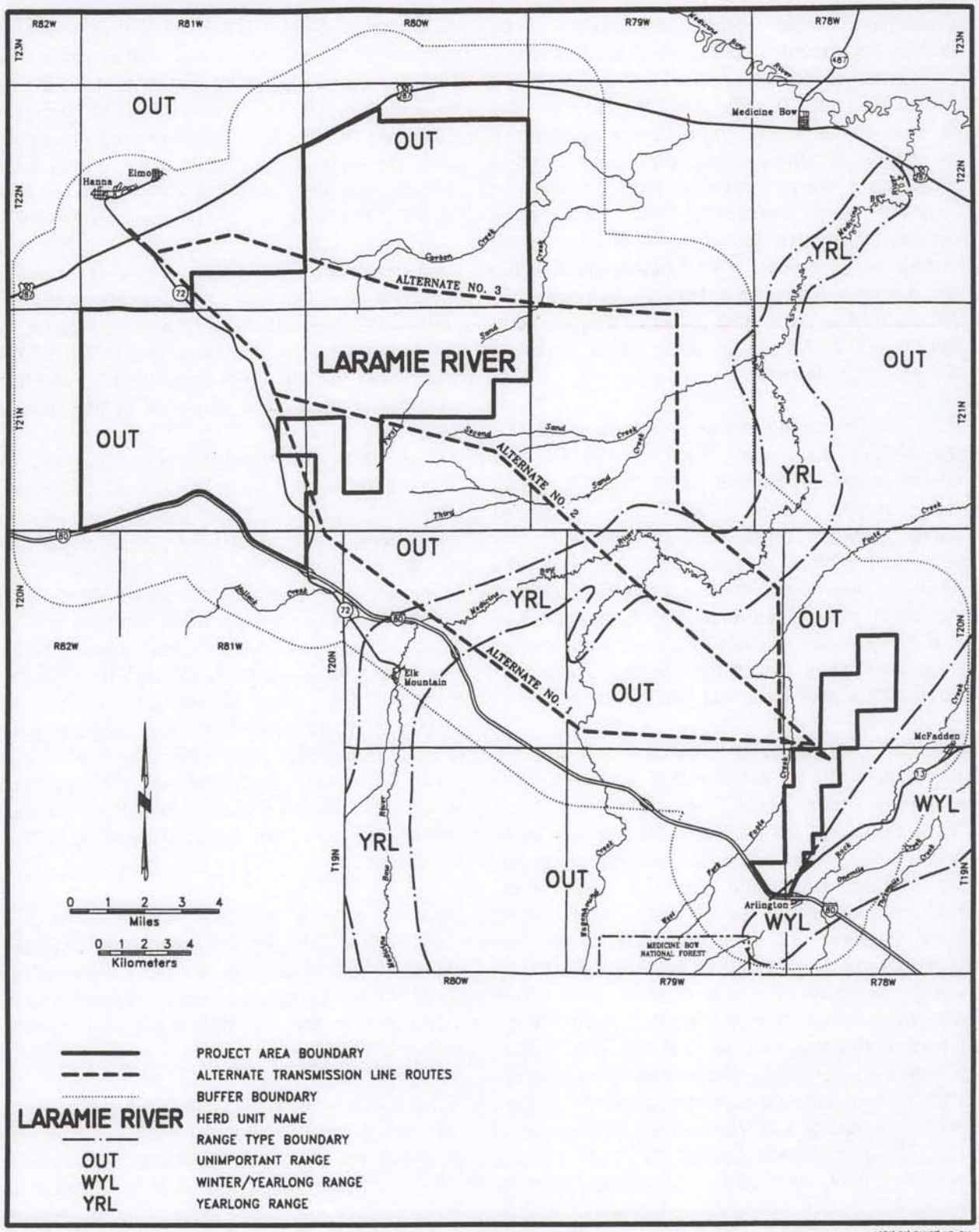
As with pronghorn, existing roads within the KPPA probably do not interfere with mule deer migration routes. Easterly et al. (n.d.) found that roads associated with oil and gas fields in mule deer crucial winter range (central Wyoming) did not interfere with mule deer use of the area. However, occasional heavy traffic (e.g., along State Highway 72) may preclude mule deer crossings for short periods of time. Although fences generally do not impede mule deer movement, deep snow and startling events (e.g., the rapid approach of a vehicle) can make fences a source of mortality. Fence kills accounted for 13% of 144 mule deer deaths caused by factors other than hunting and winterkill in the Ruby-Butte Deer Herd in Nevada (Papez 1976). It is likely that the only fences within or immediately adjacent to the KPPA that substantially impede mule deer movements are those south of the area along I-80 (these are 8 ft 2 in [2.5 m] high).

White-tailed Deer. White-tailed deer within the KPPA belong to the Laramie River Herd Unit, which consists of Hunt Areas 70 through 81, 83, and 161 (WGFD 1994a). The WGFD population objective for this herd is 1,000 animals, and the 1993 post-season population estimate was 1,022 white-tailed deer, or 102.2% of objective (Table 3.10). The five-year population average (1989-1993) was 118.9% of objective, or 1,189 deer. The population of the Laramie River Herd peaked in 1992 at 1,284 deer; the dramatic decline in 1993 was largely due to high mortality during the winter of 1992-93 (WGFD 1994a). The WGFD anticipates that the 1994 population for the herd will be slightly less than objective, or 983 animals.

Dense deciduous riparian communities are the favored habitat of white-tailed deer (Clark and Stromberg 1987). In the areas within and adjacent to the KPPA, white-tailed deer habitat is restricted to the Medicine Bow River and Rock Creek drainages and adjacent floodplains (Map 3.12). The southernmost portion of the Foote Creek Rim area (149 ac) is considered winter/yearlong range; the remainder is not considered white-tailed deer habitat (Table 3.11). According to WGFD range maps, no white-tailed deer habitat occurs within the Simpson Ridge area. All three transmission line routes cross white-tailed deer yearlong range associated with the Medicine Bow River; acreage traversed ranges from 23 ac (Alternate 1) to 30 ac (Alternate 3).

The 149 ac of white-tailed deer winter/yearlong range within the KPPA represents approximately 0.1% of this range type for the Laramie River Herd. Yearlong range traversed within the KPPA (81 ac) represents less than 0.1% of this habitat within the herd unit.

Twelve observations of white-tailed deer occurred within 0.5 mi (0.8 km) of the Foote Creek Rim area between April 20, 1994 and November 2, 1994. All twelve observations were below the eastern slope of Foote Creek Rim in areas of aspen and other dense vegetation. No white-tailed deer were observed between November 3, 1994 and March 17, 1995 (Mariah 1994a, 1995).



Map 3.12 White-tailed Deer Herd Units and Range Types.

White-tailed deer have not been observed within the Simpson Ridge area (Mariah 1994a, 1995).

White-tailed deer movement within and adjacent to the KPPA occurs along the Medicine Bow and Rock Creek drainages and adjacent floodplains and wet meadows. Seasonal movement is limited in extent and likely consists of localized shifts [i.e., 10 to 20 mi (16-32 km)] within the riparian corridors (Halls 1978).

Elk. Elk in the KPPA are part of the Snowy Range Herd, which includes Hunt Areas 8 through 12, 110, and 114 (WGFD 1994a) (Map 3.13). The WGFD population objective for the Snowy Range Herd is 4,900 animals, and the estimated post-season population in 1993 was 6,888 elk, or 140.6% of objective (Table 3.10). The five-year population average (1989-1993) was 6,188 animals, or 126.3% of objective. The population of the Snowy Range Herd increased from 1991 to 1993, at which point it was at its highest level since 1986 (WGFD 1994a). A liberal hunting season in 1994 is expected to reduce the population slightly, to approximately 6,515 elk.

Elk winter range is generally associated with foothills, rugged terrain, and washes located within sagebrush-grassland habitats (Lyon and Ward 1982). Winter range is that range used by a population or portion of a population annually in substantial numbers only during winter, and crucial winter range is defined as winter range which determines whether a population maintains and reproduces itself at or above the WGFD population objective over the long-term (WGFD n.d.).

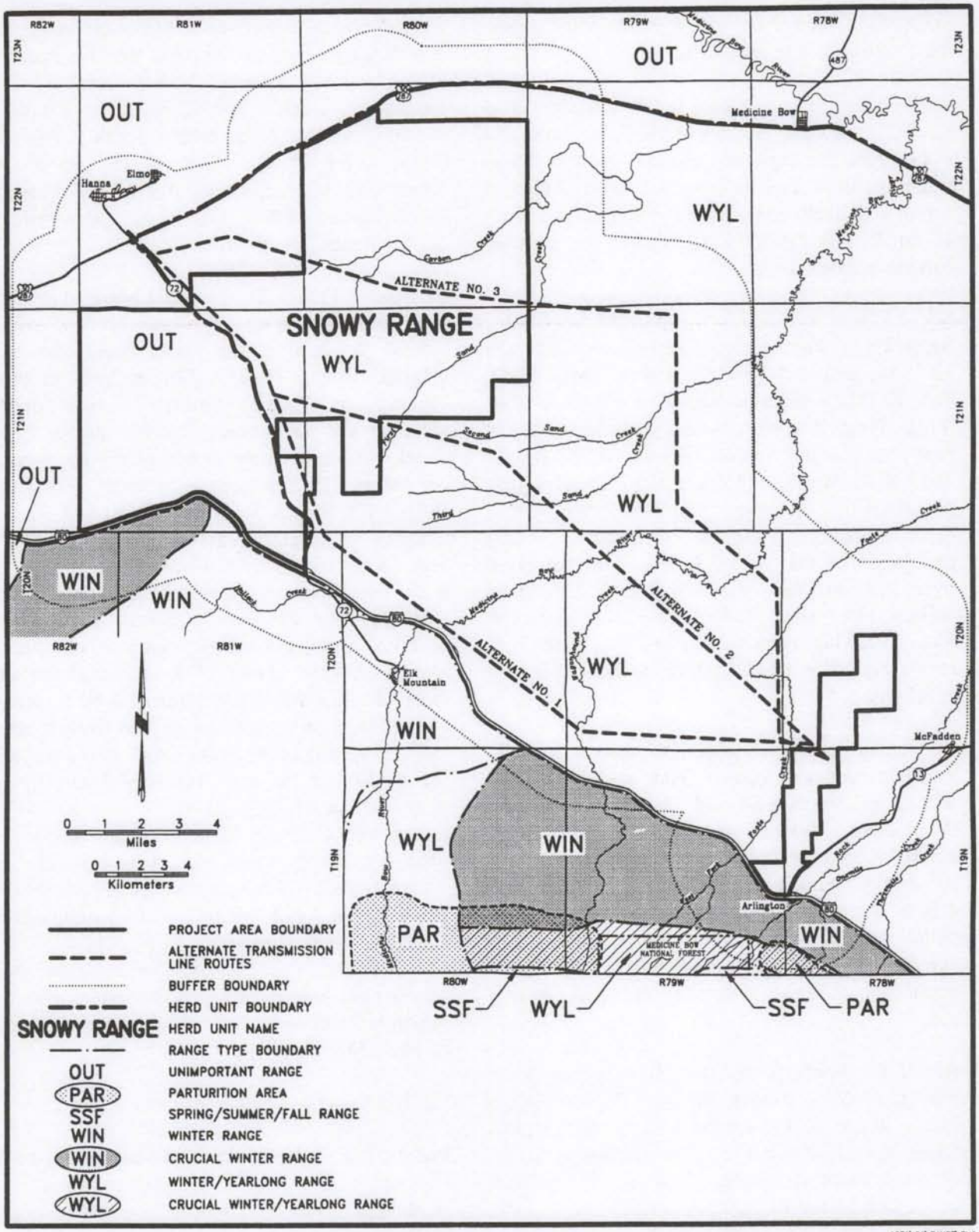
All of the Foote Creek Rim area is considered winter/yearlong habitat for the Snowy Range Herd, as are 36,147 ac (65.8%) in the Simpson Ridge area (Table 3.11). The remainder of the Simpson Ridge area is outside of any elk herd unit and is considered unimportant to elk. The central area between Foote Creek Rim and Simpson Ridge contains elk winter/yearlong range. Between 207 ac (Alternate 2) and 269 ac (Alternate 3) of elk winter/yearlong range would be crossed by the proposed transmission line. Elk crucial winter and winter/yearlong range exists across I-80 immediately south of Foote Creek Rim; parturition (birthing) areas are also located south of I-80 and Foote Creek Rim. The 41,858 ac of elk winter/yearlong range within the KPPA represents approximately 19% of this range type within the Snowy Range Elk Herd.

Between February 23, 1994 and March 17, 1995, 245 observations of elk were recorded within 0.5 mi (0.8 km) of the Foote Creek Rim area (Mariah 1994a, 1995). The majority of these observations (79.2%) occurred during March, although elk have been observed in the Foote Creek Rim area every month of the observation period except September-November 1994 and February 1995. A herd of 40 to 50 bull elk was observed on several occasions during March 1994 both on the top of Foote Creek Rim and the flats below the western slope of the rim. Also, approximately 25 cow elk and young were observed using the eastern slope of the rim in March 1994 and March 1995. Although some of these elk may move south across I-80 to access higher elevation summer range, it is likely that the majority remain in the Foote Creek Rim area year-round. Winter use of the rim is evidenced by the large amount of sign and tracks observed in the central and southern portions of the rim during February, March, and April. Approximately 550 elk were observed repeatedly between January 20 and March 8, 1995, 1-2 mi (2-3 km) southwest of the Foote Creek Rim area.

No elk have been incidentally observed within the Simpson Ridge area during raptor and passerine surveys (Mariah 1994a, 1995).

3.2.2.2 Other Mammals

Based on field observations (Mariah 1994a, 1995) and range and habitat preference (Clark and Stromberg 1987, WGFD 1992), 54 mammal species are known to occur or are likely to occur within the KPPA (Appendix D).



Map 3.13 Elk Herd Units and Range Types.

Predator species known to occur or potentially occurring in the area are coyote, red fox, swift fox, black bear, raccoon, ermine, long-tailed weasel, mink, badger, western spotted skunk, striped skunk, mountain lion, and bobcat (Clark and Stromberg 1987, WGFD 1992, Mariah 1994a, 1995).

Lagomorph species include desert cottontail, mountain cottontail, and white-tailed jackrabbit (Clark and Stromberg 1987, WGFD 1992, Mariah 1994a, 1995).

Sciurids (i.e., squirrels) known to occur or potentially occurring within the KPPA include least chipmunk, yellow-bellied marmot, Wyoming ground squirrel, thirteen-lined ground squirrel, golden-mantled ground squirrel, white-tailed prairie dog, and red squirrel (Clark and Stromberg 1987, WGFD 1992, Mariah 1994a, 1995). Other rodents in the area include northern pocket gopher, olive-backed pocket mouse, Ord's kangaroo rat, beaver, deer mouse, western harvest mouse, white-footed mouse, northern grasshopper mouse, bushy-tailed woodrat, several species of voles (i.e., heather, montane, long-tailed, prairie, and sagebrush), muskrat, western jumping mouse, and porcupine. Several species of shrews (i.e., masked, dusky, water, and Merriam's) and bats (i.e., silver-haired, big brown, hoary, and little brown myotis) are also likely to occur on the KPPA.

3.2.2.3 Raptors

All raptors and their nests are protected from take or disturbance under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-711) and Wyoming Statute (W.R.S. 23-1-101, 23-3-101, and 23-3-108 and Chapter LII, Section 4, of the WGFD Regulations). Certain species are also afforded protection under the Bald Eagle Protection Act (BEPA) (16 U.S.C. 668-688d) and Endangered Species Act (ESA) (16 U.S.C. 1513-1543). Section 4.2.3.3 contains a discussion of laws protecting birds inhabiting or using the KPPA.

During weekly passerine surveys conducted in the Foote Creek Rim area between mid-February 1994 and mid-March 1995, the locations of all raptors observed were mapped. Quantitative raptor use data also were collected using a skyline watch technique (Mariah 1979). Raptor species composition in the Simpson Ridge area was determined through biweekly surveys; more quantitative surveys will be implemented in this area prior to Windplant development. See Appendix A in the DEIS for details regarding raptor sampling methodology.

The entire KPPA is considered suitable habitat for raptor hunting, foraging, and perching (Table 3.11). Raptor species observed within the KPPA and adjacent areas in 1994 are turkey vulture, osprey, bald eagle, northern harrier, sharp-shinned hawk, northern goshawk, broad-winged hawk, Swainson's hawk, red-tailed hawk, ferruginous hawk, rough-legged hawk, golden eagle, American kestrel, merlin, peregrine falcon, prairie falcon, great horned owl, short-eared owl, and northern saw-whet owl (Mariah 1994a, 1995). Other raptor species observed within or adjacent to the KPPA in past years include Cooper's hawk, barn owl, eastern screech owl, and long-eared owl (WGFD 1994b). Most breeding species in the area migrate south during the winter; however, golden eagles, bald eagles, and great horned owls remain year-round. Rough-legged hawks move into the KPPA during the winter and move north during the breeding season. Peregrine falcons were observed hunting in the KPPA during all seasons except winter 1994-95 (Section 3.2.3).

The total number of raptor species observed during passerine surveys (i.e., February 1994 to March 1995) ranged from 1 (February 1994, January-February 1995) to 13 (May) on the western side of Foote Creek Rim, and from 0 (January 1995) to 9 (June and July) on the eastern side; the eastern side of the rim was not surveyed between February and mid-May 1994. The number of raptor species observed during raptor use surveys (i.e., June 1994 to March 1995)

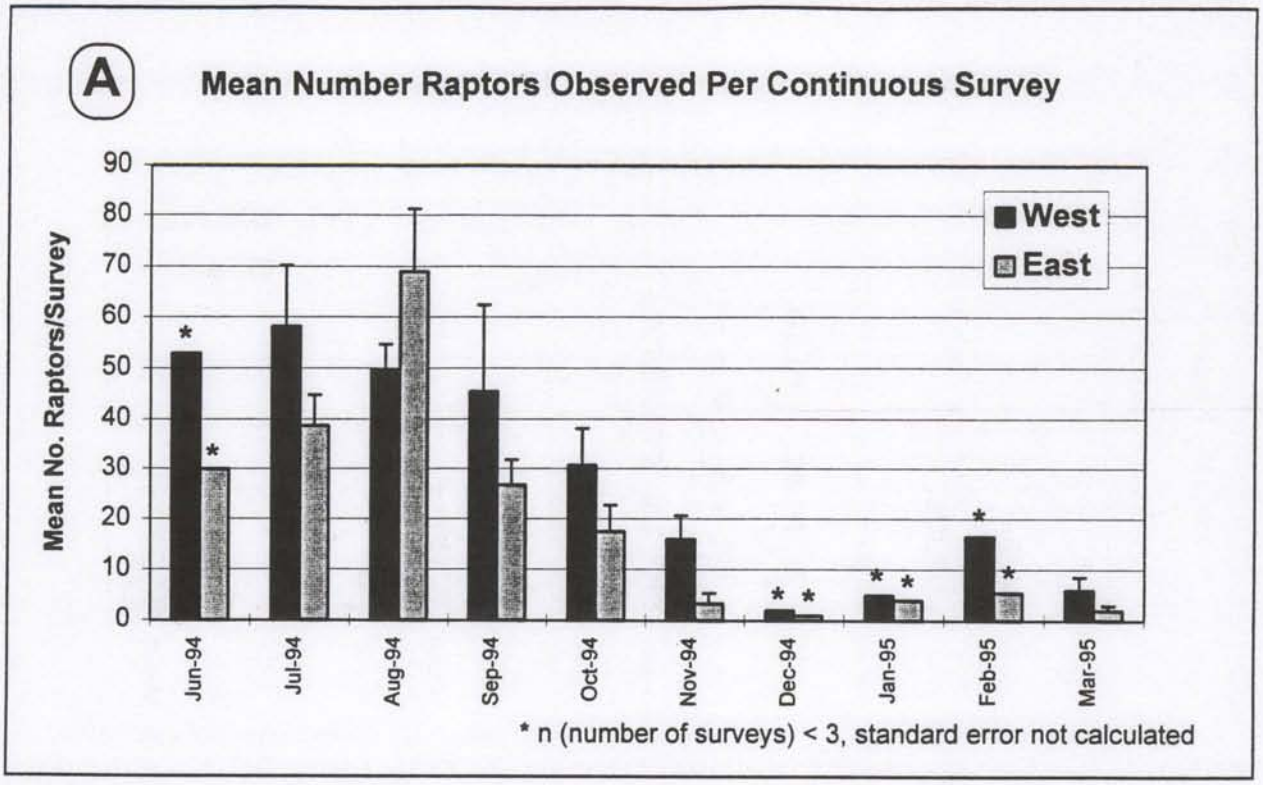
ranged from 2 (December 1994, February-March 1995) to 10 (August) on the western side, and 1 (December 1994, February 1995) to 11 (August) on the eastern side.

Raptor species observation data were summarized by averaging the number of raptor species observed per survey for each month [Figures 3.2(A), 3.2(B)]. These numbers are slightly higher than those presented in the DEIS, which were calculated by dividing the total number of species observed per month by the number of survey days in that month. This resulted in the lower averages in the DEIS, since many species were observed during more than one survey day per month. The mean number of raptor species observed during passerine surveys along Foote Creek Rim was highest from April to September, and decreased with the approach of winter [Figure 3.2(A)]. The mean number of raptor species observed during raptor use surveys peaked in August and September, possibly indicating a southbound movement of migrating species through the area; the increase may also have resulted from dispersal of young from nests in the area [Figure 3.2(B)]. The mean number of raptor species observed per month was relatively low throughout the winter, with 0-3 species observed per month. Overall, the mean number of raptor species observed during raptor use surveys was higher than that observed during passerine surveys due to the longer observation period associated with the former survey method.

Along the western side of Foote Creek Rim, the highest mean number of raptor observations per passerine survey occurred in June, July, and August [Figure 3.2(C)]. Except for September and October, the mean number of raptor observations per passerine survey was greatest along the western side during every month surveyed. This greater use of the western side is probably related to the favorable soaring conditions generated by the prevailing westerly and southwesterly winds flowing up and over the western side of the rim. Along the eastern side of the rim, the mean number of raptor observations per raptor use survey was highest in August [Figure 3.2(D)]. Possible reasons for this peak include a large number of American kestrel observations (including juveniles) along the eastern side and a period of southeasterly and east-southeasterly winds during the month. Raptor observations declined in October and November, and remained low throughout the winter. In general, golden eagles comprised the majority of raptors observed in all months during both passerine and raptor surveys; American kestrels and red-tailed hawks were also frequently observed during the spring and summer months. Raptor observations during the winter included several rough-legged hawks, a common winter resident of the area.

The intensity of raptor activity within the Foote Creek area is displayed in Maps 3.14-3.16. Overall, raptor use of Foote Creek Rim was concentrated along the western edge of the rim. Eagles (i.e., golden and bald) were observed most frequently along the western side of the rim. Two areas accounted for the majority of eagle observations--the central western slope and a ridge jutting from the northwestern portion of the rim. It is likely that a combination of favorable winds for soaring, a substantial prey base, and preferred perch sites are present in these areas; no nests were found in the areas, and it is unlikely that these areas offer substantial nesting habitat. Eagle use was similar between breeding and nonbreeding seasons (Maps 3.14A-3-14D).

Although somewhat more common on the western side, buteos were observed throughout the Foote Creek Rim area. Ferruginous hawk observations were most concentrated in the vicinity and north of the ridge jutting from the northwestern portion of the rim, and breeding and nonbreeding distributions were similar (Maps 3.15A and 3.15B). Red-tailed hawks were observed primarily in the southern half of the Foote Creek Rim area, and used the east side of the rim much more frequently than any other buteo. Breeding season observations were concentrated in the Arlington Peak area and along the central western slope. Red-tailed hawk distribution during the breeding season appears to be, at least in part, the result of several active red-tailed hawk nests in



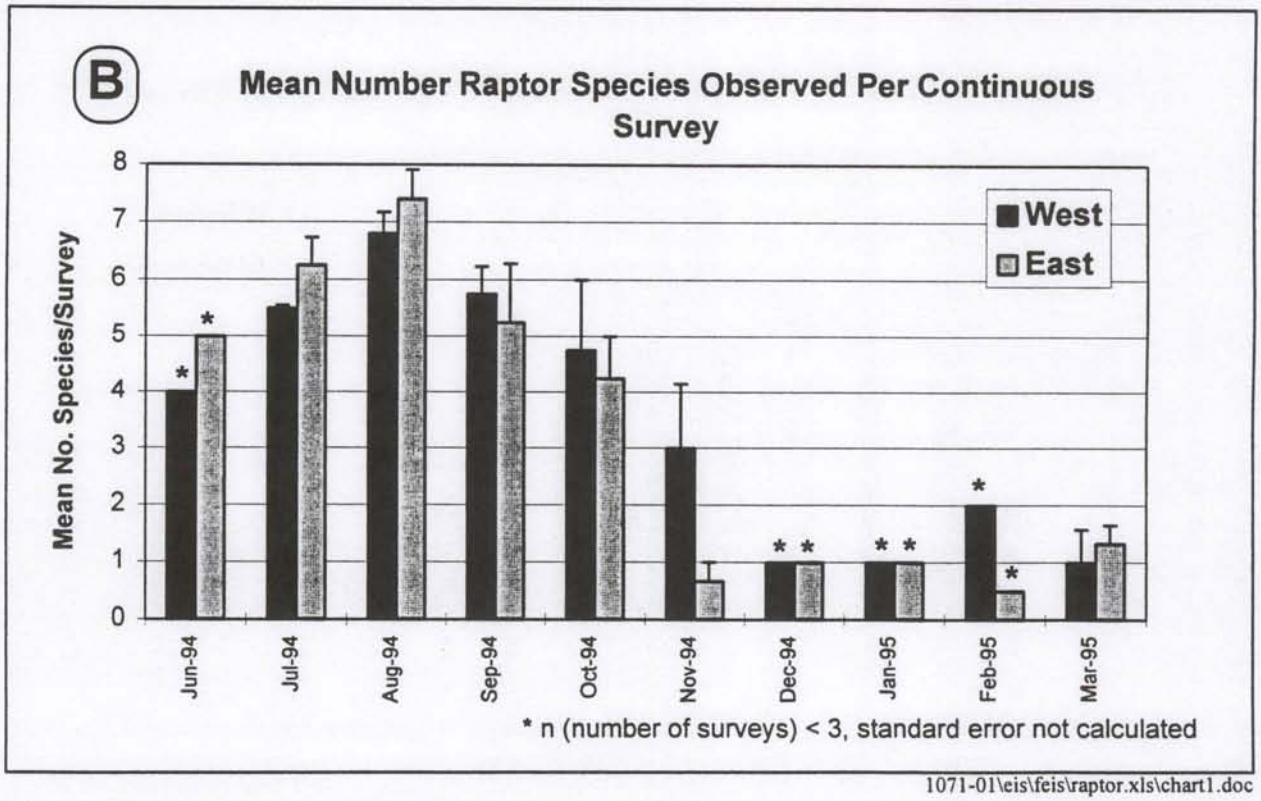


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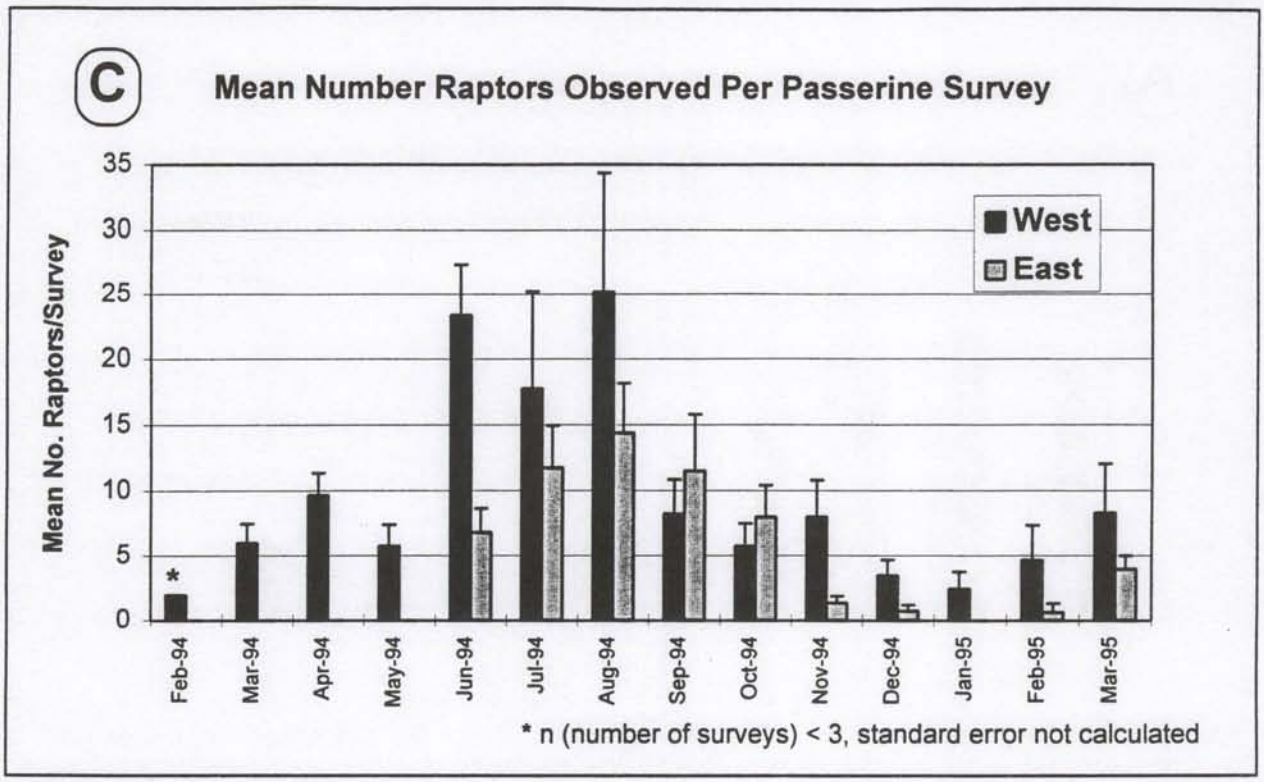
Figure 3.2 Mean Number of Raptor Observations and Mean Number of Raptor Species Observed during Raptor Use (Continuous) and Passerine Surveys.



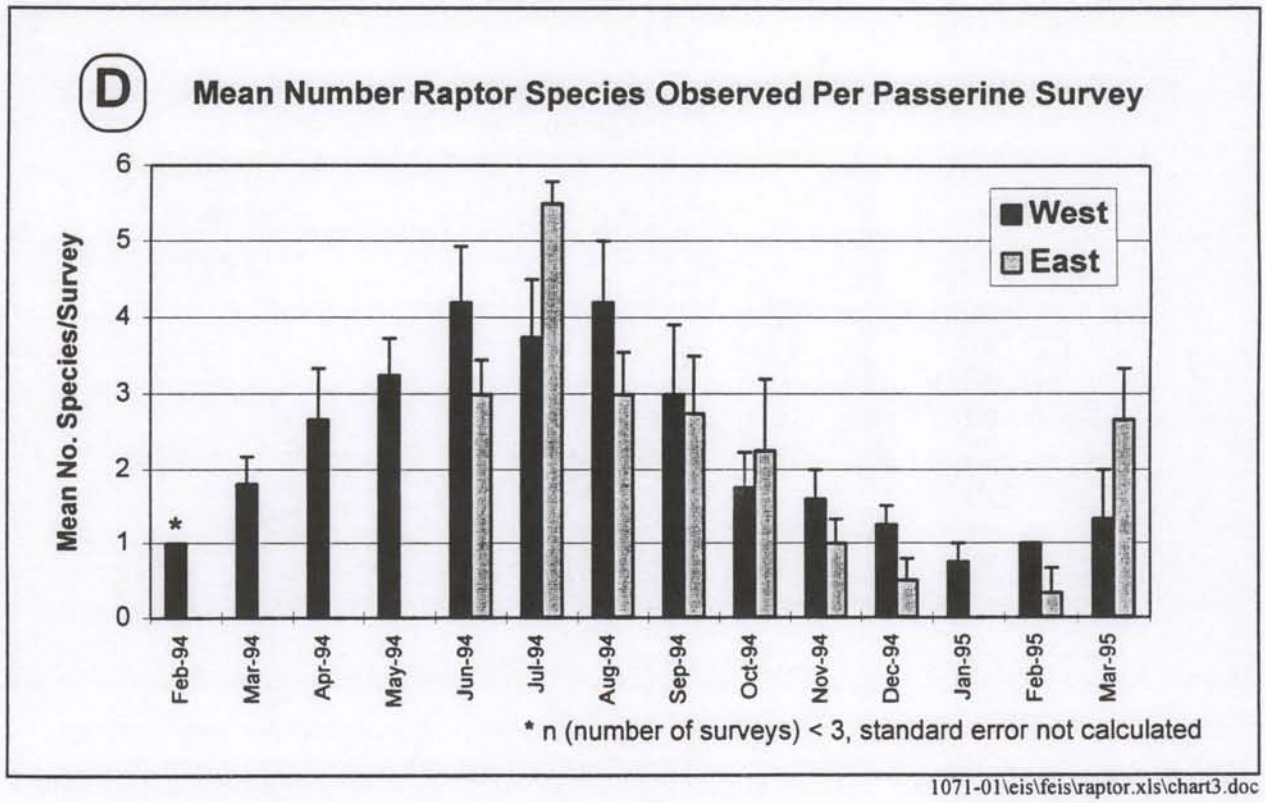


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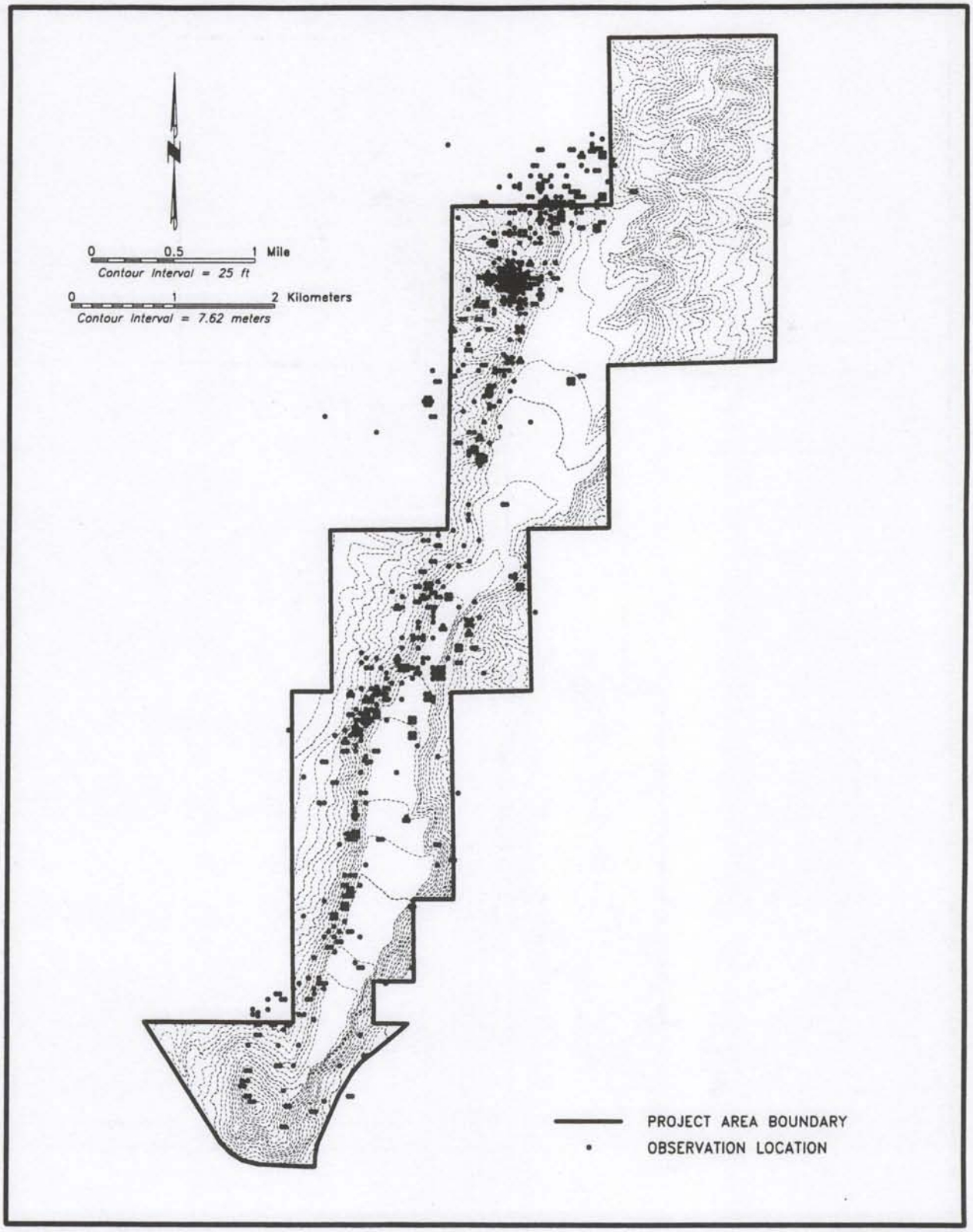
Figure 3.2 (Continued)



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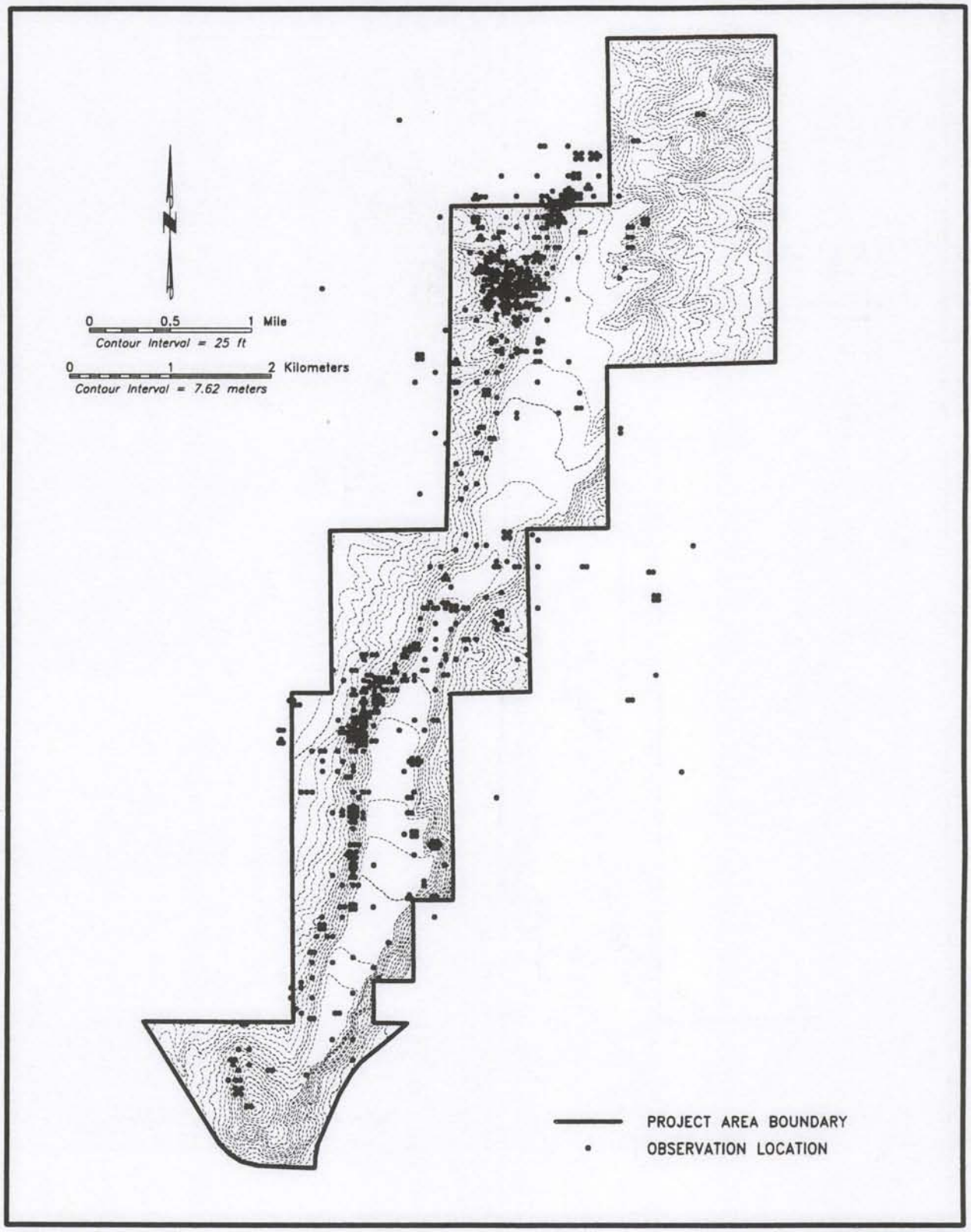
Map 3.14A Eagle Distribution on Foote Creek Rim, Breeding Season, 1994-1995 (n = 792).



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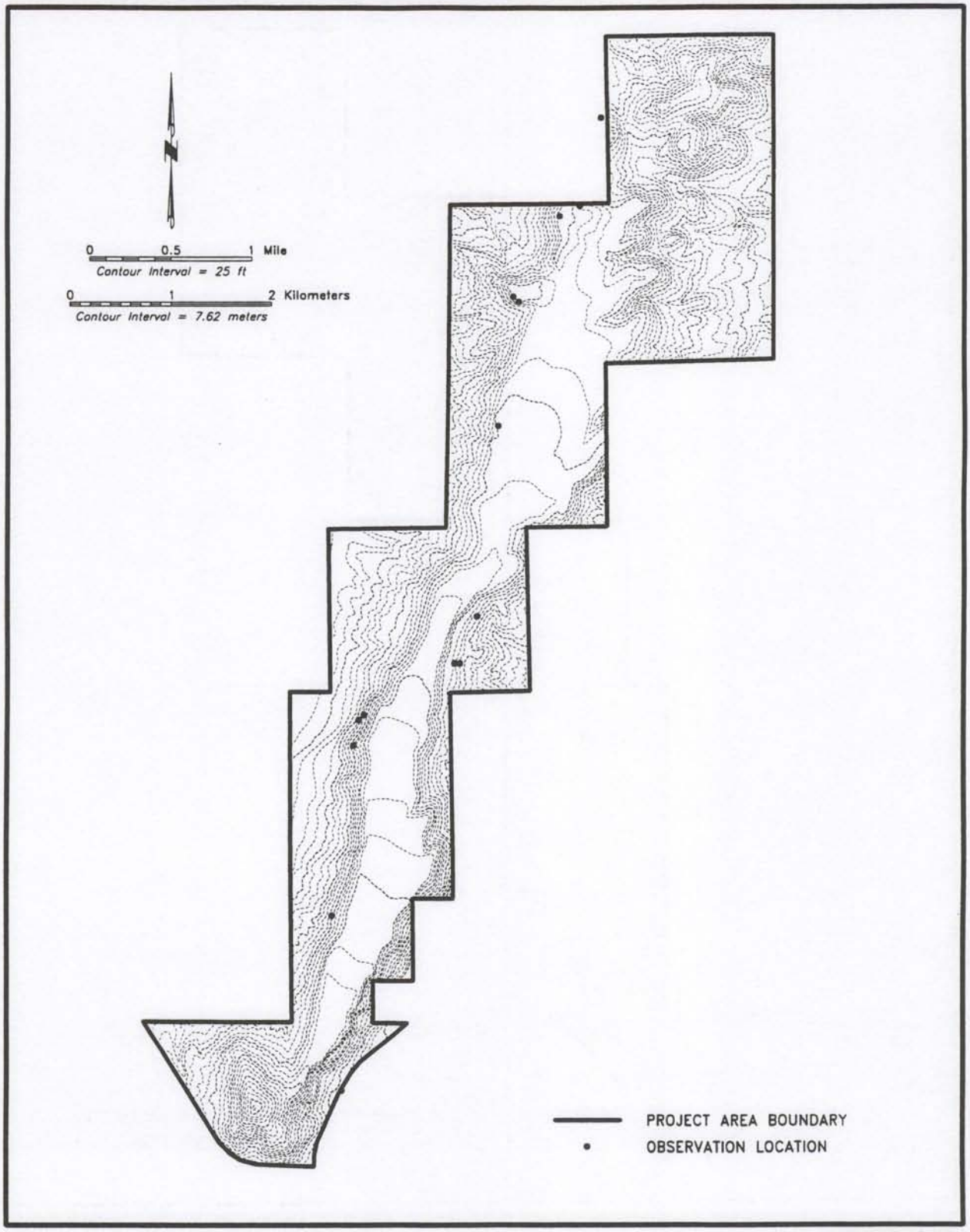
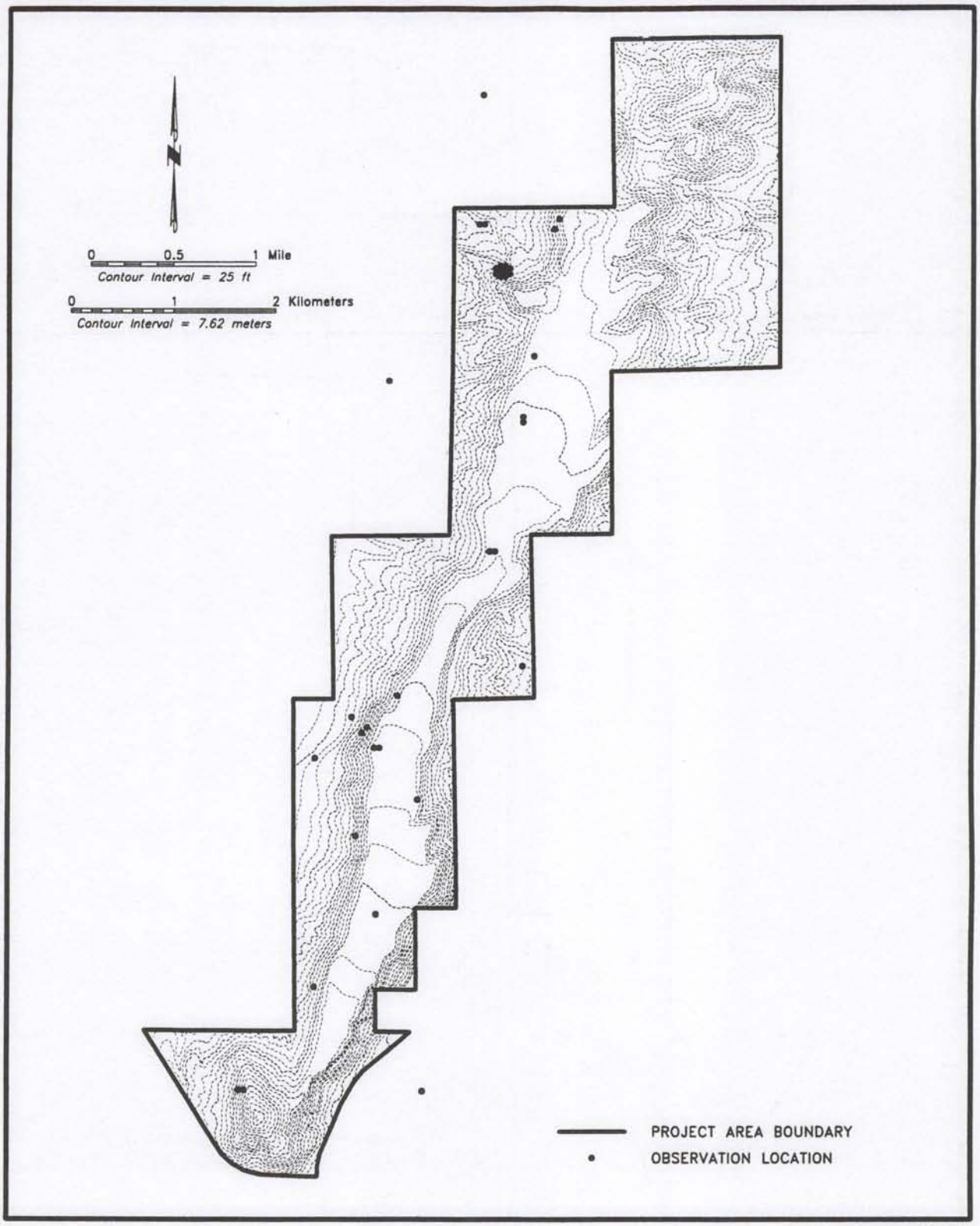
Map 3.14B Eagle Distribution on Foote Creek Rim, Nonbreeding Seasons, 1994-1995 (n = 771).



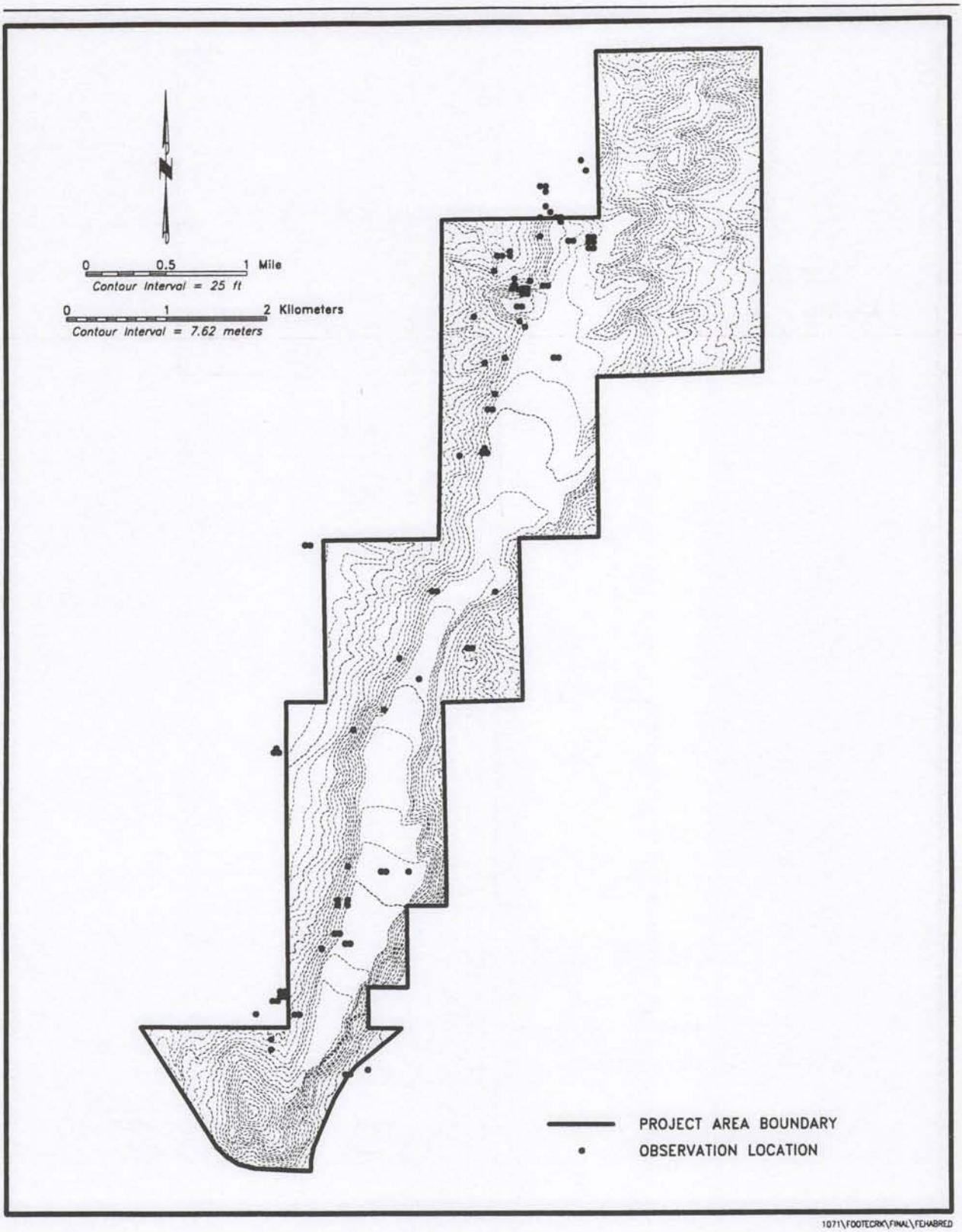
1071\FOOTECRK\FINAL\BAEABRED

Map 3.14C Bald Eagle Distribution on Foote Creek Rim, Breeding Season, 1994-1995 (n = 14).



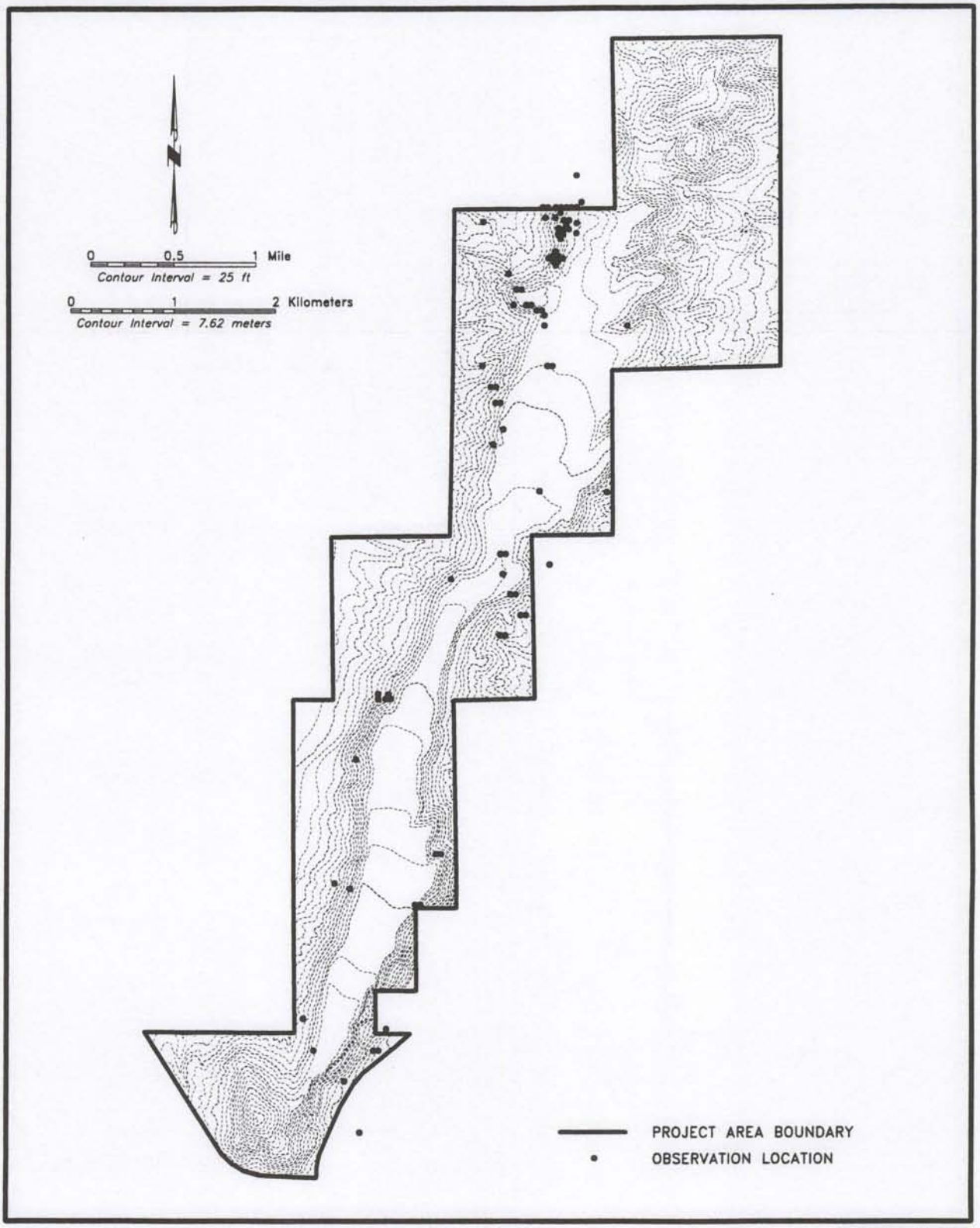
1071\FOOTECRK\FINAL\BAEANOMB

Map 3.14D Bald Eagle Distribution on Foote Creek Rim, Nonbreeding Seasons, 1994-1995 (n = 36).



1071\FOOTECRK\FINAL\FEHABRED

Map 3.15A Ferruginous Hawk Distribution on Foote Creek Rim, Breeding Season, 1994-1995 (n = 93).



1071\FOOTECRK\FINAL\FEHANONB

Map 3.15B Ferruginous Hawk Distribution on Foote Creek Rim, Nonbreeding Seasons, 1994-1995 (n= 84).

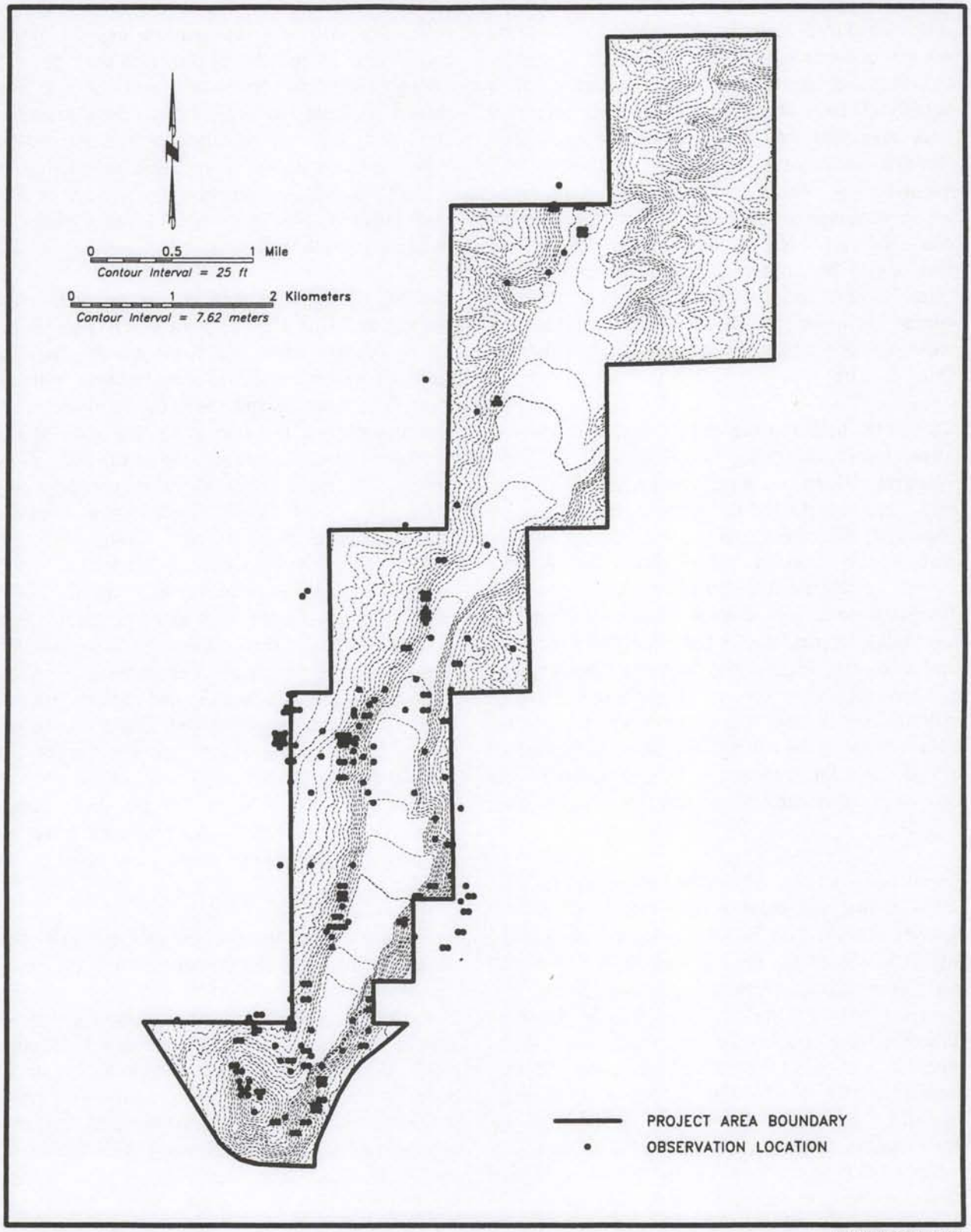
cottonwood trees along Foote Creek. Nonbreeding season observations were similar to breeding season observations, with the exception of a notable absence of observations in the Arlington Peak area and less frequent use of the central western rim (Maps 3.15C and 3.15D). The majority of Swainson's hawk observations occurred during the breeding season. Distribution was relatively even in the southern half of the area, with a few scattered observations in the north (Map 3.15E). Rough-legged hawks were observed almost exclusively during the winter season, and were distributed along the western edge of the rim (Map 3.15F).

Large falcon (peregrine and prairie) observations were distributed along the length of the rim. Peregrine falcons were primarily seen on the west side, and unlike most of the raptor species observed, used the top of the rim as frequently as eastern and western edges (Maps 3.16A and 3.16B). During the breeding season, prairie falcons were observed most frequently along the west edge, particularly in the Arlington Peak area and along the ridge jutting from the northwestern portion of the rim. Distribution during nonbreeding seasons shows a notable absence of observations in the Arlington Peak area, as well as a decline in the frequency of observations in the northwestern portion of the rim (Maps 3.16C and 3.16D).

Small falcons (i.e., American kestrel and merlin) were among the most evenly distributed raptor species observed on Foote Creek Rim, frequently using the top of the rim, as well as both the east and west edges. American kestrel use of the northern half of the rim was similar between breeding and nonbreeding seasons, but three distinct loci of observations occurred in the southern half of the rim during the summer breeding season which were absent during nonbreeding seasons (i.e., along the section line north of Arlington Peak, along the trees in the southeastern portion of the rim, and along the central western portion of the rim (Maps 3.16E and 3.16F). Merlin observations were distributed throughout the rim (Map 3.16G). Use of point count data to show distribution may be biased because the probability of detection declines with distance from the observation point. The bias should be slight for larger raptors such as eagles and hawks but may be consequential for smaller birds such as kestrels. Map 3.16E may represent a biased distribution; however, some clusters of bird observations are real because kestrels frequently perch on fences.

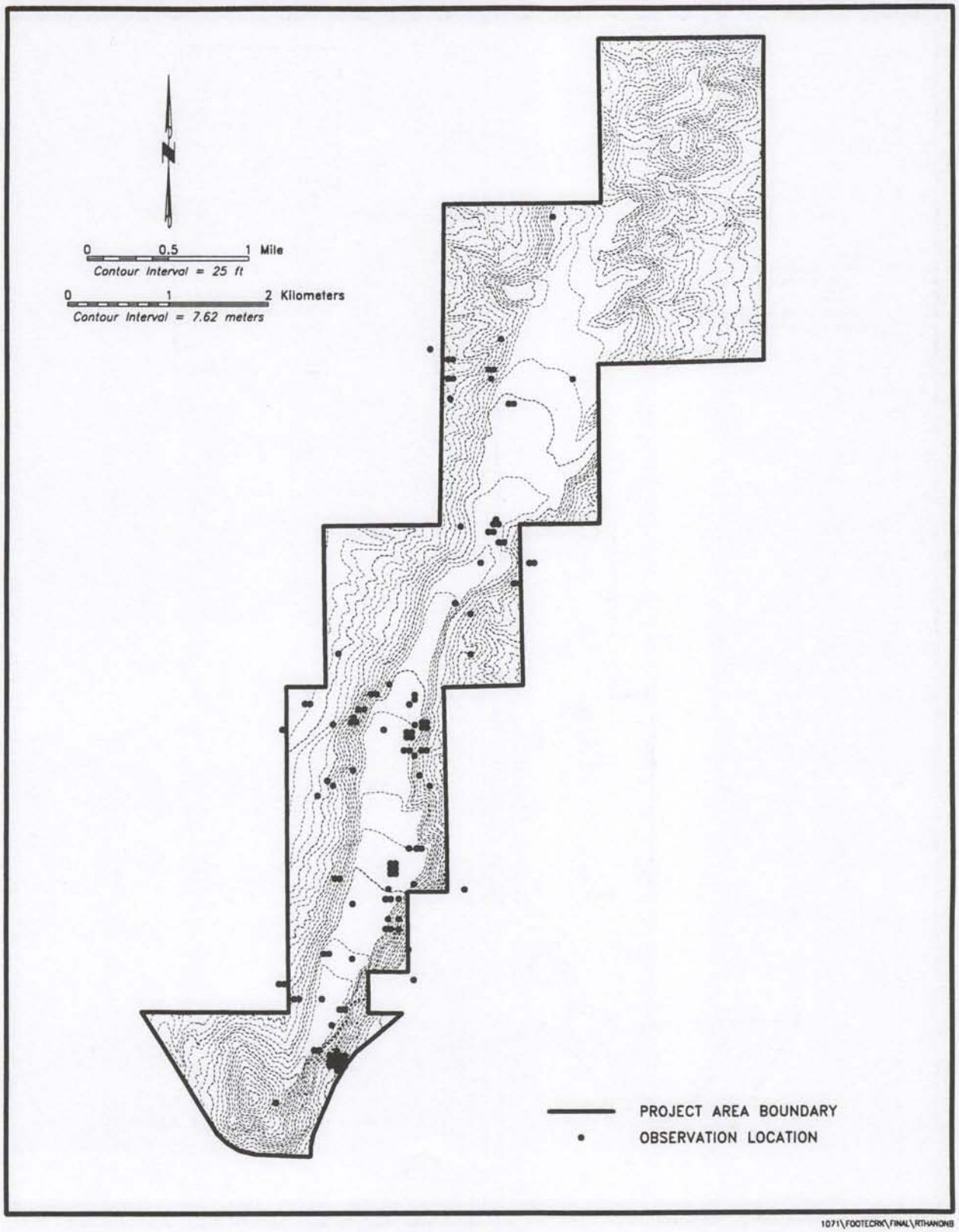
The flight heights of raptors observed within the Foote Creek Rim area are presented in Table 3.12. Flight height classes are based on the physical parameters of the proposed wind turbines, with the interval between 26 and 184 ft (8-56 m) above the rim representing the area of turbine rotor sweep for those turbines placed on top of the rim. Fifty percent of raptor observations occurred in this flight class; 45% of the raptors were observed 0-26 ft (0-8 m) above the rim. Golden and bald eagles and ferruginous, rough-legged, and red-tailed hawks were observed at the 26-184 ft (8-56 m) flight height class more frequently than at any other class; these birds often soar and hunt within this height class. Peregrine and prairie falcons, Swainson's hawks, and turkey vultures were also commonly observed within this height class. Small falcons (i.e., American kestrel and merlin) and northern harriers were observed most frequently in the 0-26 ft (0-8 m) flight height class. These species hunt by soaring and hovering low over the ground and pouncing on prey (Scott 1987).

Most raptor nests are located in topographically diverse areas, and the numerous rock outcrops, riparian drainages, and cliffs within and adjacent to the KPPA provide suitable substrates for raptor nesting. Aerial and ground surveys for raptor nests within and adjacent to the KPPA were conducted during the spring and summer of 1994. The surveys focused primarily on suitable raptor nesting habitat as defined above, and encompassed the Foote Creek Rim area plus a 10-mi (16-km) buffer (excluding forested land south of I-80) and the Simpson Ridge area and proposed alternate transmission line routes plus a 2-mi (3-km) buffer (see Map 3.16½). The survey area around Foote



1071\FOOTECRK\FINAL\RTHABRED

Map 3.15C Red-tailed Hawk Distribution on Foote Creek Rim, Breeding Season, 1994-1995 (n = 225).



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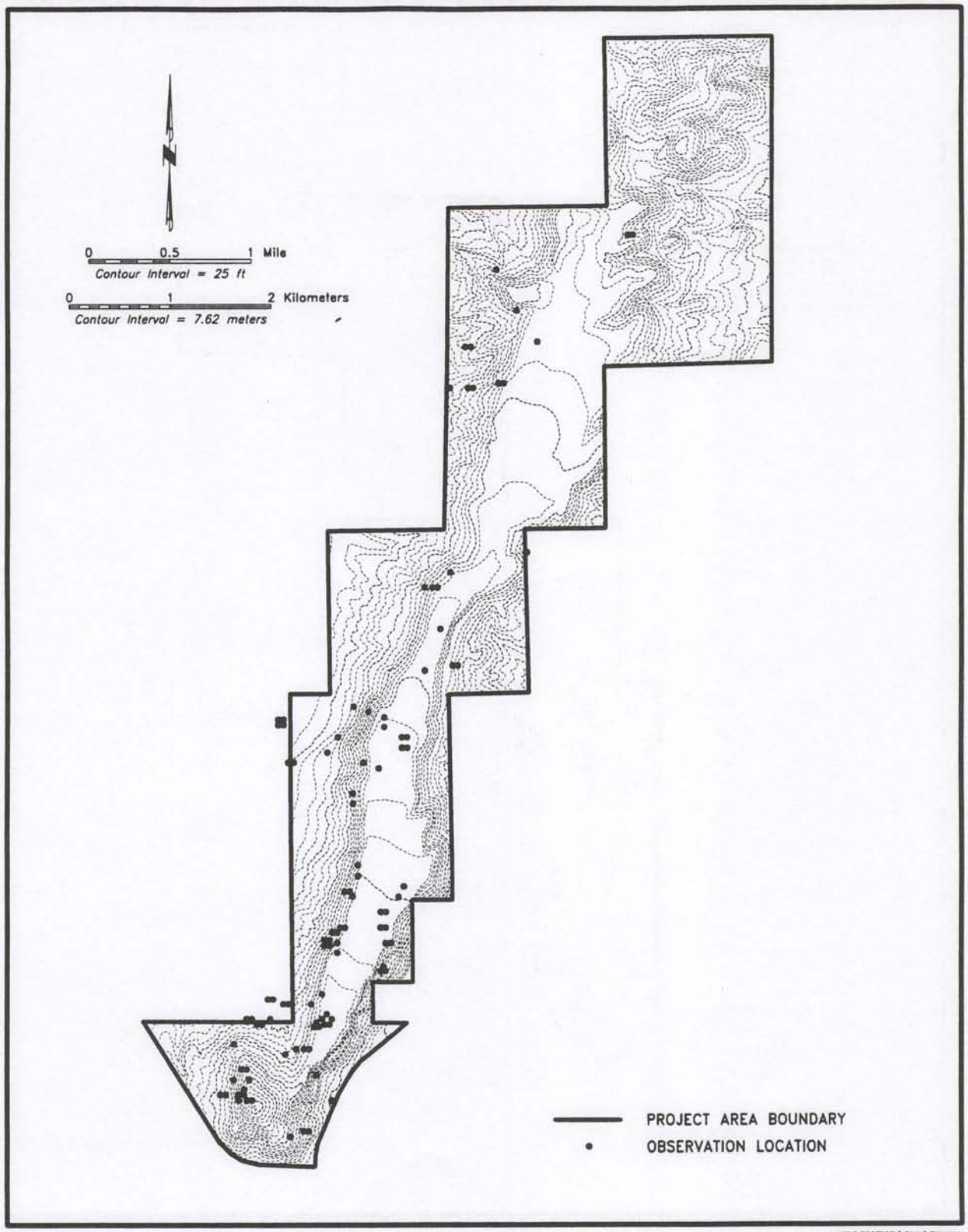
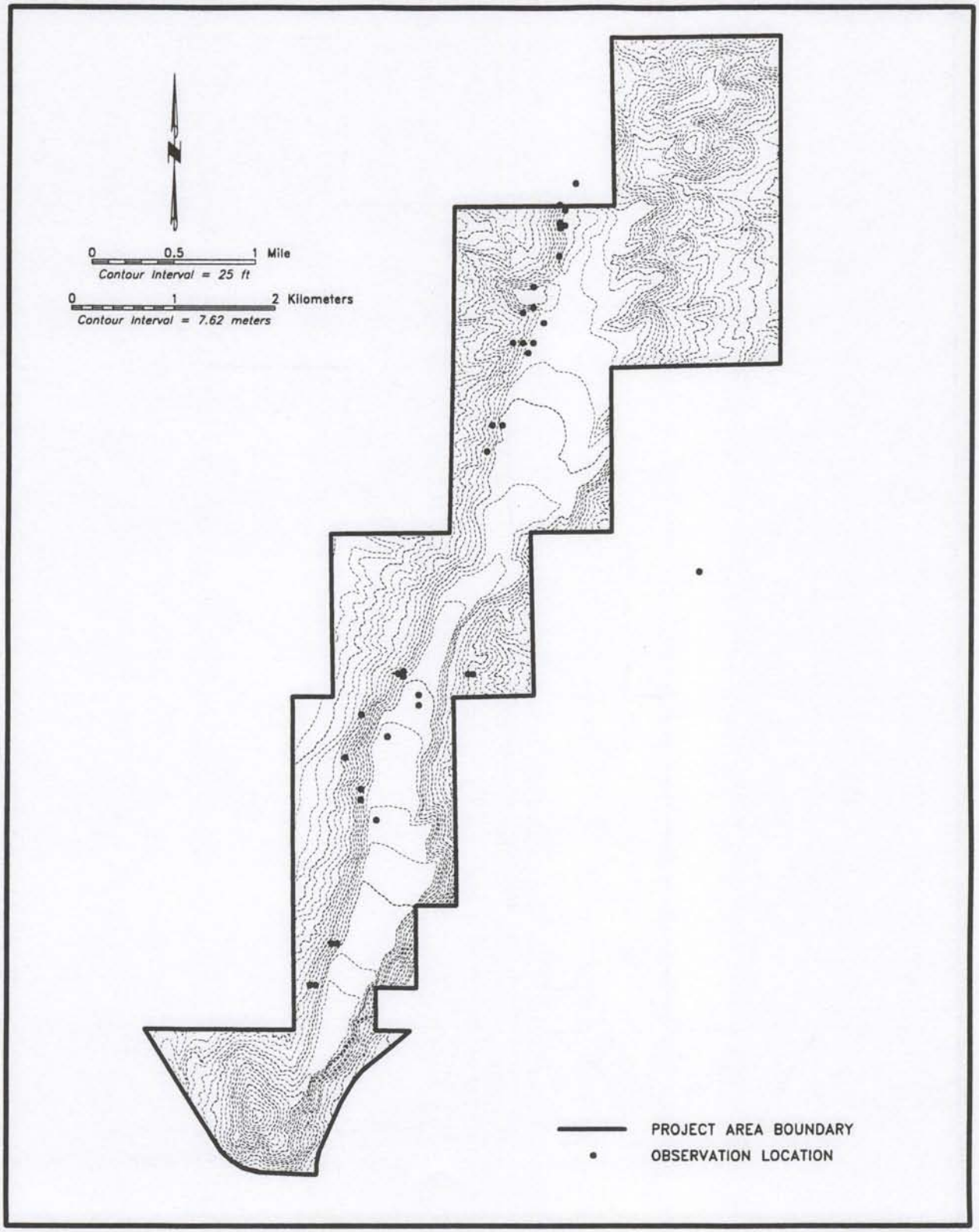
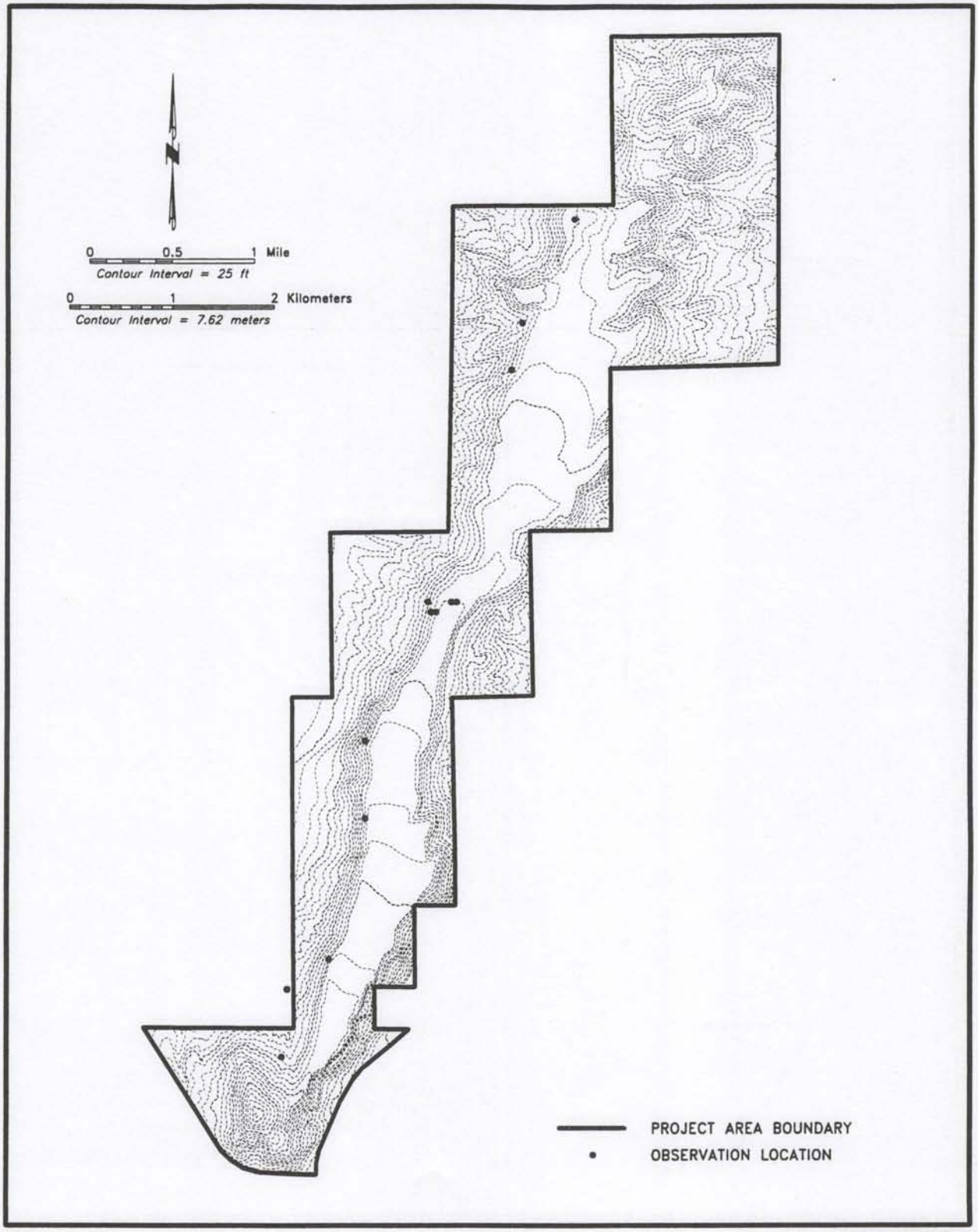
Map 3.15D Red-tailed Hawk Distribution on Foote Creek Rim, Nonbreeding Seasons, 1994-1995 (n = 120).



Map 3.15E Swainson's Hawk Distribution on Foote Creek Rim, All Seasons, 1994-1995 (n = 108).

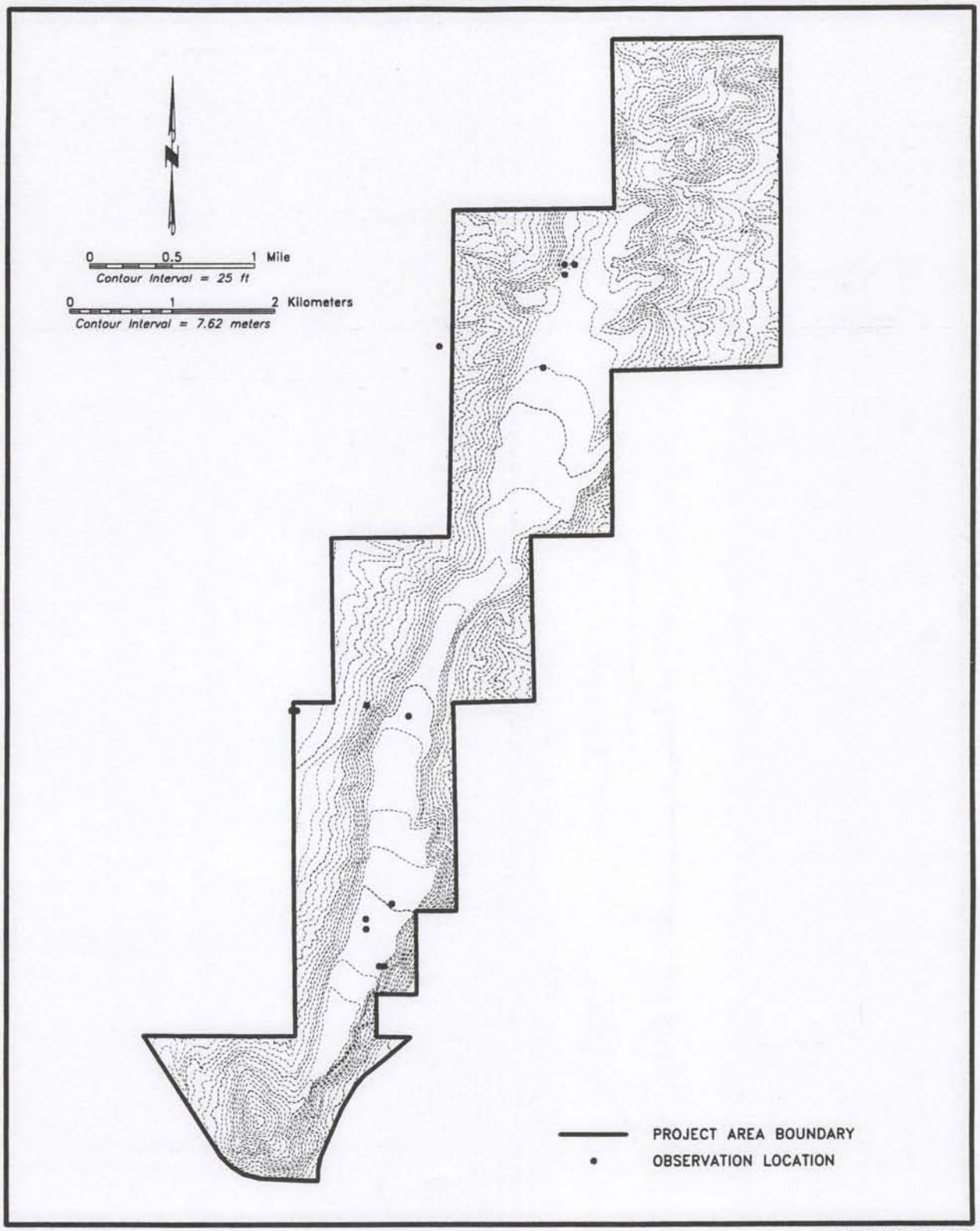


Map 3.15F Rough-legged Hawk Distribution on Foote Creek Rim, All Seasons, 1994-1995 (n = 36).



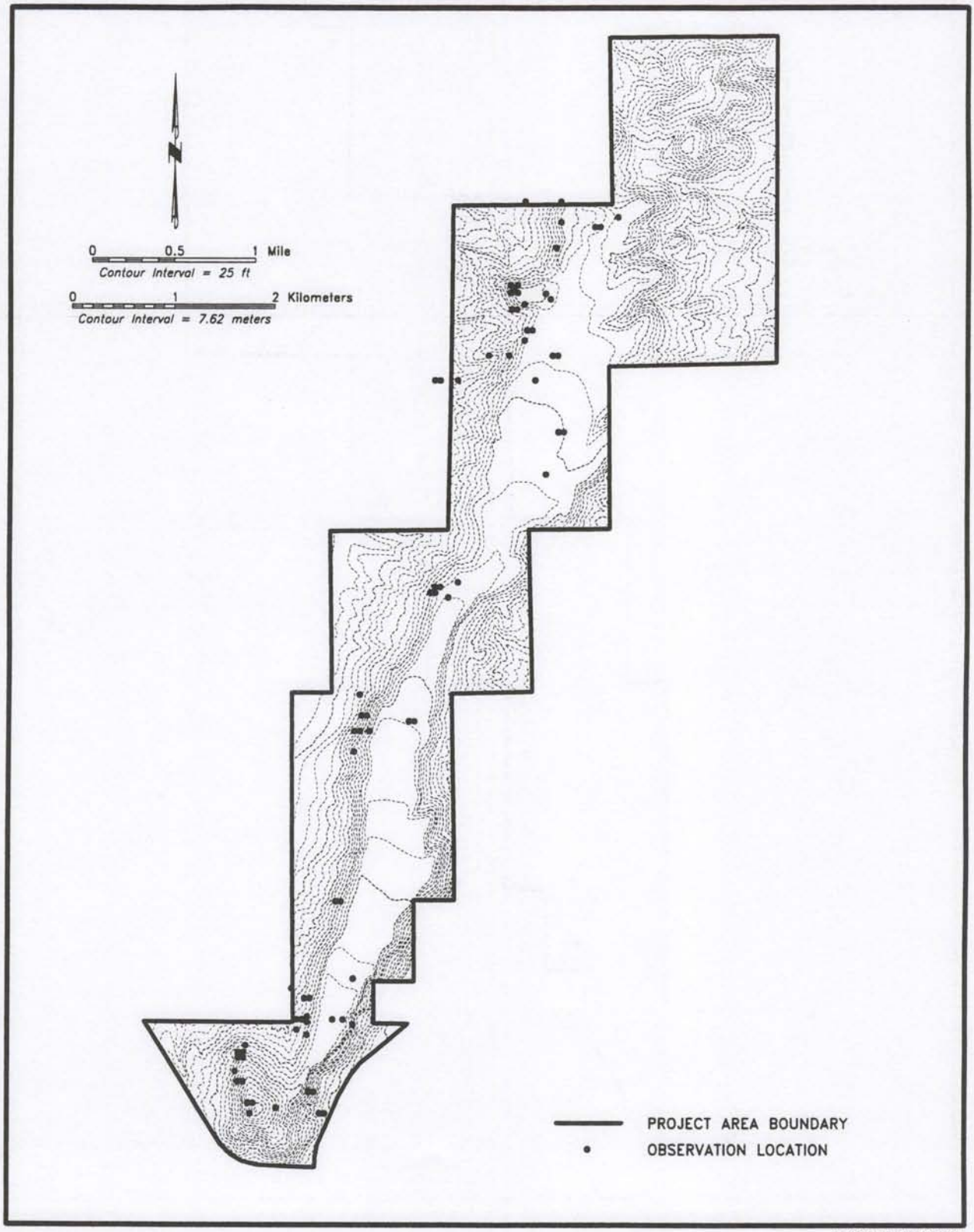
1071\FOOTECRK\FINAL\PEFABRED

Map 3.16A Peregrine Falcon Distribution on Foote Creek Rim, Breeding Season, 1994-1995 (n = 13).



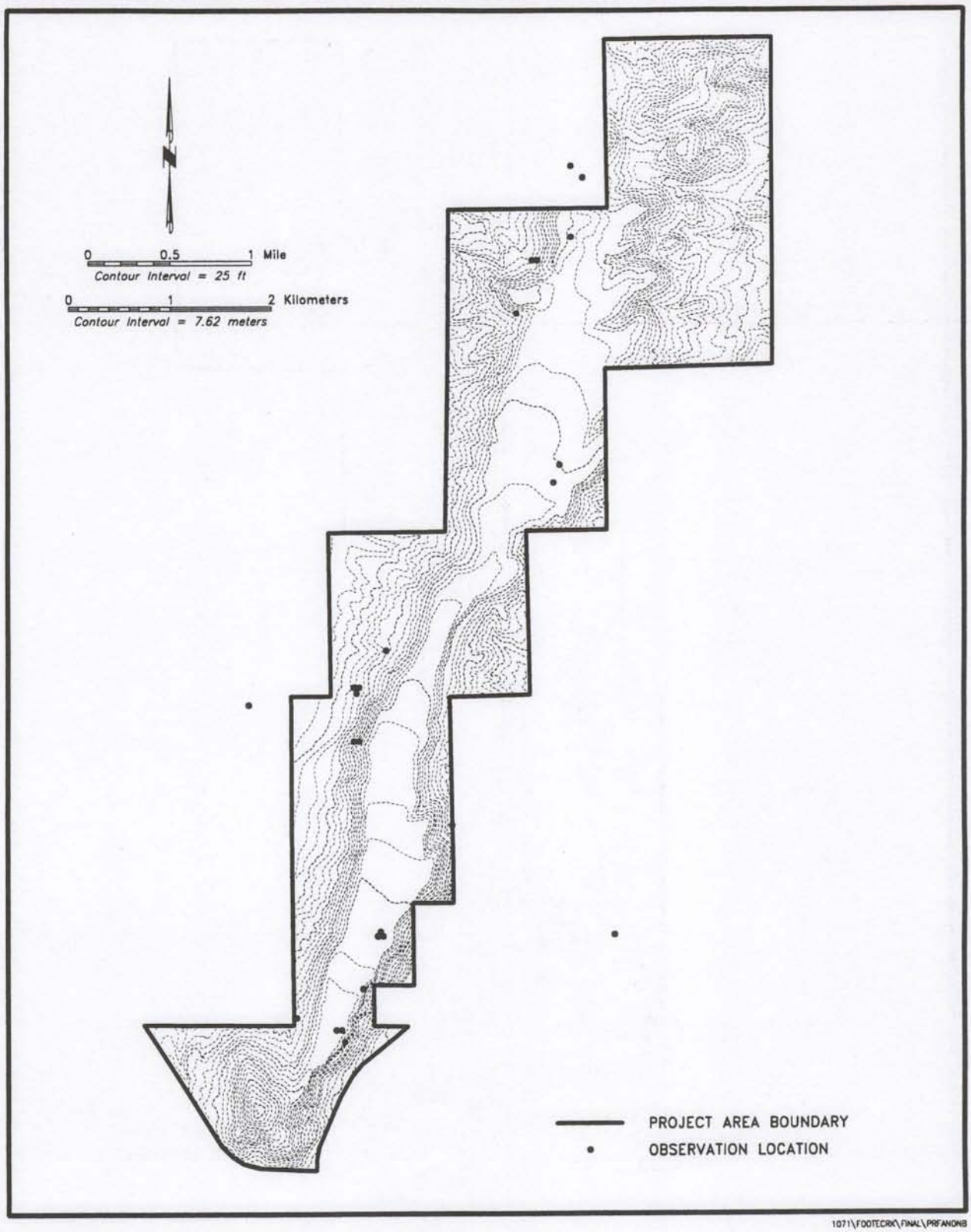
1071\FOOTECRK\FINAL\PEFANONB

Map 3.16B Peregrine Falcon Distribution on Foote Creek Rim, Nonbreeding Seasons, 1994-1995 (n = 14).



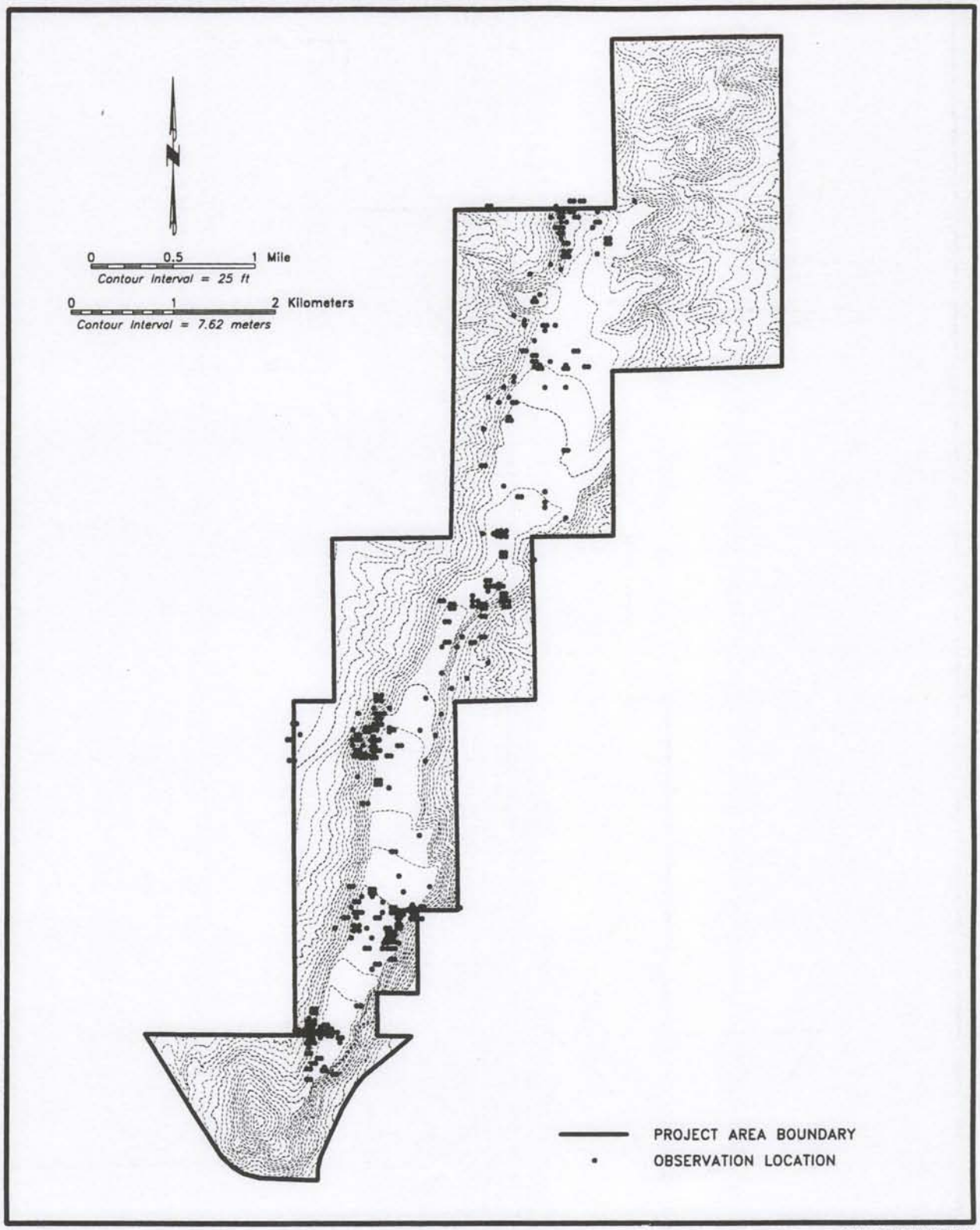
1071\FOOTECRK\FINAL\PRFABRED

Map 3.16C Prairie Falcon Distribution on Foote Creek Rim, Breeding Season, 1994-1995 (n = 77).



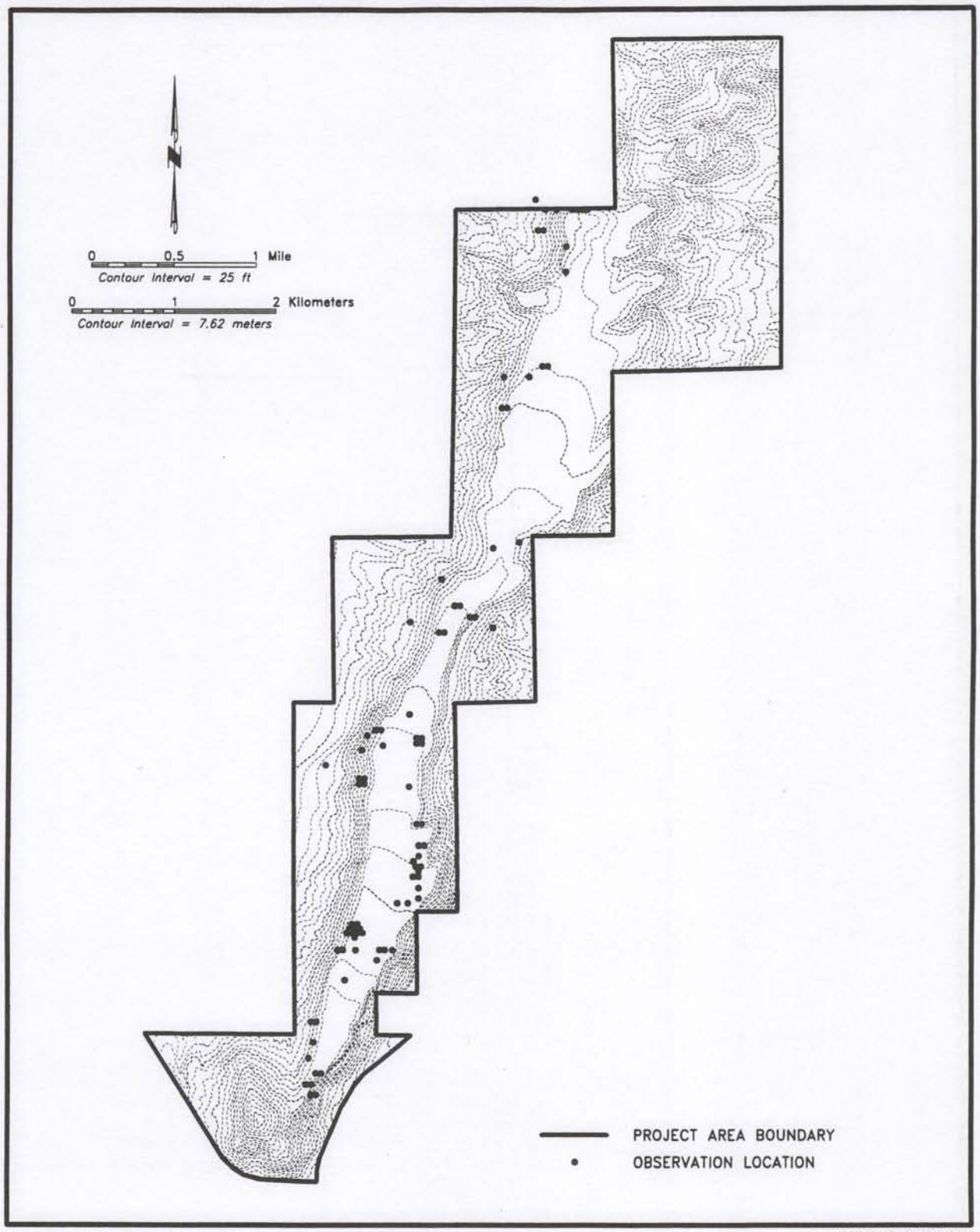
1071\FOOTECRK\FINAL\PRFANONB

Map 3.16D Prairie Falcon Distribution on Foote Creek Rim, Nonbreeding Seasons, 1994-1995 (n = 25).



1071\FOOTECRK\FINAL\AMKEBRED

Map 3.16E American Kestrel Distribution on Foote Creek Rim, Breeding Season, 1994-1995 (n = 401).



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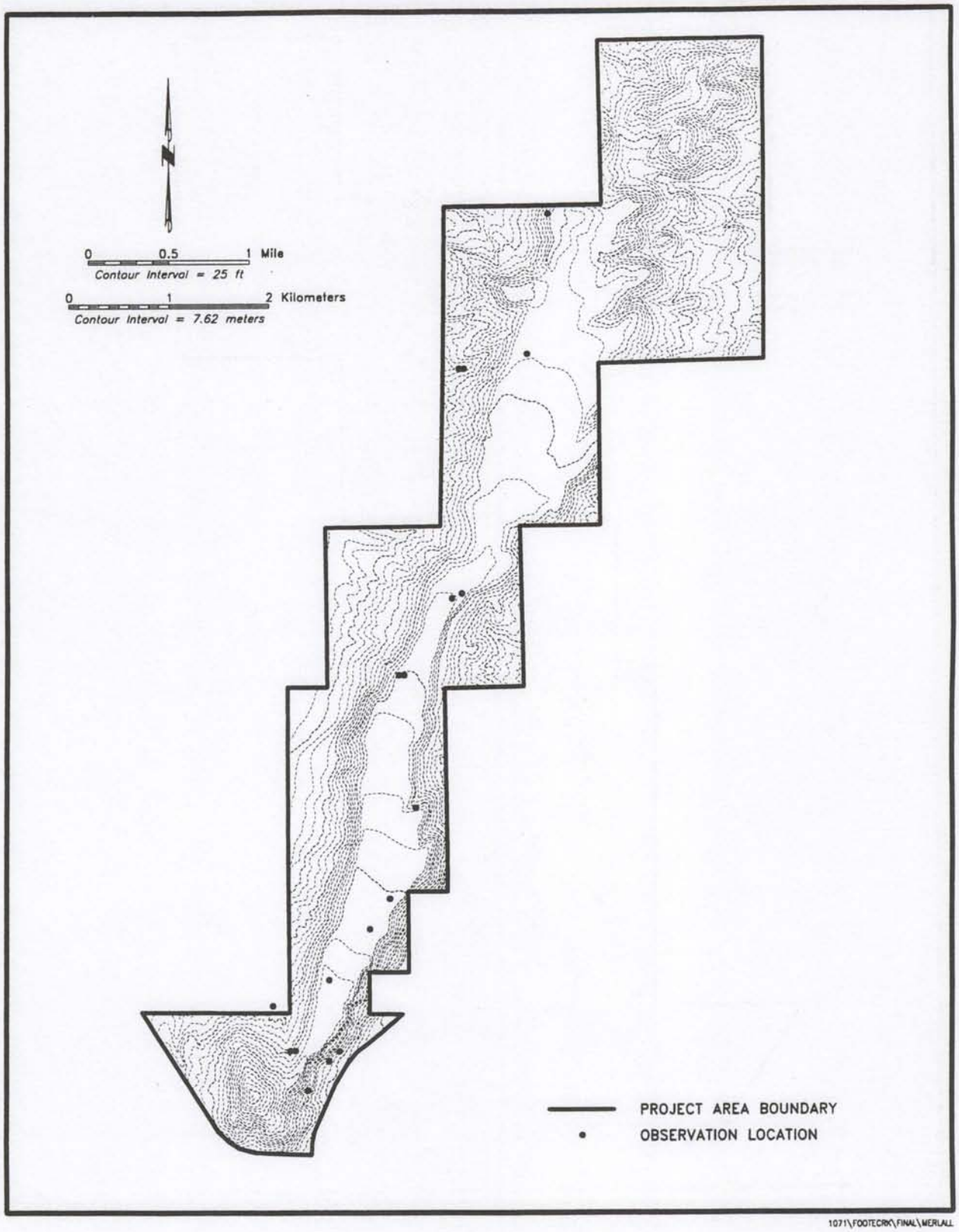
Map 3.16F American Kestrel Distribution on Foote Creek Rim, Nonbreeding Seasons, 1994-1995 (n = 87).



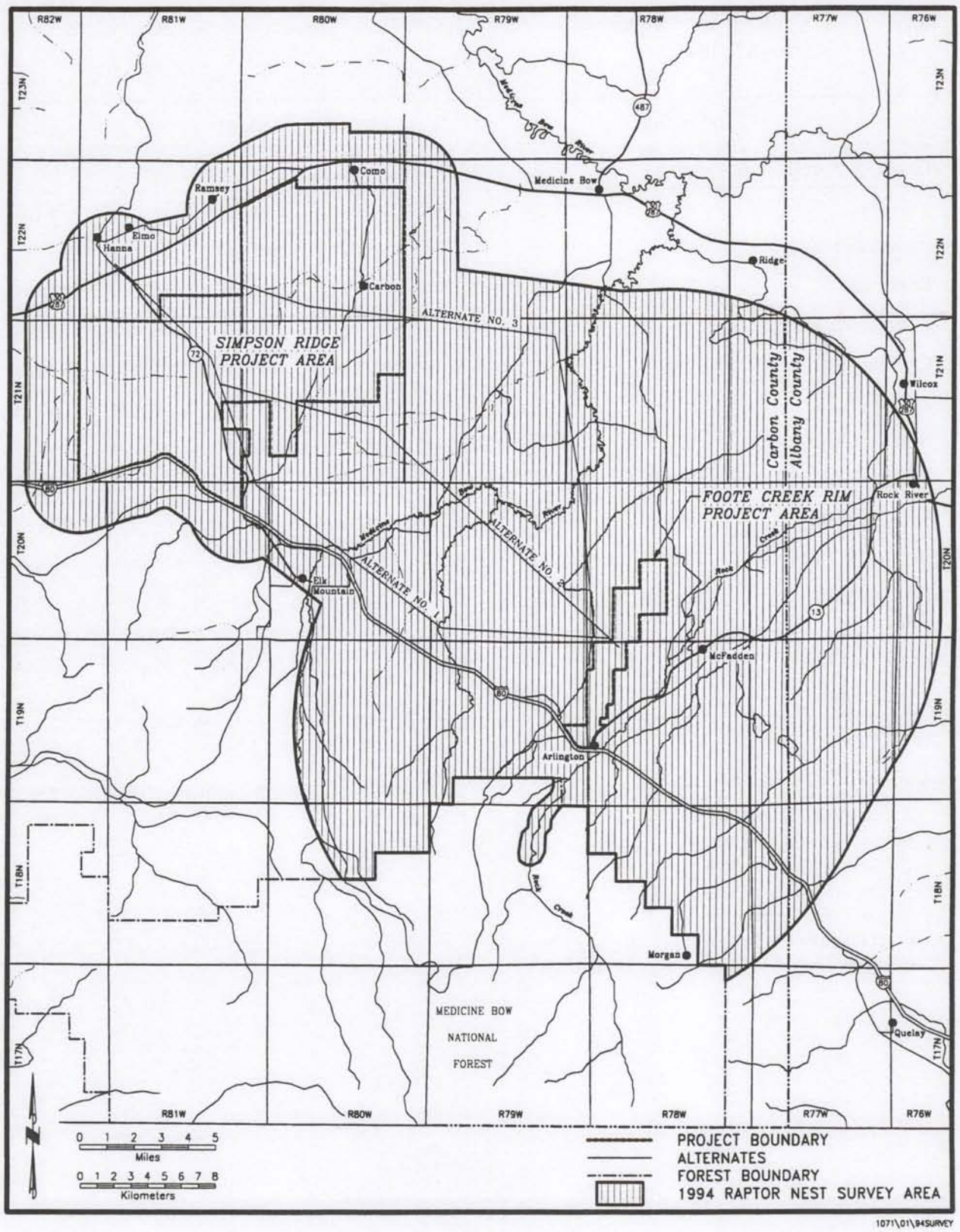
Map 3.16G Merlin Distribution on Foote Creek Rim, All Seasons, 1994-1995 (n = 18).

Table 3.12 Flight Heights of Raptors Observed Within the Foote Creek Rim Area, February 16, 1994 - March 17, 1995.

Taxonomic Group or Species	Total No. of Observations in Sample	Flight Height Class[1]					
		C-	B-	A-	A+	B+	C+
Accipiters	6	0 (0)	0 (0)	0 (0)	2 (33)	1 (17)	4 (67)
American kestrel	359	7 (2)	23 (6)	142 (40)	240 (67)	131 (36)	17 (5)
Bald eagle	31	3 (10)[2]	6 (19)	5 (16)	5 (16)	15 (48)	12 (39)
Ferruginous hawk	128	3 (2)	6 (5)	29 (23)	50 (39)	81 (63)	42 (33)
Golden eagle	1,181	38 (3)	142 (12)	298 (25)	456 (39)	630 (53)	424 (36)
Merlin	12	0 (0)	2 (17)	6 (50)	7 (58)	4 (33)	0 (0)
Northern harrier	105	1 (1)	12 (11)	17 (16)	74 (70)	27 (26)	9 (9)
Peregrine falcon	21	1 (5)	4 (19)	11 (52)	17 (81)	14 (67)	3 (14)
Prairie falcon	75	2 (3)	6 (8)	21 (28)	42 (56)	41 (55)	10 (13)
Red-tailed hawk	272	13 (5)	35 (13)	54 (20)	88 (32)	147 (54)	90 (33)
Rough-legged hawk	23	0 (0)	0 (0)	4 (17)	6 (26)	20 (87)	6 (26)
Swainson's hawk	90	1 (1)	8 (9)	13 (14)	43 (48)	38 (42)	36 (40)
Turkey vulture	13	1 (8)	1 (8)	1 (8)	3 (23)	6 (46)	6 (46)
Total	2,316	70 (3)	245 (11)	601 (26)	1,033 (45)	1,155 (50)	659 (28)

[1] A = 0-26 ft (0-8 m)
B = 26-184 ft (8-56 m)
C = >184 ft (>56 m)
+ = above rim
- = below rim

[2] Percentage of total number of individual observations in parentheses; percentages do not total 100 since more than one flight height class may be assigned to a single observation.



Map 3.16½ 1994 Raptor Nest Survey Area.

Creek Rim was expanded to 10 mi (16 km) because this was regarded as the potential zone of influence of the first phase of Windplant development on golden eagles and prairie falcons (Call 1978; unpublished data, Snake River Birds of Prey Study). Aerial surveys were conducted between May 31 and June 5, 1994. Ground survey dates varied, depending on raptor species and nesting chronology, as follows:

Golden eagle	June 17 - July 13,
Bald eagle	June 19 - August 1,
Ferruginous hawk	June 16 - July 26,
Red-tailed hawk	May 30 - August 9,
Swainson's hawk	June 19 - August 16, and
Prairie falcon	June 16 - July 26.

The complete methodology for raptor nest surveys is described in Appendix A in the DEIS. These surveys confirmed the status of known nests in BLM and WGFD databases, and resulted in the initial observation of many previously unknown nests.

Three hundred nine raptor nests were located within the 377,728-ac raptor nest survey area in 1994 (Table 3.13). One hundred fifty-seven nests were located within the Foote Creek Rim area and associated 10-mi (16-km) buffer [238,976 ac or 373.4 mi^2 (967.1 km^2)], and 143 nests were within the Simpson Ridge area and associated 2-mi (3-km) buffer [123,072 ac or 192.3 mi^2 (498.1 km^2)]; nine raptor nests were outside of these areas but within 2 mi (3 km) of the alternate transmission line routes [15,680 ac or 24.5 mi^2 (63.5 km^2)]. The majority (73.1%) of known raptor nests within the survey area belong to red-tailed hawks (128 nests) and ferruginous hawks (98 nests). Inactive raptor nests observed in trees (mostly limber pines) were assigned to either red-tailed hawks or ferruginous hawks. Other raptor nests observed during the survey belong to golden eagle (43 nests), bald eagle (1 nest), Swainson's hawk (30 nests), American kestrel (2 nests), and prairie falcon (7 nests). Of the 66 known active raptor nests observed during the survey, the majority (77.2%) belonged to red-tailed hawk (20 nests), ferruginous hawk (18 nests), or Swainson's hawk (13 nests) (Table 3.13). The remaining active nests include golden eagle (5 nests), bald eagle (1 nest), American kestrel (2 nests), and prairie falcon (7 nests). Other raptor species reported to have nested within the survey area include great horned owl and eastern screech owl (WGFD 1994b).

A total of 119 raptor nests was located within 2 mi (3 km) of the three alternate transmission line routes (Table 3.14). Approximately 22% of these nests were active, with the majority (88%) of these active nests used by ferruginous hawk (7 nests), prairie falcon (6 nests), red-tailed hawk (6 nests), and Swainson's hawk (4 nests). Fifty raptor nests occur within 2 mi (3 km) of Alternate 3, 28 nests within 2 mi (3 km) of Alternate 2, and 19 nests within 2 mi (3 km) of Alternate 1. The remaining 22 raptor nests are within 2 mi (3 km) of joint routes.

Density of raptor nests is greatest in the Simpson Ridge area and associated 2-mi (3-km) buffer, with approximately 0.75 nest/mi^2 (0.3 nest/km^2) [0.192 active nests/mi^2 (0.74 active nests/km^2)]. Within the potential zone of influence for the Foote Creek Rim area [i.e., Foote Creek Rim area and associated 10-mi (16-km) buffer], raptor nest density is 0.44 nest/mi^2 (0.2 nest/km^2) [0.06 active nests/mi^2 (0.02 active nests/km^2)]. Overall, there is approximately 0.53 nest/mi^2 (0.2 nest/km^2) [0.11 active nests/mi^2 (0.044 active nests/km^2)] within the 1994 raptor nest survey area. Table 3.15 presents the density of active nests by species for the 1994 raptor nest survey area. The raptor nest densities found within the survey area [i.e., 0.44-0.75 nest/mi^2 (0.2-0.3 nest/km^2)] are similar to those reported for areas immediately north of the survey area. Raptor nest data from a coalbed methane project north of Hanna, Wyoming (Mariah 1992) indicate a raptor nest density of 0.78 nest/mi^2 (0.2 nest/km^2), which is similar to nest density within the Simpson Ridge area. The overall raptor nest density within the 1994 survey area [0.53 nest/mi^2 (0.2 nest/km^2)] is similar to the density of 0.48 nest/mi^2 (0.2 nest/km^2) extrapolated from raptor surveys at coal mines adjacent to Hanna, Wyoming (Mariah 1989). A relatively high raptor nest density of 2.0 nests/mi^2 (0.7 nest/km^2) has been noted within the permit

Table 3.13 Number of Active and Inactive Nests of Raptor Species Within the 1994 Raptor Nest Survey Area.

Raptor Species	1994 Nest Status[1]	Foote Creek Rim Area[2]	Simpson Ridge Area[3]	Other Areas Within the KPPA[4]	Total Raptor Nest Survey Area
American kestrel[5]	Active	0	2	0	2
	Inactive	0	0	0	0
Bald eagle	Active	0	1	0	1
	Inactive	0	0	0	0
Ferruginous hawk	Active	7	10	1	18
	Inactive	24	56	0	80
Golden eagle	Active	2	2	1	5
	Inactive	29	9	0	38
Prairie falcon	Active	0	5	2	7
	Inactive	0	0	0	0
Red-tailed hawk	Active	11	7	2	20
	Inactive	75	31	2	108
Swainson's hawk	Active	2	10	1	13
	Inactive	7	10	0	17
Subtotal	Active	22	37	7	66
	Inactive	135	106	2	243
Total		157	143	9	309

1 A nest was considered active if one of the following was observed:
a) eggs were laid,
b) young were present, or
c) an adult was observed in incubating posture on the nest (Postupalsky 1974).

2 Includes associated 10-mi (16-km) buffer (excluding forested land south of I-80).

3 Includes associated 2-mi (3-km) buffer.

4 Areas within 2 mi (3 km) of alternate transmission line routes but outside of the Foote Creek Rim and Simpson Ridge areas.

5 Due to the difficulty of locating American kestrel nests, nests of this species were not a focus of the 1994 nest survey; however, two nests were incidentally located during the survey.

Table 3.14 Number of Active and Inactive Nests of Raptor Species Within 2 Mi (3 km) of Alternate Transmission Line Routes, 1994.

Raptor Species	1994 Nest Status[1]	Alternate 1	Alternate 2	Alternate 3	Alternates 1 and 2[2]	Alternates 1, 2, and 3[2]	Total All Alternate Routes
American kestrel	Active	0	0	1	0	0	1
	Inactive	0	0	0	0	0	0
Ferruginous hawk	Active	4	1	1	1	0	7
	Inactive	2	2	12	2	5	23
Golden eagle	Active	1	0	1	0	0	2
	Inactive	0	10	4	2	0	16
Prairie falcon	Active	0	1	2	3	0	6
	Inactive	0	0	0	0	0	0
Red-tailed hawk	Active	1	2	2	1	0	6
	Inactive	7	12	24	6	0	49
Swainson's hawk	Active	1	0	2	0	1	4
	Inactive	3	0	1	0	1	5
Subtotal	Active	7	4	9	5	1	26
	Inactive	12	24	41	10	6	93
Total		19	28	50	15	7	119

[1] A nest was considered active if one of the following was observed:
a) eggs were laid,
b) young were present, or
c) an adult was observed in incubating posture on the nest (Postupalsky 1974).

[2] Refers to segments where the alternate routes merge near Hanna.

area of a surface coal mine located about 115 mi (185 km) west of the KPPA (Mariah 1994b).

While anecdotal nesting information is available for the general KPPA, the 1994 raptor nest survey and monitoring is the first complete record of raptor nesting activity for the proposed development area. As with any biological survey, it is difficult to obtain a 100% census during any one year. Additionally, because reproduction varies temporally and only one year of complete raptor reproductive information exists, it is unknown if 1994 was a typical year for raptor reproduction on the KPPA. In fact, 1994 appeared to be a poor year for raptor reproduction in southeastern Wyoming. For example, golden eagle reproduction was much lower in 1994 compared to previous years (personal communication with Jim Orpet, Intermountain Resources, Laramie, May 1995). Thus, parameters such as nest density, productivity, or percentage of KPPA included in raptor buffers, may increase over the next few years of monitoring, as additional nests missed during previous surveys are located; eventually, these parameters would be expected to fluctuate over time. Collection of reproductive data for successive years will clarify reproductive trends and how much of the KPPA is used for breeding by raptors and will enable definition of presently unknown reproductive parameters, such as number

of territories located within the raptor nest survey area.

In 1994, approximately 36.7% of the KPPA (22,248 ac) was included within raptor nest buffers [i.e., areas within 0.75 mi (1.21 km) of a known active raptor nest]; these buffers covered 36.8% of the Simpson Ridge area (20,218 ac) and 38.4% of the Foote Creek Rim area (1,920 ac). However, as previously noted, activity status of raptor nests varies from year to year (Mariah 1988a, 1988b; Newton 1979) and until the actual number of raptor territories can be determined, it is not possible to calculate the number of acres that would be encompassed within raptor nest buffers in any given year. The purpose of these raptor nest buffers is to protect active nests and immediately surrounding habitat from surface-disturbing activities (and associated noise, dust, etc.) during the breeding season (i.e., February 1 to July 31) (BLM 1987:471-472).

Sixty-six nests were occupied within the 1994 raptor nest survey area; 55 nests produced nestlings; and final nest status, or nest success, was known for 48 nests (Table 3.15). Nest success ranged from a low of 67% for the prairie falcon to a high of 100% for both eagle species. Average number of fledged young ranged from 1.0 for the bald eagle to 2.2 for the ferruginous hawk (Table 3.15). Ground surveys were not conducted for two incidentally located American kestrel nests, thus these two nests are excluded from Table 3.15.

The Hanna RCA covers approximately 17.4% (9,575 ac) of the Simpson Ridge area (Map 3.9), and likely contributes to the relatively high nest density observed within the Simpson Ridge area. RCAs are areas in which raptors nest in high densities on cliffs or other formations year after year. While RCAs do not have any associated regulatory or planning stipulations, BLM recognizes that surface disturbance and human activity can upset stable raptor populations (BLM 1987:205). Therefore, management actions for RCAs include minimization of surface disturbance to reduce disturbance to raptors and their habitat. The GDRA RMP/EIS (BLM 1987) specifies that there will be a case-by-case examination of proposals to determine potential adverse effects and to develop appropriate mitigations. All three alternate transmission line routes traverse the Hanna RCA; Alternate 3 crosses the least amount of acreage (58 ac) and Alternate 2 crosses the greatest amount (92 ac).

3.2.2.4 Upland Game Birds

Three species of upland game birds--sage grouse, blue grouse, and mourning dove--occur on or adjacent to the KPPA.

Sage Grouse. Sage grouse habitat is characterized by an interspersed mixture of sagebrush and grassland. In winter, sage grouse use tall, dense stands of sagebrush that remain relatively exposed through deep snow (Greer n.d.); low sagebrush on windswept knolls are also used as feeding sites. During the spring, sage grouse gather on breeding grounds, or leks, characterized by open areas (e.g., meadows, low sagebrush zones) surrounded by denser sagebrush cover (Greer n.d.). Sage grouse return year after year to these leks, although the exact location may shift slightly between years. The area within 0.25 mi (0.40 km) of a lek center is considered potential breeding habitat and is protected from surface disturbance through a BLM surface disturbance stipulation (BLM 1987:204). Sage grouse tend to nest within 2 mi (3 km) of the lek center (BLM 1987:202, Greer n.d.); this area is considered probable nesting habitat, and is closed to surface-disturbing activity from March 1 through June 30 (personal communication with Larry Apple, BLM Great Divide Resource Area [GDRA], May 11, 1995). Wallestad and Pyrah (1974) determined that 68% of sage grouse nests were within 1.5 mi (2.4 km) of leks in central Montana. Braun et al. (1977) confirmed that the area within 2 mi (3 km) of a lek often includes 60 to 80% of the nesting sage grouse from the lek. A large proportion (92%) of sage grouse nests may be protected from disturbance through application of a 2-mi (3-km) buffer (Wakkinen et al. 1992). Sage grouse select sagebrush-grassland habitats with relatively tall

Table 3.15 Reproductive Information for Raptors that Nested Within the 1994 Raptor Nest Survey Area[1].

Species	No. Occupied Nests[2]	Nest Density[3]	Nest Success (%)[4]	Ave. No. Young Fledged/Nest
Bald eagle	1	0.002/mi² (0.001/km²)	100	1
Ferruginous hawk	18	0.029/mi² (0.011/km²)	91[5]	2.20 ± 0.919
Golden eagle	5	0.008/mi² (0.003/km²)	100[6]	1.33 ± 0.577
Prairie falcon	7	0.012/mi² (0.005 km²)	67[7]	2.00 ± 0.816
Red-tailed hawk	20	0.034/mi² (0.013/km²)	82[8]	1.714 ± 0.726
Swainson's hawk	13	0.022/mi² (0.009/km²)	80[9]	2.125 ± 0.353

1 The 1994 raptor nest survey area includes the Foote Creek Rim area and associated 10-mi (16-km) buffer, Simpson Ridge area and associated 2-mi (3-km) buffer, and the three alternate transmission routes with associated 2-mi (3-km) buffers (590 mi² [1,475 km²]).

2 A nest was considered active if one of the following was observed:
a) eggs were laid,
b) young were present, or
c) and adult was observed in incubating posture on nest (Postupalsky 1974).

3 Based on number of active nests.

4 At least one well-feathered nestling or fledged bird observed.

5 Nest success known for 11 nests, and unknown for three active nests. Four nests where nestlings were observed but not seen when revisited were excluded.

6 Nest success known for three nests, and two nests where nestlings were observed but not seen when revisited were excluded.

7 Nest success known for six nests, and unknown for one nest.

8 Nest success known for 17 nests, and unknown for two active nests. One nest where nestlings were observed but not seen when revisited was excluded.

9 Nest success known for 10 nests, and unknown for three active nests.

sagebrush and canopy coverage ranging from approximately 10 to 40% in which to build nests (Wallestad and Pyrah 1974, Rothenmaier 1979).

Forty-four sage grouse leks occur within the KPPA and its adjacent 2-mi (3-km) buffer; 36 of these leks are historic sites (i.e., inactive in 1994) noted in BLM (1994a) and WGFD (1994b) records. Since all 44 leks represent sites chosen by sage grouse for reproductive activity, then approximately 3,110 ac within the Simpson Ridge area (5.7%) is potential sage grouse breeding habitat; no breeding habitat occurs within the Foote Creek Rim area (Table 3.11). All three proposed transmission line alternate routes pass through potential breeding habitat, with the acreage traversed ranging from 4.8 ac (Alternate 2) to 9.7 ac (Alternate 1). A majority of the Simpson Ridge area (86.6% or 47,549 ac) is probable sage grouse nesting habitat, while only 98 ac within the Foote Creek Rim area (2.0%) would be suitable nesting habitat. All three alternate transmission line routes cross probable nesting habitat [182 ac (Alternate 1) to 212 ac (Alternate 3)].

Aerial and ground surveys in 1994 revealed that eight of the 44 leks within and adjacent to the KPPA were active. Seven were located within the Simpson Ridge area and one was located approximately 1.0 mi (1.6 km) southeast of the Simpson Ridge area. Based on only these eight active leks, approximately 848 ac within the Simpson Ridge area (1.5%) is potential sage grouse breeding habitat and 34,930 ac (63.6%) is probable nesting habitat. All three proposed transmission line alternates traverse probable active nesting habitat--Alternate 1 crosses 47 ac, Alternate 2 crosses 90 ac, and Alternate 3 crosses 141 ac. None of the routes traverse potential active sage grouse breeding habitat.

Ten sage grouse observations were recorded between April 20 and August 29, 1994, for the Foote Creek Rim area (Mariah 1994a). Only one of the observations occurred near the rim itself; all the rest occurred near bodies of water immediately east of the Foote Creek Rim area.

Forty-eight observations of sage grouse were made incidental to raptor and passerine surveys in the Simpson Ridge area between April 11 and August 16, 1994 (Mariah 1994a). Thirty-nine of these observations occurred on an active lek; the other nine occurred in sagebrush habitat along the eastern portion of Simpson Ridge.

Blue Grouse. Blue grouse prefer mountain shrubland, aspen-conifer woodland, and various forest types which are common throughout Wyoming (BLM 1987:204). Edges between these habitat types and riparian areas within and adjacent to these types are frequented.

Within the KPPA, blue grouse have only been observed on the eastern slope of Foote Creek Rim in a grassland-shrubland transitional zone (Mariah 1994a). It is likely that blue grouse occur in other areas within the KPPA, but they are probably restricted to limited areas of suitable habitat (e.g., wooded riparian zones, pine-grassland ecotones).

Mourning Dove. This species is a common breeding bird in habitats that occur in the KPPA. The birds migrate from the area in the fall and winter. Mourning dove concentrations are usually highest around power lines, buildings, and other areas of human disturbance, which occur on only a small portion of the KPPA. Doves prefer the shrub-covered areas along perennial water sources and washes that provide nesting and roosting cover.

Thirty-two observations of mourning doves were incidentally recorded during passerine and raptor surveys within the Foote Creek Rim area between May 4 and September 27, 1994 (Mariah 1994a). The majority of these observations were along the eastern slope of the rim in areas of sagebrush-grassland interspersed with trees and large shrubs; mourning doves likely bred in this area. Only one mourning dove was actually observed on top of Foote Creek Rim.

Only six observations of mourning doves were incidentally recorded for the Simpson Ridge area between April 25 and September 12, 1994 (Mariah

1994a). As with Foote Creek Rim, all of these observations were in areas of sagebrush-grassland intermixed with trees and shrubs; one observation was in the vicinity of an abandoned homestead.

3.2.2.5 Waterfowl, Shorebirds, and Waders

Several species of waterfowl have been observed on the various impoundments, reservoirs, and perennial creeks and rivers within and immediately adjacent to the KPPA. The most common waterfowl species observed in the KPPA are Canada goose, northern pintail, American wigeon, mallard, lesser scaup, and redhead (Mariah 1994a, 1995). Other species observed were snow goose, canvasback, ring-necked duck, bufflehead, common merganser, gadwall, green-winged teal, blue-winged teal, cinnamon teal, northern shoveler, ruddy duck, and American coot. Waterfowl species not observed but potentially occurring on the KPPA based on range and habitat preference (Scott 1987, WGFD 1992) include wood duck, common goldeneye, and red-breasted merganser. Waterfowl, as well as shorebirds and waders, use the KPPA during migration (spring and fall), and some species (e.g., Canada goose, mallard) probably breed in the area during spring and summer.

Shorebird and wading species observed on or adjacent to the KPPA were common loon, pied-billed grebe, American white pelican, double-crested cormorant, great blue heron, white-faced ibis, Virginia rail, sandhill crane, mountain plover, semipalmated plover, killdeer, American avocet, greater yellowlegs, spotted sandpiper, upland sandpiper, long-billed dowitcher, common snipe, Wilson's phalarope, Franklin's gull, California gull, and Caspian tern (Mariah 1994a, 1995). Many of these species are known to breed (e.g., mountain plover) or are likely to breed (e.g., American avocet) within the KPPA. Based on range and habitat preference (Scott 1987, WGFD 1992), several other species of grebes, herons, egrets, plovers, sandpipers, gulls, and terns may frequent or occasionally move through the KPPA (Appendix D).

The majority of waterfowl and shorebird observations within 1 mi of the Foote Creek Rim area (85% or 7,265 observations) were located immediately east of the Foote Creek Rim area along a series of reservoirs and impoundments; these observations were noted during monthly reconnaissance surveys along the eastern slope of Foote Creek Rim and incidental to other surveys between March 1994 and March 1995 (Mariah 1994a, 1995). Common waterfowl species observed were redhead (2,942 observations), mallard (895), Canada goose (803), American wigeon (344), gadwall (158), common merganser (125), cinnamon teal (58), northern pintail (63), and lesser scaup (51). The majority of redheads were observed in large congregations on the reservoirs during March and April. Other waterfowl species observed included green-winged teal (33), northern shoveler (31), ring-necked duck (28), bufflehead (7), ruddy duck (3), and blue-winged teal (2). Shorebirds, waders, and other water birds observed immediately east of Foote Creek Rim include Franklin's gull (41 observations), pied-billed grebe (18), sandhill crane (15), American coot (14), killdeer (13), double-crested cormorant (13), great blue heron (12), American avocet (10), common loon (7), American white pelican (4), Caspian tern (2), California gull (1), spotted sandpiper (1), white-faced ibis (1), semipalmated plover (1), and Virginia rail (1).

Eight hundred twenty-five observations of waterfowl and shorebirds were recorded between March 1994 and March 1995 (Mariah 1994a, 1995) during passerine and raptor surveys on Foote Creek Rim. Many of these birds were seen on top of the rim or flying along the top or upper slopes. Waterfowl species included Canada goose (384 observations), mallard (28), and ring-necked duck (1). Shorebird, wader, and other water bird species observed on top of or flying above the rim were mountain plover (134 observations), sandhill crane (36), gull species (36), American white pelican (28), upland sandpiper (23), double-crested cormorant (17), California gull (13), white-faced ibis (12), killdeer (11), common merganser (10),

long-billed dowitcher (10), great blue heron (10), common snipe (2), American avocet (1), Caspian tern (1), and Franklin's gull (1). An additional 444 waterfowl/shorebirds/waders were observed incidental to passerine and raptor surveys, including Wilson's phalarope and snow goose, as well as many of the previously mentioned species. Of those observed flying over or immediately adjacent to Foote Creek Rim, 86% of the waterfowl and 22% of shorebird/waders were flying between 26 and 184 ft (8 and 56 m) above the rim (i.e., at proposed wind turbine rotor height) (Table 3.16).

One thousand and one waterfowl and shorebird observations were noted during, and incidental to, surveys within the Simpson Ridge area between March 1994 and March 1995 (Mariah 1994a, 1995). Approximately 90% of these observations occurred on or immediately adjacent to seven bodies of water located within the Simpson Ridge area: Seven Mile Lake (northwest Section 32, T21N, R80W), Fiddler's Green Reservoir (Section 21, T21N, R80W), Sixmile Spring (Sections 17 and 18, T21N, R80W), Jacks Spring (Section 5, T21N, R80W), Soda Lakes (Section 23, T21N, R81W), a tributary of Percy Creek (Section 11 to 14, T21N, R81W) and an unnamed pond (Section 13, T21N, R81W). Waterfowl species commonly observed within the Simpson Ridge area were mallard, Canada goose, northern pintail, American wigeon, and lesser scaup. Other waterfowl species occasionally seen were green-winged teal, redhead, canvasback, gadwall, common merganser, blue-winged teal, northern shoveler, and ring-necked duck. Shorebird, wader, and other water bird species observed within the Simpson Ridge area were American coot (a single observation of 150 individuals), American avocet (73 observations), killdeer (54), Wilson's phalarope (47), great blue heron (4), American white pelican (3), and greater yellowlegs (2).

3.2.2.6 Passerines

Ninety-four species of passerine birds were observed within the KPPA between February 1994 and March 1995 (Mariah 1994a, 1995). During timed passerine surveys of the Foote Creek Rim and the Simpson Ridge areas, the horned lark was the most commonly observed species with 6,028 sightings. Other common species included mountain bluebird (684 sightings), cliff swallow (574), Brewer's blackbird (484), vesper sparrow (387), green-tailed towhee (351), sage thrasher (208), black-billed magpie (206), northern flicker (180), American goldfinch (173), Brewer's sparrow (168), western meadowlark (163), American robin (99), eastern bluebird (95), tree swallow (92), and yellow warbler (91). Additional passerine species known to occur or likely to occur (Scott 1987, WGFD 1992) within the KPPA are listed in Appendix D in the DEIS (see also corrections to Appendix D in the FEIS).

Systematic surveys of passerines were conducted weekly within the Foote Creek Rim area and biweekly for the Simpson Ridge area between mid-February 1994 and mid-March 1995. The complete methodology for passerine surveys is described in Appendix A in the DEIS. Passerine sampling methodology and effort was equivalent between the western and eastern sides of Foote Creek Rim for late May 1994 through mid-March 1995; therefore, data from these months are used for trend comparisons. The mean number of passerine species observed per survey along the western side of the rim peaked in May at 12.0 species/survey, and then gradually declined throughout the summer and into the fall; during December 1994 and January 1995, no passerines were identified to species [Figure 3.3(A)]. This seasonal decline is a result of species that breed in the area moving south as the weather cools. The mean number of passerine species observed per survey along the eastern side of the rim peaked in June (26 passerine species/survey), and then, as with the western side, declined to <1 species/survey in December and January [Figure 3.3(A)]. In every month, more passerine species were observed along the eastern side of the rim than along the western side. This higher passerine species diversity is likely a reflection of the greater vegetational structure and diversity of habitats along the eastern edge of Foote Creek Rim. Grassland species (e.g., horned lark and

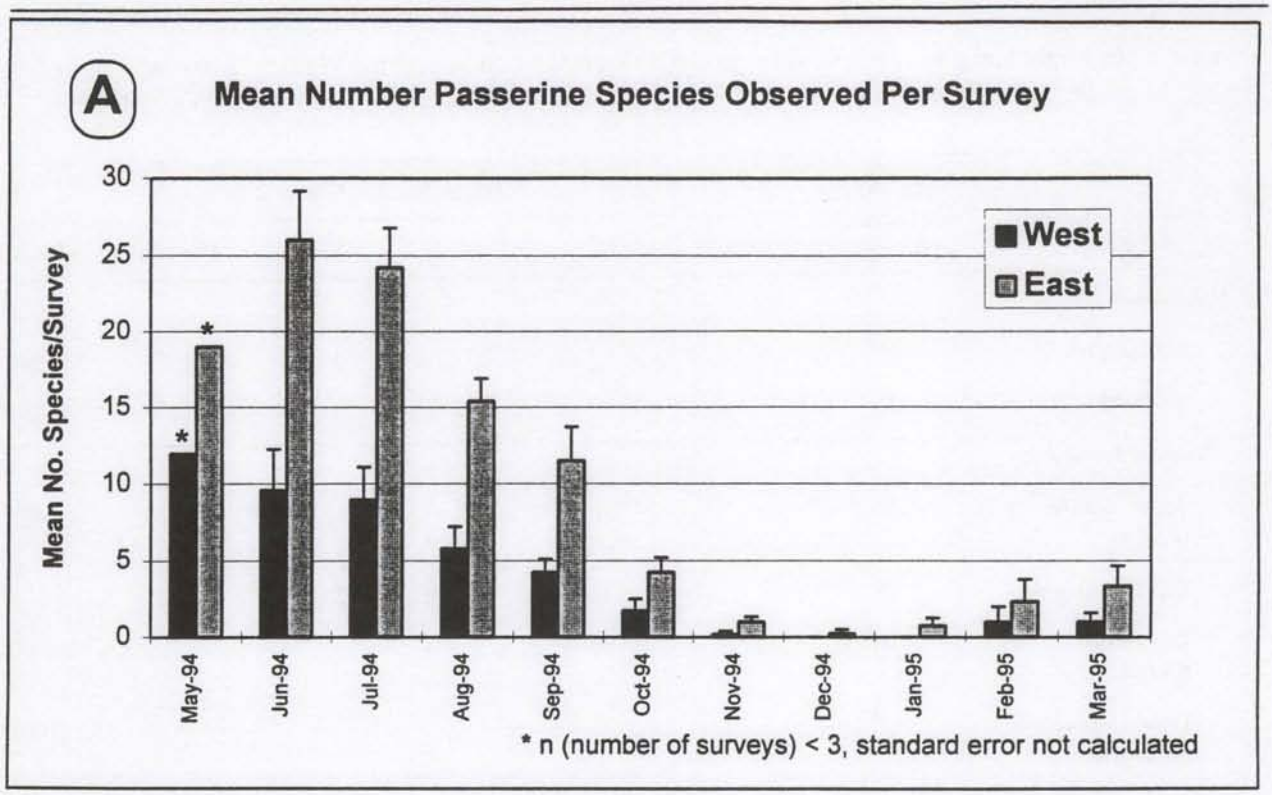
Table 3.16 Flight Heights of Selected Species of Waterfowl and Shorebird/Waders Observed Flying Over or Immediately Adjacent to Foote Creek Rim, February 16, 1994 - March 17, 1995.

Taxonomic Group or Species	Total No. of Individuals in Sample	Flight Height Class[1]					
		C-	B-	A-	A+	B+	C+
Waterfowl							
Canada goose	205	--	--	20 (10)	34 (17)	199 (97)	73 (36)
Mallard	18	--	--	1 (6)	8 (44)	7 (39)	16 (89)
Shorebird/waders							
American white pelican	33	--	--	--	--	5 (15)	28 (85)
California gull	16	--	5 (31)	6 (38)	12 (75)	5 (31)	--
Common merganser	10	--	--	--	--	7 (70)	3 (30)
Double-crested cormorant	12[3]	--	--	--	--	--	12 (100)
Great blue heron	9	--	--	--	--	8 (89)	9 (100)
Long-billed dowitcher	19	--	--	10 (53)	10 (53)	9 (47)	--
Franklin's gull	40[3]	--	--	--	--	--	40 (100)
Mountain plover	47	--	3 (6)	8 (17)	40 (85)	8 (17)	--
Sandhill crane	8	--	3 (38)	1 (13)	2 (25)	1 (13)	2 (25)
White-faced ibis	12[3]	--	--	--	--	--	12 (100)

[1] A = 0-26 ft (0-8 m)
B = 26-184 ft (8-56 m)
C = >184 ft (>56 m)
+ = above rim
- = below rim

[2] Percentage of total number of individual observations in parentheses; percentages do not total 100, since more than one flight height class may be assigned to a single observation.

[3] Represents a single observation of a flock of individuals.



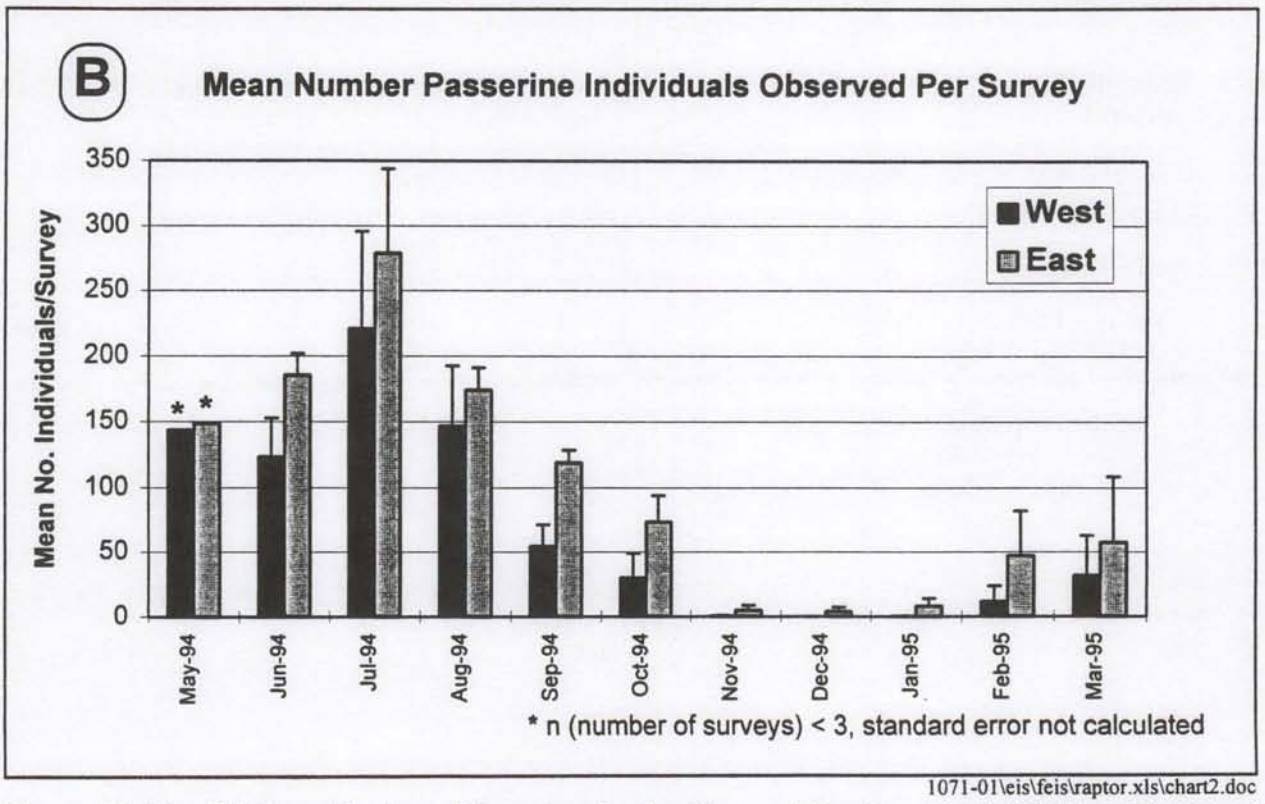


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Figure 3.3 The (A) Mean Number of Passerine Species Observed Per Survey and (B) Mean Number of Passerine Observations Per Survey Along the West and East Sides of Foote Creek Rim, May 1994 to March 1995.

Brewer's blackbird) were frequently observed along the open western edge of Foote Creek Rim, while species favoring mixed grassland/shrub habitats (e.g., green-tailed towhee and northern flicker) were more common along the eastern edge of the rim.

The mean number of passerine observations per survey along the western side of Foote Creek Rim peaked in July (221.25 observations/survey) and August (147.20 observations/survey), and then gradually declined through December and January (0 and 0.25 observations/survey, respectively) [Figure 3.3(B)]. As with the western side, passerine observations along the eastern side of the rim peaked in July (279.00 observations/survey), and then declined through December (4.25 observations/survey). The mean number of passerine observations/survey was greater along the eastern side than along the western side for every month surveyed. The relatively large number of observations in May for east and west Foote Creek Rim (149 and 144 observations/ survey, respectively) probably was a result of the compound effect of an influx of breeders mixing with northbound migrants. The large number of passerine observations in July along both sides of Foote Creek Rim is probably the result of the offspring of local breeders entering the visible population.

The number of passerine observations (i.e., between May 24, 1994 and March 17, 1995) at each survey location along both the western and eastern sides of Foote Creek Rim is portrayed in Figure 3.4. Along the western side of Foote Creek Rim, passerines were most commonly observed between sample points 8 and 11, and sample points 21 and 28 (Figure 3.4). These areas of higher bird activity may differ from other areas along the western side of Foote Creek Rim in such variables as topography, habitat structure, and/or microclimate. That portion of the eastern side of Foote Creek Rim surveyed for passerine observations (also between May 24, 1994 and March 17, 1995), on the other hand, possessed a relatively uniform amount of passerine activity along its length (Figure 3.4). Only along the northern and southern ends of the transect, where vegetation diversity and structure decrease, is there a drop in passerine observations.

Although it is likely that the vast majority of passerines that migrate through the KPPA in the spring continue moving to points north of the area, many individuals stay and breed in the area (e.g., horned lark, mountain bluebird, northern flicker, western meadowlark). Riparian areas such as the Rock Creek and Medicine Bow drainages provide natural corridors for migratory movements of passerines (i.e., north-south), as do the north and south-oriented ridges in the KPPA. Although specific migratory movement patterns have not yet been determined for the KPPA, it is likely the majority of passerines migrating through the KPPA follow these natural features (Mariah 1993, 1994a, 1995). In October 1993, several flocks of mountain bluebirds were observed moving south along the western slope of Foote Creek Rim (Mariah 1993). Between September and November 1994, numerous flocks of passerines (e.g., horned lark, mountain bluebird, eastern bluebird, northern flicker, pine siskin, purple finch, rosy finch, dark-eyed junco) were observed flying south along the rim. One large flock (approximately 460 birds) of purple finches was observed moving south along the eastern edge of Foote Creek Rim on September 28, 1994 (Mariah 1994a).

The flight heights of passerines observed within the Foote Creek Rim area are presented in Table 3.17. The four most commonly observed species (horned lark, Brewer's blackbird, cliff swallow, and mountain bluebird) are presented separately from the other passerine species due to their prevalence in the total sample. In general, passerines were observed flying 0-26 ft (0-8 m) below the rim and 0-26 ft (0-8 m) above the rim more frequently than in any other height classes. Since most observations of flying passerines were of birds moving during local foraging bouts, it would be expected that their flight height would be relatively low. Horned larks (89%) and mountain bluebirds (87%) were observed more frequently in the 0-26 ft (0-8 m) flight height class than cliff

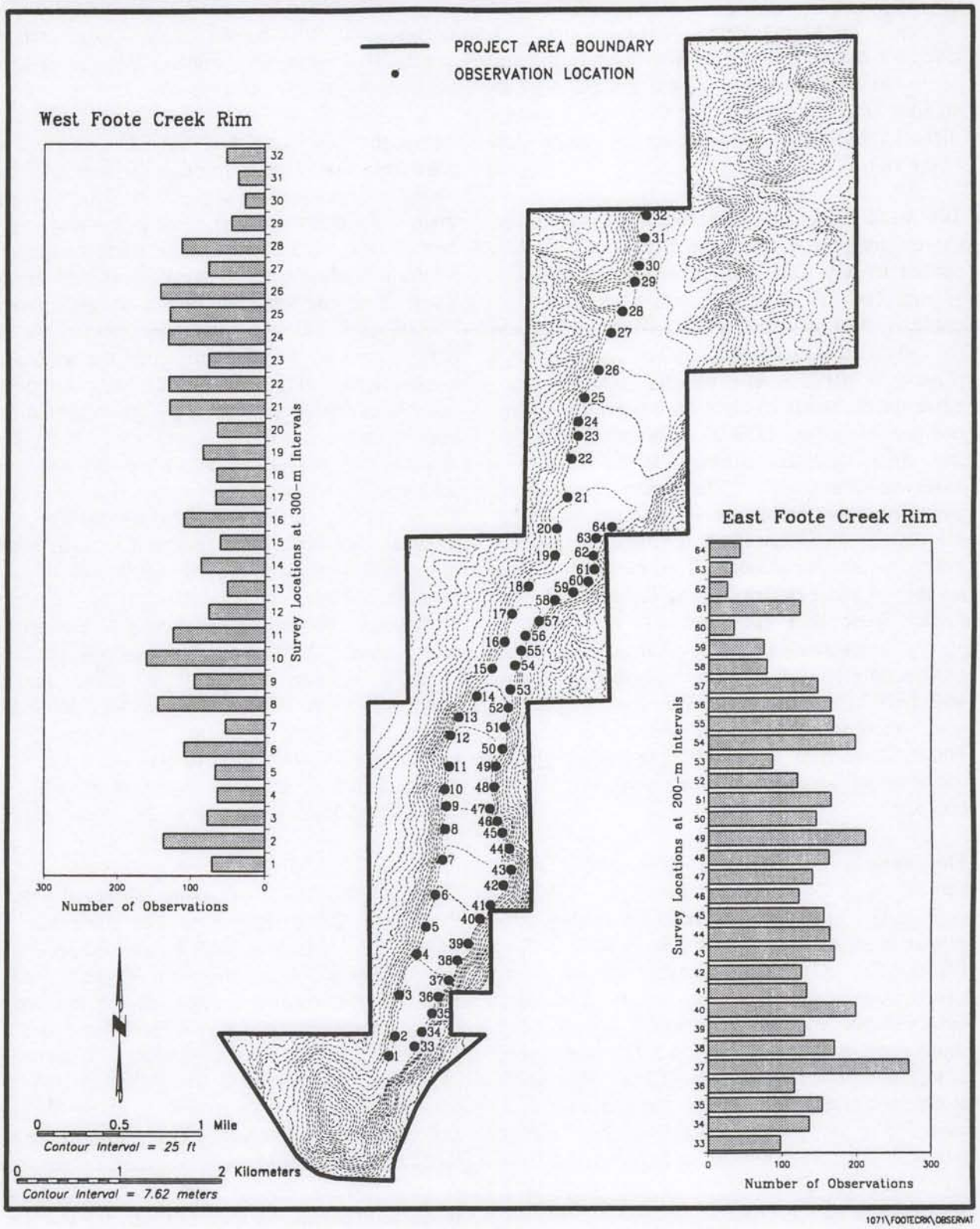


Figure 3.4 Number of Passerines Observed Along the West and East Sides of Foote Creek Rim, May 1994 to March 1995.

swallows (65%), Brewer's blackbirds (60%), or other passerines (55%). These species tend to perch and forage on the ground or on low structures (i.e., fences) on the rimtop. Relatively few passerines fly at the height of the proposed wind turbine rotors.

3.2.2.7 Amphibians and Reptiles

Based on range and habitat preference (Stebbins 1966; Baxter and Stone 1985), three amphibian and three reptile species are likely to occur within the KPPA. Amphibian species include tiger salamander, chorus frog, and leopard frog. Amphibians on the KPPA primarily occur in and adjacent to ephemeral, intermittent, and perennial water habitats. Reptile species potentially occurring on the KPPA include sagebrush lizard, short-horned lizard, and western terrestrial garter snake. Historic habitat for the federally endangered Wyoming toad occurs in the Rock Creek drainage east of Foote Creek Rim (see Section 3.2.3.3) [Wyoming Natural Diversity Database (WNDD) 1994].

3.2.2.8 Fisheries

Oberholtzer (1985) provides a comprehensive survey of fish species within all of the major drainages in the KPPA. The only WGFD Class 3 stream (WDEQ Class 2 surface water) within or immediately adjacent to the KPPA is the section of Rock Creek immediately east of Foote Creek Rim. A WGFD Class 3 stream is a trout fishery of statewide importance (WGFD 1991). A WDEQ Class 2 surface water currently supports game fish or has the potential to support game fish populations (WDEQ 1990). Game fish species within this section of Rock Creek are rainbow trout, brown trout, and brook trout (personal communication, May 15, 1995 with Don Miller, WGFD); nongame species include creek chub, longnose dace, white sucker, and longnose sucker. WGFD provides public access to Rock Creek in several locations.

The Medicine Bow River, Wagonhound Creek, and Foote Creek are all WGFD Class 4 streams and WDEQ Class 2 surface waters. WGFD Class 4 streams are considered low production trout waters that may be fisheries of local importance, but are generally incapable of sustaining substantial fishing pressure (WGFD 1991). The section of the Medicine Bow River within the KPPA supports a variety of fish species, including brown trout, rainbow trout, walleye, longnose dace, longnose sucker, white sucker, common carp, creek chub, silver shiner, and johnny darter. Wagonhound Creek, which flows through the Wick Unit southwest of the Foote Creek Rim, contains primarily brown trout, as well as several nongame species already mentioned (personal communication, May 15, 1995 with Don Miller, WGFD). Foote Creek, which flows along the western side of Foote Creek Rim, contains rainbow trout and a few brook trout.

The remainder of the drainages within the KPPA (i.e., Dry Creek; Watkins Creek; Bear Creek; and First, Second, and Third Sand Creeks) are either intermittent/ephemeral streams that do not support any fish populations or are perennial streams that may support small populations of brook trout and nongame species (Oberholtzer 1985).

Lakes or reservoirs within or adjacent to the KPPA may contain game fish, but are dependent upon private or state restocking efforts to maintain viable populations. Two reservoirs immediately east of Foote Creek Rim are privately owned and are managed as trout fishing clubs by local ranchers. East Allen Lake, located northeast of the KPPA, is a popular public trout fishery for Carbon and Albany County residents.

3.2.3 Threatened and Endangered/State Sensitive Species

The ESA (16 U.S.C. 1531-1543) protects listed T&E plant and animal species and their critical habitats. To ensure compliance with this act, a Biological Assessment (BA) analyzing the effects of the proposed project on T&E and candidate species was prepared and submitted to the USFWS in February 1995. A biological opinion will be obtained from USFWS prior to issuing the ROD

Table 3.17 Flight Heights of Passerines Observed Within the Foote Creek Rim Area, 1994-1995.

Taxonomic Group or Species	Total Number of Individuals in Sample	Flight Height Class[1]					
		C-	B-	A-	A+	B+	C+
Brewer's blackbird	444	2 (<1)	9 (2)	37 (8)	266 (60)	90 (20)	5 (1)
Cliff swallow	372	10 (3)	45 (12)	174 (47)	240 (65)	29 (8)	21 (6)
Horned lark	4,098	20 (<1)[2]	71 (2)	671 (16)	3,647 (89)	520 (13)	12 (<1)
Mountain bluebird	353	1 (<1)	6 (2)	53 (15)	306 (87)	96 (27)	0 (0)
Other passerines	1,293	6 (<1)	227 (18)	689 (53)	717 (65)	275 (21)	6 (<1)
Total	6,560	39 (1)	358 (5)	1,624 (25)	5,176 (79)	1010 (15)	44 (1)

[1] A = 0-26 ft (0-8 m)
B = 26-184 ft (8-56 m)
C = >184 ft (>56 m)
+ = above rim
- = below rim

[2] Percentage of total number of individual observations in parentheses; percentages may not total 100, since more than one flight height class may be assigned to a single observation.

for this project. The BA is available from the BLM. In addition, surveys for T&E and candidate species will be conducted on a case-by-case basis as directed by the USFWS and BLM as components of the pre-construction process.

The USFWS was contacted to initiate informal consultation and to obtain a list of T&E species potentially present within and adjacent to the KPPA. Their response indicated that the bald eagle, peregrine falcon, black-footed ferret and whooping crane are the only T&E species that may occur in or adjacent to the KPPA; however, numerous candidate species for federal listing also occur or potentially occur in the area (Table 3.18). In addition, observation records obtained from the WGFD and WNDD provided a list of state sensitive species that occur on or adjacent to the KPPA.

Species that are proposed for listing as T&E are grouped into one of three candidate categories: Category 1 (C1), Category 2 (C2), or Category 3 (3C). C1 species are those for which the USFWS has sufficient data to list as T&E, but for which proposed rules have not yet been issued. C2 species are those that are being considered for listing, but for which sufficient data are not yet available for a listing decision. 3C species are those that were once considered for listing as T&E, but now no longer receive such consideration; they are either more widespread or abundant than previously believed or are not subject to identifiable threats. State sensitive and WNDD designations are defined in the footnotes of Table 3.18.

Although whooping cranes may migrate through the KPPA, there have been no observations of this species in the area (WGFD 1994a); therefore, this

species is not addressed further in this EIS. Since there will be no downstream water depletion of the Platte River due to the proposed project, such downstream T&E species as the piping plover, least tern, and pallid sturgeon will not be impacted by the project and are not addressed further in the EIS.

TEC&S animal and plant species occurring or potentially occurring on or adjacent to the KPPA are discussed below.

3.2.3.1 Mammals

Black-footed Ferret. This federally endangered species was once distributed throughout the high plains of the Rocky Mountain and western Great Plains regions (Forrest et al. 1985). Prairie dogs are the main food source of BFFs (Sheets et al. 1972) and few ferrets have been historically collected away from prairie dog colonies (Forrest et al. 1985). BFFs were considered extinct until a small population was discovered near Meeteetse, Wyoming, in 1981. Following outbreaks of canine distemper, surviving ferrets were brought into captivity and a captive breeding program was initiated (USFWS 1988). BFFs were reintroduced in the Shirley Basin region of central Wyoming in 1991; this reintroduction effort continues with the aid of annual supplemental releases.

One probable BFF sighting was reported in August 1988, in an area along the southern border of the Simpson Ridge area (Jobman 1992). This is the most recent potential observation of a BFF within or adjacent to the KPPA. No BFF sightings have been confirmed in the KPPA since the reintroduction of ferrets into Shirley Basin (personal communication, 1993, with Bob Oakleaf, Nongame Coordinator, WGFD). Several historic sightings of BFFs have been recorded in an area north and east of Foote Creek Rim and Alternate 3 (WNDD 1993b, 1994).

Approximately 35% (19,107 ac) of the Simpson Ridge area is classified as BFF PMZ2 (Map 3.9). PMZs are areas designated by the WGFD, BLM, and USFWS to assist in the management of the BFF reintroduction effort (WGFD and BLM 1991). PMZ1 (Shirley Basin) was established as the preferred release site in the Management Area and PMZ2 (Medicine Bow) was designated as a secondary release site. Ferrets have been reintroduced into PMZ1 under an experimental/ nonessential designation, and movement outside of the PMZ is anticipated as the ferrets become established and disperse throughout the area. The area south and east of the North Platte River was declared ferret-free prior to the reintroduction of ferrets in Shirley Basin (WGFD and BLM 1991). BFF searches would not be required by the WGFD, BLM, and USFWS within the KPPA due to the experimental/nonessential designation and management guidelines presented in the ferret plan (WGFD and BLM 1991).

Although it is very unlikely that BFFs are present on or near the KPPA, white-tailed prairie dog colonies are scattered throughout the KPPA and adjacent areas and could provide a potential prey base and suitable habitat for ferrets. Prairie dog colonies within the Foote Creek Rim area and along Alternate 3 were mapped in June 1994. Three historic prairie dog colonies encompass approximately 979 ac (20%) of the Foote Creek Rim area; the acreage covered by active prairie dog colonies is smaller. Alternate 3 passes through approximately 6.7 mi (10.7 km) of historic prairie dog colonies (81 ac), some of which are greater than 500 ac in size.

Long-legged Myotis (Bat). This C2 species is one of eight small mouse-eared bats known to occur in Wyoming. Long-legged myotis live throughout the western half of North America and have been reported as the most abundant mouse-eared bat in the western United States (Clark and Stromberg 1987, WGFD 1992). They have been observed in a variety of habitats in Wyoming, including coniferous (e.g., ponderosa pine) and deciduous forests, basin-prairie and mountain-foothills shrublands, and riparian areas. Long-legged myotis nest in tree hollows, snags, buildings, rock crevices, mines, and caves. This species may hibernate in Wyoming during the winter, and is extremely susceptible to disturbance during

Table 3.18 Threatened, Endangered, Candidate, and State Sensitive (TEC&S) Animal and Plant Species Known to Occur or Potentially Occurring Within the KPPA.[1]

Common Name	Location[2]	Date of Last Observation[3]	Status[4]
Mammals			
Black-footed ferret	Several historic observations north and east of FCRA and Alternate 3; most recent probable observation along the southern boundary of the SRA; potential resident of prairie dog colonies within the area	August 1988 (probable)	LE, I-WYGF, S1, G1
Hoary bat	Approximately 2.0 mi (3.2 km) south of the FCRA	May 16, 1992	III-WYGF, S3, G5
Long-legged myotis (bat)	Likely visitor (potential resident) of the KPPA	--	C2, S5?, G5
North American lynx	Approximately 3.0 mi (4.8 km) south of the FCRA	September 26, 1987	C2, III-WYGF, S2, G5
Swift fox	Potential visitor to grassland habitats within the KPPA	--	C2, S3, G4
White-footed mouse	Approximately 4.0 mi (6.4 km) north of the SRA	July 24, 1979	III-WYGF, S3, G5
Birds			
American bittern	Approximately 3.0 mi (4.8 km) northwest of the SRA	July 8, 1985	II-WYGF, S2B, SZN, G4
American white pelican	Numerous observations both within and adjacent to the KPPA	1994	I-WYGF, S1B, S3N, G3
Baird's sparrow	Unlikely summer visitor to the KPPA	--	C2, S2?, G3
Bald eagle	Numerous observations throughout the KPPA; a single active nest within 2.0 mi (3.2 km) of the SRA	1995	LT, S1B, S2N, G3
Bushtit	Two observations along Wagonhound Creek, approximately 4.0 mi (6.4 km) west of the southern FCRA	June 13, 1986	III-WYGF, S3B, SZN, G5
Caspian tern	Two observations approximately 1.0 mi (1.6 km) east of FCR	1994	I-WYGF, S1B, S3N, G5
Ferruginous hawk	Numerous observations throughout the KPPA	1995	C2, III-WYGF, S4B, SZN, G4
Great blue heron	Numerous observations throughout the KPPA	1994	III-WYGF, S4B, S4N, G5
Loggerhead shrike	Several observations throughout FCR	1994	C2, S4B, SZN, G4
Long-billed curlew	Approximately 0.5 mi (0.8 km) south of the SRA	April 17, 1987	3C, III-WYGF, S3B, S4N, G5
Merlin	Several observations along FCR and the southeastern SRA.	1994	II-WYGF, S2, S3B, SZN, G4

Table 3.18 (Continued)

Common Name	Location[2]	Date of Last Observation[3]	Status[4]
Birds (Continued)			
Mountain plover	Numerous observations on top of FCR; plover chicks observed during June and July	1994	C1, S3B, S4N, G3
Northern goshawk	Southern FCR and approximately 1.0 mi (1.6 km) east of FCR	1994	C2, S4B, SZN, G4
Peregrine falcon	Numerous observations along FCR and northwest of the SRA	1994	LE, S1B, S1N, G3T2
Plain titmouse	Several observations along the eastern slope of FCR	1994	III-WYGF, S3B, SZN, G5
Trumpeter swan	Approximately 4.0 mi (6.4 km) east-northeast of the SRA; unlikely migrant through the area	October 23, 1988	C2, I-WYGF, S1, S2B, S2N, G4
Upland sandpiper	Several observations on central and northern FCR	1994	II-WYGF, S2B, S3N, G5
Western burrowing owl	Three observations, two north and one approximately 0.5 mi (0.8 km) south of the SRA	April 27, 1986	C2, II-WYGF, S2, S3B, SZN, G5
Western snowy plover	Potential rare migrant through the KPPA	–	3C, S1, G4?
White-faced ibis	Thirteen observations on and adjacent to FCRA and two observations 2.0-3.0 mi (3.2-4.8 km) northwest of the SRA	1994	C2, I-WYGF, S1B, S2N, G5
Whooping crane	Unlikely migrant through the area	–	LE, SHB, S1N, G1
Amphibians and Reptiles			
Wyoming toad	Possible historic habitat in Rock Creek Drainage east of the FCRA	–	LE, S1, G5T1
Eastern short-horned lizard	Two observations in the SRA and one on FCR	1994	C2, S5, G5
Plants			
Bun milk-vetch	Northern end of Alternate ROWs	June 1920	WYLST 2, S3, G3
Contracted Indian ricegrass	Potential habitat throughout the KPPA	–	C2, WYLST 2, S2, G4T2
Slender-trumpet ipomopsis	Approximately 3.0 mi (4.8 km) west-southwest of the southern FCRA	August 9, 1993	WYLST 3, S1, G?
Ute lady's tresses	Potential occurrence in wetland areas throughout the KPPA	–	LT, WYLST 1, S1, G2

Table 3.18 (Continued)

[1] WNDD (1993b, 1994); WGFD (1994); Mariah (1994a, 1995).
[2] FCRA = Foote Creek Rim Area.
SRA = Simpson Ridge Area.
FCR = Foote Creek Rim.
[3] All observations made in 1994 and 1995 occurred as a result of raptor and passerine field surveys (Mariah 1994a, 1995).
[4] Status definitions as given by the WNDD (1991, 1993a).

Federal Status:

- LE = Listed as federally endangered.
- LT = Listed as federally threatened.
- C1 = USFWS Notice of Review, Category 1. Species for which current information supports the biological appropriateness of proposing to list as endangered or threatened, but proposed rules have not yet been issued.
- C2 = USFWS Notice of Review, Category 2. Species for which current information indicates that proposing to list as endangered or threatened is possibly appropriate, but insufficient information is on file to support an immediate ruling.
- 3C = USFWS Notice of Review, Category 3C. Taxa that were once considered for listing as endangered or threatened, but now no longer receive such consideration. Taxa are more widespread or abundant than previously believed, or are not subject to identifiable threats.

State Status:

- I-WYGF = Priority I; includes federally endangered and threatened wildlife. Also includes species in need of immediate attention and active management to ensure that extirpation or a significant decline in the breeding population does not occur.
- II-WYGF = Priority II; includes species which are in need of additional study to determine whether intensive management is warranted or whether low-level management (such as monitoring population trends) will suffice. Until intensive management is necessary, low-level management will be implemented.
- III-WYGF = Priority III; includes species whose needs should be accommodated in resource management planning. However, intensive management programs to maintain or enhance populations are not warranted at present. Populations of these species should be monitored to determine if low levels of management continue to be adequate. Knowledge of some of these species often is very limited.

WNDD Status:

- WYLST 1 = High priority; contains: 1) species that are vulnerable to extinction throughout their range or within Wyoming; 2) federally listed and proposed threatened and endangered species, C1 and C2 candidates, and U.S. Forest Service (USFS) and BLM sensitive species; and 3) species that are regionally rare or significantly disjunct, but which presently have no formal protection status.
- WYLST 2 = Medium priority; contains: 1) species on designated watch lists for federal lands, or that are being recommended for watch lists by the WNDD; and 2) other species that are suspected to be moderately rare and/or somewhat threatened globally or regionally.
- WYLST 3 = Low priority; contains: 1) species that were previously considered higher priority for protection, but which have been down-ranked as new information has become available; and 2) species that are rare in Wyoming but common and secure in adjacent areas.
- S1 = Critically imperiled in Wyoming because of extreme rarity (5 or fewer occurrences or very few remaining individuals) or because of some factor(s) making it especially vulnerable to extirpation within the state.
  - S1B = Statewide breeding status of S1.
  - S1N = Statewide nonbreeding status of S1.
- S2 = Imperiled in Wyoming because of rarity (6 to 20 occurrences or few remaining individuals) or because of some factor(s) making it very vulnerable to extirpation within the state.
  - S2B = Statewide breeding status of S2.
  - S2N = Statewide nonbreeding status of S2.
- S3 = Rare or uncommon in Wyoming (on the order of 21 to 100 occurrences).
  - S3B = Statewide breeding status of S3.
  - S3N = Statewide nonbreeding status of S3.
- S4 = Apparently secure in Wyoming with many occurrences.
  - S4B = Statewide breeding status of S4.
  - S4N = Statewide nonbreeding status of S4.
- SH = Historical occurrence in the state, perhaps having not been verified in the past 20 years, and suspected to still be extant. Upon verification of an existing occurrence, SH rank elements would typically receive an S1 rank.
  - SHB = Statewide breeding status of SH.
- SZN = Species which are not of significant concern when migrating through or wintering in Wyoming. This includes relatively uncommon migrants in the state with irregular, transitory, or dispersed occurrences. Includes rare species for which important habitats that could be protected are difficult or impossible to define. Also refers to abundant species wintering in, or migrating through, Wyoming.
- G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals) or because of some factor(s) making it especially vulnerable to extinction.
- G2 = Imperiled globally because of rarity (6 to 20 occurrences) or because of factors demonstrably making it vulnerable to extinction.

Table 3.18 (Continued)

G3 = Either very rare and local throughout its range, found locally (even abundant at some locations) in a restricted range, or vulnerable to extinction throughout its range.
G3T2 = Subspecies has G2 status.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G4T2 = Subspecies has G2 status.
G5 = Demonstrably secure globally and essentially ineradicable under present conditions.
G5T1 = Subspecies has G1 status.
G? = Exact global status unknown.

hibernation. Long-legged myotis feed exclusively on flying insects, especially moths.

Although long-legged myotis have not been observed in the KPPA, this may, at least in part, be due to the nocturnal activity of this species. It is likely that this bat species occasionally forages over habitats within the KPPA; however, it is unlikely that it is a common resident or visitor in the area.

North American Lynx. A C2 species, North American lynx are found in extensive tracts of high elevation, dense coniferous forests; they favor areas containing subalpine fir and Englemann spruce (WGFD 1992). Lynx prey on snowshoe hares, mice, grouse, and squirrels, and often occupy areas of heavy winter snow accumulations (Clark and Stromberg 1987).

WGFD records indicate that a lynx was sighted 3 mi south of Foote Creek Rim in 1987, along the edge of the Medicine Bow National Forest. No other lynx sightings have been reported in the area. Because the KPPA lies outside typical lynx habitat, this species is not anticipated to frequent the project area; short duration visits during hunting forays may occasionally occur during winter months.

Swift Fox. The swift fox, a C2 species, is a resident of the northern Great Plains, from the Rocky Mountain foothills to Texas (Clark and Stromberg 1987). In Wyoming, this species inhabits the eastern Great Plains grasslands, occasionally utilizing agricultural lands and irrigated native meadows. Prey items include small mammals, insects, and birds (WGFD 1992). No recent sightings of swift fox have been reported on or near the KPPA. However, much of the KPPA is potential swift fox habitat. Swift fox may, at least infrequently, use the KPPA and adjacent areas.

State Sensitive Species. Two state sensitive mammal species have been observed in the vicinity of the KPPA: the hoary bat and white-footed mouse.

The relatively large hoary bat inhabits greasewood flats, shortgrass prairies, and aspen/pine forests (Clark and Stromberg 1987). Although this bat has been observed throughout the state, the overall rarity of observations has resulted in a poor understanding of the biology of this species. A hoary bat was observed about 2 mi (3 km) south of Foote Creek Rim in 1992 (WGFD 1994b), and it is likely that this species occurs within the KPPA during the summer months.

A white-footed mouse was collected approximately 4 mi (6 km) north of the Simpson Ridge area in 1979 (WGFD 1994b). This mouse species generally occurs east of the Rocky Mountains (Burt and Grossenheider 1976, Clark and Stromberg 1987); it is at the western extreme of its range in the vicinity of the KPPA. White-footed mice inhabit deciduous woodlands and associated riparian habitats (Clark and Stromberg 1987). Although it is probably not a common species in the vicinity of the KPPA, it may occur along such wooded drainages as the Medicine Bow River and Rock Creek.

3.2.3.2 Birds

Bald Eagle. The bald eagle is a federally threatened species which requires cliffs, large trees, or sheltered canyons associated with concentrated food sources (e.g., fisheries or waterfowl concentration areas) for nesting and/or roosting areas (Edwards 1969, Snow 1973, Call 1978, Steenhof 1978, Peterson 1986). Bald eagles forage widely during the non-nesting season (i.e., fall and winter) and scavenge on animal carcasses such as deer and elk.

During 1994, one active bald eagle nest was documented approximately 2 mi (3 km) south of the Simpson Ridge area. It is located approximately 5 mi (8 km) northwest of Elk Mountain, Wyoming, and is visible from I-80. One immature bald eagle successfully fledged from this nest in 1994.

Bald eagles have been observed throughout the KPPA (Mariah 1994a, 1995; WGFD 1994b). Thirty-seven bald eagle observations occurred within the Foote Creek Rim area during raptor and passerine surveys conducted between February 1994 and March 1995. Twenty-two of the observations (59%) were immature bald eagles, while the remaining 15 observations (41%) were adults. No portion of the rim was excluded from use by bald eagles, although bald eagle observations were most common in the western and northern portions of the rim. The majority of bald eagle observations occurred either over or immediately adjacent to the top of Foote Creek Rim (see Maps 3.4C and 3.4D).

Thirteen bald eagle observations occurred within 1 mi of the Simpson Ridge area; ten of these were adult birds (77%) and three were juveniles (23%). Ten of these observations were of immature (1) and adult (9) bald eagles immediately south of I-80 on the southern boundary of the Simpson Ridge area. Two immature bald eagles were observed in the northern portion of the Simpson Ridge area. One adult was observed flying across Highway 72 near the central portion of the Simpson Ridge area. Seven (54%) of the bald eagle observations occurred in August and September of 1994.

Although bald eagles apparently did not nest within the KPPA during 1994, it is likely that they use the area for foraging throughout the year. No communal winter bald eagle roosts are known to occur within the KPPA, but it is likely that cottonwood trees along the Medicine Bow River, Rock Creek, Foote Creek, and other perennial drainages within the area are regularly used as perches in the winter (personal communication, June 1994, with Bob Oakleaf, Nongame Coordinator, WGFD). Wintering bald eagles are known to feed on road-killed deer in the area (personal communication, 1993, with Bob Oakleaf, Nongame Coordinator, WGFD), and the Rock Creek drainage east of Foote Creek Rim may also serve as a bald eagle wintering site.

Peregrine Falcon. A federally endangered species, peregrine falcons nest on tall cliffs, usually within 1.0 mi (1.6 km) of a stream, river, or extensive brush or woodlands. These habitats provide concentrated food sources and open areas to hunt (Call 1978, Snow 1972). Peregrine falcons nest on substantial rock outcrops (usually southern exposure) in small caves or on overhanging ledges large enough to accommodate three to four full-grown nestlings (Wilderness Research Institute 1979). Peregrine falcons feed almost exclusively on birds, many of which are associated with riparian zones and large bodies of water (i.e., waterfowl).

While no known peregrine falcon nests were observed in the 1994 nesting survey area, peregrine falcons have been observed within the KPPA. WGFD personnel reported two sightings of peregrine falcons 5 mi (8 km) northwest of the Simpson Ridge area in June of 1983 (WGFD 1994b). Twenty-three observations of peregrine falcons occurred in the Foote Creek Rim area between February 16, 1994 and March 17, 1995; the majority of these observations (14, or 61%) occurred between July 19 and October 3, 1994. (Inclusion of instantaneous observations recorded during raptor surveys on Foote Creek

Rim resulted in slightly inflated numbers of total peregrine falcon and ferruginous hawk observations in the DEIS because some birds were counted several times. The FEIS totals have been modified accordingly. Please note, however, that instantaneous observations are included on raptor distribution/use maps, to give a better indication of actual use.) Although peregrine falcons were observed along the length of the rim, approximately 65% of these observations (15) were along the western side of the rim. Sixteen observations (70%) occurred directly over the rim, and another 6 (26%) occurred within 328 ft (100 m) of the rim edge (see Maps 3.16A and 3.16B). Three peregrine falcon observations occurred within the Simpson Ridge area during avian surveys in August 1994.

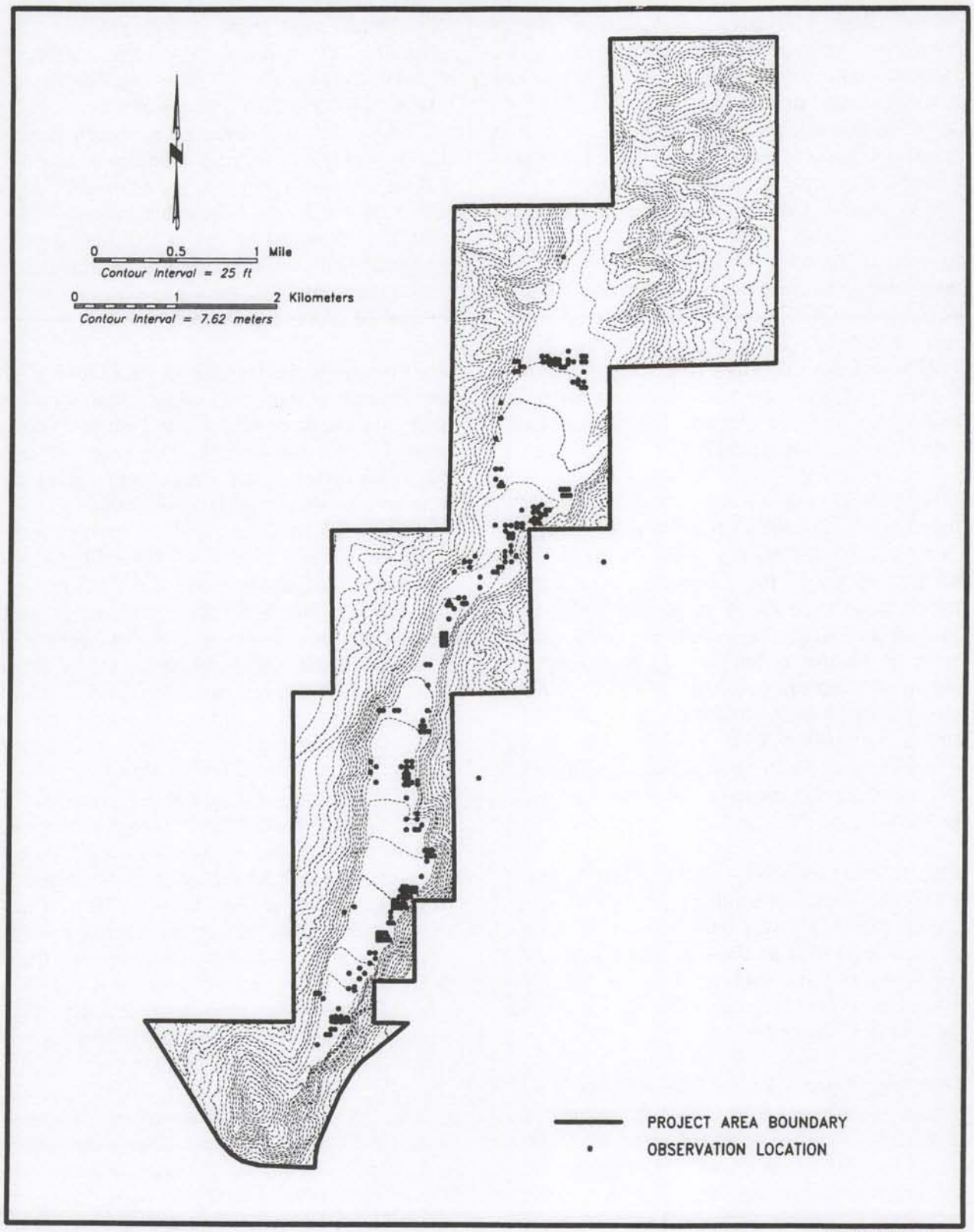
It is possible, due to the relatively large number of observations throughout the spring and summer, that peregrine falcons nest within or immediately adjacent to the KPPA. However, no peregrine falcon nests were found during the 1994 raptor nest survey, and the availability of suitable nesting cliffs in the area is limited. Also, no peregrine falcon nest records occur in the WGFD Wildlife Observation System database for the KPPA or surrounding region (WGFD 1994b). See response to comment AE90 in Section 8.2.1.3 of the FEIS for additional information on peregrine falcon nest surveys.

The KPPA, especially Foote Creek Rim, is occasionally used for hunting by peregrine falcons; several ponds and lakes immediately east of Foote Creek Rim provide an abundant source of potential waterfowl and shorebird prey. It is likely that wintering or migrating peregrine falcons also use the KPPA on occasion.

Mountain Plover. The mountain plover is a C1 species inhabiting the high, dry shortgrass plains east of the Rocky Mountains (Dinsmore 1983). The focus of breeding activity appears to be southeastern Wyoming and eastern Colorado (Graul and Webster 1976). Graul and Webster (1976) noted that mountain plover nesting habitat is associated with blue grama and buffalo grass, although any short grass, very short shrub (e.g., saltbrush), or cushion plant type could be considered nesting habitat. Breeding bird surveys between 1966 and 1987 show an overall decline in the continental population of mountain plovers (USFS 1994a). Surveys completed in 1991 indicate that only 4,360 to 5,610 mountain plovers remain on the North American continent (USFS 1994b). Loss of breeding habitat due to cultivation and prey base declines resulting from pesticide use are major threats to mountain plover survival (Wiens and Dyer 1975).

While mountain plovers have not been observed on the Simpson Ridge area, they were routinely observed throughout early and mid-summer on top of Foote Creek Rim in 1994. Two hundred thirty-four observations of mountain plovers, representing approximately 15-20 breeding pairs, were recorded on Foote Creek Rim during the spring and summer of 1994 (Mariah 1994a). One nest was located during 1994, and all three eggs successfully hatched in mid-July; most observations in mid-summer were of adults with chicks of various ages. Habitat on top of Foote Creek Rim is monotypic, shortgrass prairie, which would suggest a random, area-wide plover distribution. Observations, however, indicate that plovers show a preference for the eastern (leeward) side of Foote Creek Rim (Map 3.17); an average of 5.6 plover observations per survey was recorded for the eastern side compared to 1.1 plover observations per survey on the western side for the ten survey periods between May 24 and July 26, 1994 (date of last observation). The majority (54%) of mountain plover flight observations were at heights between 0 and 26 ft (0-8 m) above the rim; approximately 26% (3 observations) were at proposed wind turbine rotor levels [i.e., 26-184 ft (8-56 m)].

Baird's Sparrow. This C2 species is a common summer resident of the upper Great Plains states (Scott 1987). The Baird's sparrow is rare in Wyoming; it is most likely to occur along the eastern edge of the state, where it prefers mid- to tallgrass prairie and hay meadows (Dorn and Dorn 1990, WGFD 1992).



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Map 3.17 Distribution of Mountain Plover Sightings, Foote Creek Rim (n = 234).

Baird's sparrows have not been observed within or adjacent to the KPPA. However, since this species has been occasionally observed in the shortgrass prairies of eastern Wyoming, it should be considered an unlikely summer visitor to the KPPA. Any Baird's sparrows observed within the KPPA would probably be vagrant individuals temporarily feeding and resting in the area.

Ferruginous Hawk. The ferruginous hawk is a C2 species that breeds in semi-arid plains and intermountain areas of the Great Basin and Great Plains (Evans 1983). This species often nests on low cliffs, buttes, and cutbanks (Call 1978), as well as in junipers or sagebrush along the edges of pinyon-juniper communities. Ferruginous hawks feed primarily on small to medium-sized mammals such as jackrabbits, cottontail rabbits, ground squirrels and prairie dogs (Sherrod 1978).

One hundred sixty-six observations of ferruginous hawks occurred on the Foote Creek Rim area between February 16, 1994 and March 17, 1995 (Mariah 1994a, 1995). Many of these observations were of juvenile birds soaring in a relatively concentrated area along the western edge of the northern portion of the rim. Most ferruginous hawk observations were either immediately over or within 328 ft (100 m) of the rim.

Twenty-one ferruginous hawk observations were noted for the Simpson Ridge area, with approximately half (52%) occurring in the immediate vicinity of Simpson Ridge. It is anticipated that ferruginous hawks use the entire Simpson Ridge area, although only a portion of this area has been routinely surveyed.

Approximately 98 ferruginous hawk nests were found within the 1994 raptor nest survey area; the majority (67.3%) were located within the Simpson Ridge area and associated 2-mi (3-km) buffer (Table 3.13). Thirty-one ferruginous hawk nests were located within the Foote Creek Rim area and associated 10-mi (16-km) buffer. Eighteen ferruginous hawk nests were active in 1994 (Table 3.13). Nest success was known for all 11 nests, and was 91%. Average number of young fledged for the ferruginous hawk was 2.20 ± 0.919.

Loggerhead Shrike. In Wyoming, the loggerhead shrike, a C2 species, inhabits sagebrush-grasslands associated with stands of pinyon-juniper and larger shrubs (WGFD 1992). These habitats provide ample open areas in which to forage for insects and small vertebrates (Craig 1978, Bystrak 1983), as well as trees and shrubs in which to build their large, bulky nests (Graber et al. 1973). Declines in loggerhead shrike populations have been noted over the past 40 years, and the declines appear to be most significant near the periphery of their range (Bystrak 1983). Reasons for the decline are unknown; habitat changes and pesticide use may play a role.

Seventeen loggerhead shrike observations were recorded for the Foote Creek Rim area between May 1 and September 9, 1994 (Mariah 1994a, 1995). Fourteen of these observations (82.4%) were along the eastern edge and slope of the rim in areas of sagebrush-grassland interspersed with trees and large shrubs. No observations of loggerhead shrikes were made within the Simpson Ridge area during avian surveys (Mariah 1994a, 1995), however one individual was incidentally observed in July 1995.

Although loggerhead shrike nests have not been observed on the KPPA, it is likely that nesting does occur along the sagebrush draws and riparian areas located within the project area (e.g., tree and shrub areas along the eastern slope of Foote Creek Rim). Most of the KPPA provides habitats conducive to shrike foraging and hunting activities.

Northern Goshawk. The northern goshawk, a C2 species, inhabits coniferous forests, especially those with a significant Douglas fir and lodgepole pine component (WGFD 1992). Goshawks forage in a variety of habitats, including sagebrush-grassland areas adjacent to stands of coniferous forest. Prey items include small mammals, waterfowl, song birds, and insects (Terres 1980). Nests are often built high [i.e., >30 ft (9 m)] in

coniferous trees; some goshawks have been observed nesting in mature cottonwoods along riparian corridors (Call 1978).

Northern goshawks have been observed on the KPPA, with two sightings in May and one in October 1994 (Mariah 1994a, 1995). One observation occurred along the southern edge of Foote Creek Rim; another was 1.0 mi (1.6 km) east of the rim; and a third observation occurred immediately adjacent to the southeastern portion of the rim. These birds were probably hunting in the area; it is unlikely, due to the lack of extensive coniferous forest on the Foote Creek Rim area, that goshawks nest within the area. No northern goshawk nests were found during the 1994 raptor nest survey; however, forested land south of I-80 was excluded from the 1994 survey area. The closest known nests are several miles south of the Foote Creek Rim area within the Medicine Bow National Forest (WGFD 1994b). No goshawks have been observed within the Simpson Ridge area; little, if any, potential goshawk habitat occurs within this area.

Trumpeter Swan. The trumpeter swan is a C2 waterfowl species. The majority of the population that occurs in Wyoming frequents the marshes, lakes, and rivers in the Greater Yellowstone Ecosystem during the spring and summer months and returns to Idaho for the winter (WGFD 1992). Nests are usually built on a muskrat house or very small island in a large pond or small lake (WGFD 1992).

A single observation of a trumpeter swan occurred approximately 4.0 mi (6.4 km) east-northeast of the KPPA in October 1993 (WGFD 1994b). This was likely a vagrant individual that temporarily stopped in the area to feed or rest prior to continuing its wanderings. If wetlands within the KPPA are used by this species, it is probably during these rare visits by transient individuals.

Western Burrowing Owl. This small, long-legged owl of shortgrass prairie has been recently identified as a C2 species. Burrowing owls are usually active during daylight, feeding on insects, rodents, and birds. They nest in unoccupied mammal burrows, especially those of prairie dogs (Dorn and Dorn 1990, WGFD 1992).

According to WGFD (1994b) observation records, burrowing owls have occasionally been observed to the north and south of the Simpson Ridge area. Although no burrowing owls were observed during raptor and passerine surveys in 1994 (Mariah 1994a, 1995), it is possible that this species nests and forages within the KPPA. However, due to the lack of recorded observations for the KPPA and surrounding region, it is unlikely that burrowing owls are common in the area.

White-faced Ibis. The white-faced ibis is a C2 species that frequents marshes, wet-moist meadows, lake shores and irrigated meadows (WGFD 1992). Typical prey includes insects, leeches, earthworms, frogs, and fish (Terres 1980). The species breeds in colonies ranging from a few to several thousand birds in extensive freshwater marshes sporadically distributed from the Pacific Coast to the Great Plains (Erwin 1983). Breeding colonies have been observed at Hutton Lake National Wildlife Refuge in southeastern Wyoming and several locations in southwestern Wyoming (WGFD 1992).

Twelve white-faced ibis were observed flying across the narrow central portion of Foote Creek Rim on March 31, 1994. Another observation occurred approximately 2 mi (3 km) east of the Foote Creek Rim area on April 14, 1994, near a creek. This species was also observed northwest of the Simpson Ridge area on two separate occasions in the spring of 1994 (Mariah 1994a, 1995). All of these birds were likely transient individuals, resting and feeding in the area before continuing spring migration. No white-faced ibis breeding colonies occur within the KPPA.

Long-billed Curlew. A 3C species, the long-billed curlew breeds in arid grasslands and sagebrush/grasslands of the western Great Plains and Great Basin (Howe 1983). They arrive in the central Rocky Mountains in April (Behle and Perry

1975), and build shallow scrape nests in open areas of shortgrass prairie (Allen 1980).

Long-billed curlews have been observed on three separate occasions near the KPPA. One was observed about 0.5 mi (0.8 km) south of the Simpson Ridge area in 1983; the other two observations occurred in 1985 and 1987 in the vicinity of Elk Mountain, Wyoming, just southwest of Alternate 1 (WGFD 1994b). It is likely that curlews occasionally use wetland areas within the KPPA for foraging or as stopover areas during migration, but probably remain in the area for only short periods of time. Long-billed curlew nesting activity has never been documented for the KPPA, although appropriate nesting habitat is present over much of the area. Although unlikely, curlews could use areas such as Foote Creek Rim for nesting.

Western Snowy Plover. The western snowy plover, a 3C species, summers in states south and west of Wyoming (i.e., Utah, Nevada, California, and Oregon) (Scott 1987). This species feeds on insects and other invertebrates along the shores and sandy beaches of alkaline ponds (Dorn and Dorn 1990, WGFD 1992). Western snowy plovers have only been occasionally observed in Wyoming, and most of these observations have occurred in southwestern Wyoming (WGFD 1992).

No western snowy plovers have been observed within or adjacent to the KPPA (Mariah 1994a, 1995; WGFD 1994b). This species is unlikely to occur within the KPPA except as a rare summer migrant through the area.

State Sensitive Species. Nine state sensitive bird species occur, or potentially occur, within or adjacent to the KPPA: American bittern, American white pelican, burrowing owl, bushtit, Caspian tern, great blue heron, merlin, plain titmouse, and upland sandpiper (WGFD 1994b).

Four species (i.e., American bittern, American white pelican, Caspian tern, and great blue heron) frequent ponds, lakes, rivers, and wetland areas within the state (WGFD 1992). Although all four of these species may occasionally pass through the KPPA during migration or while foraging, only the American white pelican, Caspian tern, and great blue heron were observed in the area in 1994. All three of these species were observed at the reservoir and wetland areas immediately east of the Foote Creek Rim area. Thirty-six of 55 observations (65.5%) of American white pelicans and nine of 25 observations (36.0%) of great blue herons were of birds flying over or immediately adjacent to Foote Creek Rim. Two observations of Caspian terns occurred over lakes immediately east of Foote Creek Rim. Between April and November 1994, American white pelicans and great blue herons were also observed within the Simpson Ridge area.

Seventeen observations of merlin, small falcons that often nest in mature cottonwood riparian zones, were noted within the Foote Creek Rim area between February 16, 1994 and March 17, 1995 (Mariah 1994a, 1995). Eleven of the observations (65%) occurred in October and November. Thirteen (76%) of the observations involved merlin flying over or within 164 ft (50 m) of the top of the rim. Nesting habitat for this species likely occurs within the Rock Creek drainage east of the rim, but no merlin nests were found during ground surveys. Three observations of merlin were recorded within the Simpson Ridge area; all three occurred at the southeastern tip of Simpson Ridge.

Seven observations of upland sandpiper occurred in the Foote Creek Rim area between May 5 and 17, 1994. Most observations were in the central portion of the rim, away from the edges. Foote Creek Rim, with its monotypic shortgrass prairie, provides appropriate nesting habitat for upland sandpipers, which build their nests in shallow depressions on open ground (WGFD 1992). Although several of the upland sandpiper observations on Foote Creek Rim involved displaying birds, none were observed nesting in the area. No upland sandpipers were seen in the Simpson Ridge area.

Bushtits and plain titmice have both been observed in the vicinity of the KPPA (Mariah 1994a, 1995; WGFD 1994b). Both species prefer riparian habitats with significant shrub cover, such as is found along the Medicine Bow River and Rock Creek drainages. In June and July 1994, plain titmice were observed nine times along the shrub-covered eastern edge of central Foote Creek Rim (Mariah 1994a, 1995).

3.2.3.3 Amphibians and Reptiles

Wyoming Toad. The Wyoming toad is a federally endangered species found exclusively in the Laramie Basin of southwestern Wyoming (Baxter and Stone 1985). Habitat for this species includes floodplains, ponds, and small seepage lakes within shortgrass prairie communities, where it feeds on a variety of ants, beetles, and other arthropods (Baxter and Stone 1985). Currently, the Wyoming toad is found in isolated populations at Mortenson Lake near Laramie, Wyoming, and Lake George near Hutton Lake in the Hutton Lake National Wildlife Refuge. A Wyoming toad captive breeding program, supervised by the WGFD, is underway at Sybille Wildlife Research and Conservation Education Unit north of Laramie, Wyoming.

No Wyoming toads have been observed within or adjacent to the KPPA, and the likelihood of their appearance within the area is extremely low. Historic Wyoming toad habitat occurs east of Foote Creek Rim, and includes portions of the Rock Creek drainage (WNDD 1993b). Many of these areas were searched in 1980, 1983, and 1991, but no toads were found during these surveys (WNDD 1993b). A series of intensive searches in the Laramie Basin [i.e., 20 mi (32 km) east of the KPPA] during the spring and summer of 1994 failed to find any Wyoming toads [Western EcoSystems Technology, Inc. (WEST) 1994].

Eastern Short-horned Lizard. A C2 species, the eastern short-horned lizard is found throughout most of Wyoming below about 6,500 ft (1,981 m); it is especially common in sagebrush-grassland communities in the central and southwestern counties of the state (Baxter and Stone 1985). Short-horned lizards favor area with firm soils that are relatively flat and arid (Baxter and Stone 1985). These ground dwellers fo[illegible] diurnally, primarily feeding on ants and be[illegible], and bear their young live in relatively large litters (Baxter and Stone 1985).

Eastern short-horned lizards have been observed within both the Simpson Ridge (two observations) and Foote Creek Rim (one observation) areas (Mariah 1994a). It is probably a relatively common resident of sagebrush-grassland and shortgrass habitats within the KPPA.

3.2.3.4 Plants

Ute Lady's Tresses. This federally threatened member of the orchid family was first identified in Wyoming in August 1993 (BLM 1994b). Although the Ute lady's tresses has only been found in Goshen County (i.e., eastern Wyoming), it is suspected to occur throughout appropriate habitats in southern Wyoming (BLM 1994b). This species grows along streams, rivers, ponds, reservoirs, as well as in bogs and wetland, riparian, or seepage areas. These habitats do occur within the KPPA, and will be avoided where feasible; areas to be disturbed within these habitats will be surveyed for this plant prior to construction.

Contracted Indian Ricegrass. Contracted Indian ricegrass, a C2 species, potentially occurs within the KPPA. This species flourishes on dry slopes at medium elevations in deserts and plains, usually in deep, sandy soil (Hitchcock 1971, Beetle 1977). Although much of the KPPA meets the necessary habitat requirements of contracted Indian ricegrass (personal communication, 1993, with Connie Breckenridge, BLM), an initial plant survey in 1994 did not reveal its presence in the area.

State Sensitive Species. Two state sensitive species, bun milk-vetch and slender-trumpet ipomopsis, have been found in areas adjacent to the KPPA (WNDD 1993a, 1993b, 1994). Bun

milk-vetch is a plant which inhabits bare slopes and ridges (Dorn 1992); this type of habitat occurs over much of the KPPA. The ipomopsis, on the other hand, prefers relatively moist hills, slopes, and woods (Dorn 1992). This habitat type is more likely to occur south of the KPPA (i.e., within and adjacent to the Medicine Bow National Forest) than within the project area itself.

3.3 CULTURAL RESOURCES

Page 3-78, column 1, paragraph 2, line 19. Replace "NRHP" with "National Register of Historic Places (NRHP)".

Page 3-78, column 1. Insert the following paragraph between paragraphs 2 and 3: "Site eligibility is evaluated according to NRHP criteria, pursuant to 36 C.F.R. 60.4 of the Advisory Council on Historic Preservation's regulation *Treatment of Historic Properties*:

> The quality in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A) that are associated with events that have made a significant contribution to the broad pattern of our history; or
>
> B) that are associated with the lives of persons significant in our past; or
>
> C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D) that have yielded or may be likely to yield information important in history or prehistory."

Page 3-78, column 2, paragraph 3, line 16. Delete "Therefore, turbine erection may adversely affect the site's eligibility under this criterion."

3.3.1 Prehistoric Resources

Page 3-80, column 2, paragraph 3, line 4. Replace "National Register of Historic Places (NRHP)" with "NRHP".

3.4.7 Community Characteristics, Facilities, and Infrastructure

Page 3-100, column 2, paragraph 5, line 5. Insert "the Carbon County Library System," after "Community Development (1993)".

Page 3-103, column 1, paragraph 1, line 7. Replace "2,000 with "1,250".

Page 3-103, column 1, paragraph 2, line 5. Replace "8,000" with "4,500".

Page 3-103, column 2, paragraph 1, line 4. Replace "60,000" with "over 75,000".

Page 3-103, column 2, paragraph 2, line 4. Replace "10,000" with "8,300".

Page 3-103, column 2, paragraph 3, line 3. Replace "7,000" with "1,500".

3.5.3 Extractive Mineral Operations/Oil and Gas Production

Page 3-108, column 1, paragraph 6. Replace the entire paragraph with the following: "The potential for development of these coals during the LOP is low to moderate. Technology has changed dramatically since this area was first leased in 1982. Coal in the Carbon Basin is very similar in character to that currently mined by both surface and underground mining methods in the Hanna Basin."

Page 3-118, column 2, paragraph 3, line 19. Replace "effected" with "affected".

Page 3-119, Table 3.40, column 3. Replace column 3 with the following column:

Linear Distance mi (km)
20 (32.2)
0 (0)
6 (9.7)
6 (9.7)
0 (0)
18 (29.0)
8 (12.9)
0 (0)
22 (35.4)
1 (1.6)
0 (0)
0 (0)
<1 (<1)
0 (0)
0 (0)

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Page 4-1, column 2, paragraph 2, line 13. Replace "Moderate impacts have the potential to become significant (e.g., disturbance within big game crucial winter range) if not adequately mitigated." with "Moderate impacts are significant impacts that are adequately mitigated to less than significant."

Page 4-3, column 1, paragraph 2, line 13. Add the following sentences to the end of the paragraph: "In February 1995, the Wyoming State Land Office issued a coal lease in the SE 1/4 of Section 16, T21N R80W. Currently, there has been no permit application to WDEQ to mine the coal, and therefore, the type of disturbance that may be associated with this lease is unknown (personal communication, June 21, 1995, with Harold Kemp, Assistant Director, Wyoming State Land Office). Future development would add to cumulative impacts within the project area, and other leases and possible development are also anticipated (see Section 8.2.9 in the FEIS). These would be evaluated during the NEPA analyses for proposed coal development."

Page 4-3, column 1, paragraph 3, line 12. Add the following sentences to the end of the paragraph: "For many resources (e.g, wildlife habitat), impacts associated with the proposed development would exceed the surface acreage disturbed because of changes in the utility of areas surrounding facilities. Where possible, impacts to areas outside of actual disturbance areas are quantified and discussed."

Page 4-3, column 2, paragraph 1, line 11. Add the following sentence to the end of the paragraph: "Therefore, impacts due to construction of other power plants are not discussed in detail under the No Action Alternative for each resource. However, because protection of air quality is one of the principal benefits of wind energy development, the possible reductions in emissions from development of a 500-MW Windplant are discussed in Section 4.1.1 under Air Quality. Possible alternate energy sources are also discussed under the No Action Alternative for mineral resources, because Windplant development can be directly correlated with saving a certain amount of fossil fuels (see Section 4.1.3.4). For other resources (e.g., wildlife), analysis associated with development of other power plants would not be appropriate because impacts could not be quantified in the absence of a specific proposal for such an alternative."

4.1 PHYSICAL RESOURCES

4.1.1 Climate and Air Quality

Page 4-6, column 1, paragraph 2, line 17. Replace "possible" with "feasible".

Pages 4-7 and 4-8. Add the following footnote to Tables 4.2 and 4.3: "Note: The reductions in emissions and associated costs shown in this table are based on production of 500 MW of wind-generated power compared with production of 500 MW of power from a coal-, oil-, or gas-fired plant. Because these types of plants have different capacity factors, annual emission reductions may vary from those shown in this table.

4.1.3 Mineral Resources

4.1.3.2 Proposed Action

Page 4-15, column 2, paragraph 3, line 4. Replace "but the potential for future coal mining is low" with "and there is potential for future coal mining during the LOP".

Page 4-15, column 2, paragraph 3, line 6. Replace "The Windplant would preclude coal mining for the LOP such that if mining becomes economical during the LOP, moderate impacts to coal would occur" with "If mining becomes economical during the LOP, BLM would follow procedures outlined in Section 8.2.9 in the FEIS to minimize conflicts between wind and coal development within the KPPA."

4.1.4 Geologic Hazards

Page 4-16, column 2, paragraph 3, line 4. Insert "and known subsidence areas" after "abandoned underground mines".

Page 4-17, column 2, paragraph 1, line 5. Add "NEPA analysis and" before "POD process".

Page 4-18, column 1, paragraph 1, line 3. Add "NEPA document and" before "POD".

4.1.5 Paleontologic Resources

4.1.5.2 Proposed Action

Page 4-18, column 1, paragraph 3, line 1. Replace "The Class I paleontologic survey of Foote Creek Rim will be completed by a BLM-approved paleontologist and included in the FEIS for this project. Based on results of the Class I survey, BLM will determine if a Class III survey of proposed disturbance areas will be required (BLM 1993b). If it is required, the Class III survey results would also be included in the FEIS." with "The Class I paleontologic survey of Foote Creek Rim is included as Appendix G in the FEIS. Based on the Class I survey, BLM would not require a Class III survey of proposed disturbance areas for Phase I development because formations on Foote Creek Rim are not likely to contain important fossils."

Page 4-18, column 1, paragraph 3, line 9. Replace "paleontolgical" with "paleontological".

Page 4-18, column 1, paragraph 3, line 19. Replace "activities at the site would cease" with "activities within 100 ft (30.5 m) of the site would cease".

4.1.6 Soils

4.1.6.2 Proposed Action

Page 4-20, column 1, paragraph 3, line 10. Replace " preparation of the POD for each phase" with "preparation of the NEPA document and POD for each phase subsequent to Phase I".

4.1.6.5 Cumulative Impacts

Page 4-21, column 1, paragraph 1, line 10. Replace "EIS" with "NEPA documents".

4.1.7 Surface Water and Groundwater

4.1.7.1 Significance Criteria

Page 4-21, column 2, bullet 3, line 4. Replace "(to be provided with the POD for each phase)" with (to be developed prior to construction of each phase)".

4.1.7.5 Cumulative Impacts

Page 4-23, column 1, paragraph 3, line 22. Replace "only minimally, if at all," with "insignificantly".

4.1.8 Noise

4.1.8.2 Proposed Action

Page 4-26, column 1. Add the following paragraph after paragraph 1: "Harmonic resonance (overtones) commonly occurs in the operation of windfarms when a number of turbine blades are synchronized with one another. Resonance occurs when the driving force of a system occurs at the same natural frequency of that system. In this case, the acoustic energy created by the wind turbine system is considerably higher frequency than the natural frequency of nearby structures. Therefore, it is very unlikely that wind turbines would incite resonance in nearby structures. Furthermore, the magnitude of acoustic energy produced by wind turbines would not be sufficient to incite resonance in the nearest residential structures. Impacts due to harmonic resonance would be negligible; little can be done to eliminate, or at least minimize this impact."

Page 4-26, column 2, paragraph 2, line 3. Insert "probably" after "operations". Line 5. Insert the following sentence after "significant.": "If, however, additional turbines are erected on the southern end of Foote Creek Rim, it is possible that impacts to residents in Arlington could be significant."

4.1.8.3 Alternative A

Page 4-27, column 2, paragraph 3, line 5. Replace "possible" with "feasible".

4.2 BIOLOGICAL RESOURCES

4.2.1 Vegetation

4.2.1.1 Significance Criteria

Page 4-29, column 1, paragraph 5, line 5. Replace "vegetation productivity is not restored to at least predisturbance levels within five years after reclamation;" with "vegetation productivity is not restored to a level as great or greater than adjacent undisturbed native vegetation within five years after reclamation;"

Page 4-29, column 2, paragraph 1, line 2. Add "compared with adjacent undisturbed native vegetation;" after "greater than 20%".

4.2.1.2 Proposed Action

Page 4-31, column 2, paragraph 2, line 8. Add "NEPA document and" before "POD preparation".

4.2.2 Wetlands and Riparian Areas

4.2.2.1 Proposed Action

Page 4-31, column 1, paragraph 3, line 12. Replace "50%" with "5%".

Page 4-31, column 2, paragraph 2, line 12. Add the following sentence after "would be employed." "Reclamation success standards would be incorporated into the POD for each phase and would include evaluation of overall changes in land use, restoration of productivity to levels equivalent to adjacent undisturbed vegetation, comparison of species composition and diversity of reclaimed areas with adjacent undisturbed vegetation, and assessment of weed invasion."

4.2.2.2 Proposed Action

Page 4-32, column 2, paragraph 1, line 14. Replace "POD preparation and the Section 404 permitting process." with "preparation of the NEPA document and the POD and the Section 404 permitting process for phases subsequent to Phase I."

4.2.3 Wildlife and Fisheries

Page 4-33, column 1, paragraph 5, line 3. Replace "collision" with "collision-related".

4.2.3.1 Big Game

Page 4-34, column 2, paragraph 3, line 11. Add "However, doe-fawn groups remained sensitive to traffic." after "during the hunting season."

Page 4-37, column 1, paragraph 1, line 3. Add "Yeo et al. (1984) also suggested that pronghorn may respond differently to the development of larger windfarms compared with the two large turbines studied at Medicine Bow."

Page 4-37, column 1, paragraph 2. Add the following sentence to the end of the paragraph: "However, the fact that some animals remain in disturbed areas (Easterly et al. n.d.; Segerstrom 1982) does not negate the fact that other animals were adversely impacted by these projects and were displaced from impacted areas."

Page 4-38, column 2, paragraph 1, line 4. Add the following sentence after "(n.d.).": "Easterly et al. (n.d.) studied predominantly nonmigratory deer. Migratory deer may be displaced to a greater extent than nonmigratory deer (personal communication, March 26, 1995, with Rich Guenzel, WGFD)."

Page 4-38, column 2, paragraph 3, line 2. Replace "minimal" with "a small amount of".

Page 4-39, column 1, paragraph 1, line 6. Replace "minimal" with "insignificant".

4.2.3.3 Legislation Related to Avian Mortality

Page 4-44, column 1, paragraph 2, line 8. Insert ", 21-3-108," before "and". Line 9. Insert "and Chapter LII, Section 4 of the Wyoming Game and Fish Regulations" before "unless".

Page 4-44, column 2, paragraph 3, line 2. Replace "Mortality" with "Collision-related mortality".

Page 4-45, column 2, paragraph 2, line 25. Insert "collision-related" before "avian". Insert the following sentence at the end of the paragraph: "This EIS evaluates the full range of estimated avian mortalities and impacts (other than those related to other protected wildlife species) which might be covered by such permits or stipulations, if any, for the first phase of the project."

4.2.3.4 Raptors

Page 4-46, column 1, paragraph 2, line 3. Insert "collision-related" before "raptor".

Page 4-46, column 1, paragraph 2, line 15. Insert "Estep 1989;" at the beginning of the references. Line 18. Insert "collision-related" before "mortality". Line 22. Replace "turbine" with "collision-related".

Page 4-46, column 1, paragraph 3, line 2. Replace "turbine-caused" with "collision-related".

Page 4-46, column 2, paragraph 1, lines 2 and 6. Insert "collision-related" before "mortality".

Page 4-48, column 1, paragraph 1, line 2. Replace "Windplant-related" with "collision-related".

Page 4-48, column 1, paragraph 3, line 14. Insert "collision-related" before "mortality".

Page 4-48, column 2, paragraph 1, line 6. Replace "then" with "than".

Page 4-49, Table 4.13, footnote 3. Replace "standard error" with "standard deviation".

Page 4-50, Table 4.14. Replace footnote 4 with the following: "No standard deviation (SD) is associated with this number (see Table 4.13, footnote 3).

Page 4-50, Table 4.14. Delete footnote 8 and replace all references to "8" in the table with "7".

Page 4-51, column 1, paragraph 2, line 7. Replace "wind turbine-caused" with "collision-related".

Page 4-51, column 2, paragraph 2, line 6. Replace "turbine-caused" with "collision-related".

Page 4-51, column 2, paragraph 3, line 1. Replace "Turbine-caused" with "Collision-related".

Page 4-52, Table 4.15. Replace Table 4.15 in the DEIS with Table 4.15 in the FEIS.

Page 4-54, column 1, paragraph 3, lines 3 and 13. Replace "turbine-caused" with "collision-related".

Page 4-54, column 2, paragraph 1, lines 1 and 5. Replace "turbine-caused" with "collision-related".

Page 4-54, column 2, paragraph 4, line 3. Add the following sentence to the end of the paragraph: "Other sources of man-caused mortality (e.g., road-kills, collisions with power lines) that occur within the KPPA would likely continue."

Page 4-54, column 2, paragraph 3, line 5. Insert "collision-related" before "mortality".

Page 4-55, column 1, paragraph 2, line 5. Replace "The POD process described in Section 2.1.2" with "Completion of a formal NEPA

Table 4.15 Comparison of Raptor Species Distribution in Southern Wyoming vs. California for all Raptor Species Observed on Foote Creek Rim.

	State	
Species	Wyoming	California
American kestrel	Seasonal resident, common during breeding season, some stay through winter	Resident, common
Bald eagle[2,3]	Resident[4], infrequent, winter population increases	Resident, infrequent
Broad-winged hawk	Migrant, rare	Migrant, rare
Ferruginous hawk[5]	Seasonal resident, common during breeding season, rare during winter	Does not breed in California, uncommon winter resident
Golden eagle[3]	Resident, common	Resident, common
Great-horned owl	Resident, common	Resident, common
Merlin	Resident, uncommon during breeding season to rare during winter	Common winter resident
Northern goshawk[5]	Resident, uncommon	Resident, uncommon
Northern harrier[6]	Seasonal resident, common during breeding season, some stay through winter	Resident, common, population declining throughout California
Northern saw-whet owl	Resident, common	Resident, common
Osprey	Seasonal resident, common during summer	Seasonal resident, common during summer
Peregrine falcon[2]	Resident, rare	Seasonal resident, uncommon to rare during summer
Prairie falcon	Resident, common, larger breeding population on KPPA than at California windfarms	Resident, uncommon
Red-tailed hawk	Resident, common	Resident, common
Rough-legged hawk	Common winter resident	Common to uncommon winter resident
Sharp-shinned hawk[6]	Seasonal resident, common during summer	Seasonal resident, common during winter
Short-eared owl[6]	Resident, common	Resident, uncommon
Swainson's hawk[7]	Seasonal resident, common during breeding season	Uncommon during breeding season
Turkey vulture	Seasonal resident, common during summer	Resident, common

1 Seasonal status taken from Wyoming Bird and Mammal Atlas (WGFD 1992), and Field Guide to the Birds of North America (Scott 1987).
2 Federally threatened.
3 Protected under the BEPA.
4 Breeds and remains in the area year-round.
5 Federal candidate species: C2.
6 Species of special concern in California [California Department of Fish and Game (CDFG) 1991].
7 California threatened (CDFG 1991).

analysis for each phase, in addition to the required POD,"

4.2.3.5 Upland Game Birds

Page 4-55, column 2, paragraph 2, line 6. After "presence of the WTG." add "Since attendance and location of one lek was erratic, the effects of the development on sage grouse populations could not be determined."

Page 4-56, column 2. Add the following paragraph after paragraph 3: "Impacts to mourning dove and blue grouse under Alternative A would probably be negligible for the LOP and would be reduced by approximately 40% from impacts associated with the Proposed Action."

Page 4-56, column 2, paragraph 4, line 4. Add the following sentence to the end of the paragraph: "Other sources of man-caused mortality (e.g., road-kills, hunting) that occur within the KPPA would likely continue."

4.2.3.6 Waterfowl, Shorebirds, and Waders

Page 4-57, column 1, paragraph 3, line 19. Replace "turbine-caused" with "collision-related".

Page 4-57, column 2, paragraph 3, line 11. Replace "turbine-caused" with "collision-related".

Page 4-58, column 2, paragraph 3, line 12. Add "NEPA documents and" before "PODs".

Page 4-59, Table 4-16, caption. After "Transmission Lines.[1]" add ",[2]". Add the following footnote to the bottom of the table: "[2] Many of the factors presented in this table affect the visibility of an obstacle, and thus influence the potential for collisions."

Page 4-60, column 1, paragraph 2, line 3. Add the following sentence to the end of the paragraph: "Other sources of man-caused mortality (e.g., road-kills, hunting, collisions with power lines) that occur within the KPPA would likely continue."

4.2.3.7 Passerines

Page 4-60, column 2, paragraph 1, line 3. Replace "turbine-caused" with "collision-related".

Page 4-60, column 2, paragraph 3, line 1. Replace "turbine-caused" with "collision-related".

Page 4-61, column 2, paragraph 2, lines 6 and 14. Replace "turbine-caused" with "collision-related".

Page 4-61, column 2, paragraph 3, line 1. Replace "turbine-caused" with "collision-related". Line 13. Replace "wind turbines" with "collisions with Windplant facilities".

Page 4-62, column 1, paragraph 1, line 2. Add "NEPA documents and" before "PODs".

Page 4-62, column 1, paragraph 2, line 1. Replace "turbines" with "collisions with turbines or other Windplant facilities".

Page 4-62, column 1, paragraph 5, line 3. Add the following sentence to the end of the paragraph: "Other sources of man-caused mortality (e.g., road-kills, collisions with power lines) that occur within the KPPA would likely continue."

Page 4-62, column 2, paragraph 1, line 12. Replace "turbine-caused" with "collision-related".

4.2.3.9 Fisheries

Page 4-63, column 2, paragraph 4, line 2. After "(e.g.," add "the proposed Medicine Bow windfarm,".

4.2.4 Threatened/Endangered, Candidate, and State Sensitive Species

4.2.4.2 Mammals

Page 4-64, column 1, paragraph 1, lines 2, 7, 12, 14, 17, 25 and paragraph 2, line 2; and column 2, paragraph 1, line 9 and paragraph 2, lines 2, 12, and 15. Replace BBF with BFF.

Page 4-64, column 2, paragraph 3, line 14. Replace "turbine" with "collision-related".

4.2.4.3 Birds

Page 4-66, column 2, paragraph 1, line 8. Insert "collisions with" before "WTGs".

Page 4-66, column 2, paragraph 1, line 8. After "proposed Windplant" add "and the proposed Medicine Bow windfarm".

Page 4-68, column 1, paragraph 1, line 28. Add the following sentence to the end of the paragraph: "Furthermore, persistent snow drifts could cause a shift in vegetation from low-saturated plants preferred by mountain plovers to denser vegetation that is avoided by plovers."

Page 4-68, column 2, paragraph 3, line 4. After "development," add "the proposed Medicine Bow windfarm,".

Page 4-69, column 2, paragraph 3, line 5. After "WTGs" add "and turbines associated with the proposed Medicine Bow windfarm".

Page 4-70, column 1, paragraph 5, line 18. Delete the word "not".

4.2.4.5 Plants

Page 4-71, column 1, paragraph 2, line 9; paragraph 2, line 12; and paragraph 4, line 16. Replace "alternatives" with "Alternative A".

4.3 CULTURAL AND HISTORIC RESOURCES

4.3.2 Proposed Action

Page 4-71, column 2, paragraph 3. Replace the entire paragraph with the following: "An ethnohistoric/ ethnographic analysis of the Foote Creek Rim Archaeological District showed that impacts from the proposed development are potentially significant. ("Foote Creek Rim Archaeological District" is a descriptive term encompassing all features on top of Foote Creek Rim; the term does not currently have regulatory meaning) (see Section 3.3 in the DEIS). The ethnohistoric/ethnographic analysis was prepared in consultation with Native American tribes; specific results will be kept confidential due to the sensitive nature of this information. Mitigation for potentially significant impacts would be developed in consultation with Native American tribes and would include, but are not necessarily limited to avoiding archaeological features, providing Native Americans with access to the area, or other mitigation negotiated with Native Americans."

Page 4-72, column 1, paragraph 2, line 22. After "prehistoric materials" add "not previously identified".

Page 4-72, column 1, paragraph 2, line 24. Replace "site(s)" with "discovered features".

Page 4-72, column 2, paragraph 3, line 24. Replace sentence beginning with "If the district is determined to be eligible . . ." with "Based on results of an ethnohistoric/ethnographic study of the district, Windplant development would constitute a potentially significant impact to cultural resources on Foote Creek Rim. Mitigation would include avoiding archaeological features, providing Native Americans with access to the area, or other mitigation developed in consultation with Native Americans."

4.4 SOCIOECONOMICS

4.4.2.1 Employment

Page 4-77, Table 4.18. Add footnote 2 to the table caption and define as follows: "[2] Figures are annual totals and are not cumulative."

4.4.2.2 Population

Pages 4-78 and 4-79, Tables 4.19 and 4.20. Add footnote 2 to the table caption and define as follows: "[2] Figures are annual totals and are not cumulative."

4.4.2.3 Housing

Page 4-81, Table 4.21. Add footnote 2 to the table caption and define as follows: "[2] Figures are annual totals and are not cumulative."

4.4.2.4 Schools

Page 4-82, Table 4.22. Add footnote 2 to the table caption and define as follows: "[2] Figures are annual totals and are not cumulative."

4.4.2.7 Community Characteristics, Facilities, and Infrastructure

Page 4-83, column 2, paragraph 4, line 1. Replace "the Windplant" with "Phase I of Windplant development". Line 3. Replace "the Windplant" with "the first 70.5-MW phase". Line 7. Delete "for the customers of these four utilities and BPA". Lines 1 and 4. Replace "will" with "would".

Page 4-84, column 1, paragraph 3, line 10. Insert "(0 °C)" after "32 °F".

4.4.5 Cumulative Impacts

Page 4-86, Table 4.23, column 2. For the categories "Payroll, Average annual" and "Payroll, Total" under the Creston/Blue Gap Natural Gas Project, footnote 4 should be added as follows: "[4] Based on the first 25 years of operation."

Page 4-86, Table 4.23, column 5. For the categories "Payroll, Average annual" and "Local sales, severance, and *ad valorem* taxes" under Proposed Action, footnote 5 should be added and defined as follows: "[5] Reflects a 10-year construction period plus a 30-year life-of project."

Page 4-86, Table 4.23, column 2. For the category "Local sales, severance, and *ad valorem* taxes", under Creston/Blue Gap Natural Gas Project, footnote 6 should be added as follows: [6] Based on a 30-year LOP."

Page 4-86, Table 4.23, column 5. For the category "Local sales, severance, and *ad valorem* taxes", the Proposed Action column should be changed to read "Annual average: $3,029,994".

4.5 LAND USE

4.5.2 Proposed Action

4.5.2.1 Landscape Character

Page 4-88, column 1, paragraph 1, line 9. Add "NEPA documents and" after "Future".

Page 4-88, column 2, paragraph 3, line 1. Add "NEPA documents and" before "PODs".

4.5.5 Cumulative Impacts

Page 4-91, column 2, paragraph 4, line 3. After "developments" add "(e.g., the proposed Medicine Bow windfarm)". Line 5. Replace "a minimal" with "an insignificant".

4.6 VISUAL RESOURCES

Page 4-93, column 2, paragraph 2, line 1. Replace "will" with "would".

4.7 HAZARDOUS MATERIALS

4.7.1 Significance Criteria

Page 4-95, column 2, paragraph 2, line 2. Replace "Proposed Action" with "proposed project".

4.8 UNAVOIDABLE ADVERSE EFFECTS

Page 4-97, column 2, paragraph 1, line 8. Replace "a minimal" with "an insignificant". Line 22. Add the following to the end of the paragraph: "Potentially significant impacts, such as displacement of mountain plover from breeding habitat on Foote Creek Rim, also may constitute unavoidable adverse effects."

4.9 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Page 4-98, column 1, paragraph 4, line 3. Delete "drilling".

5.0 MITIGATION AND MONITORING

In response to several comments received during the public comment period, Chapter 5.0 was reorganized to better define applicant-committed, project-wide, and site-specific mitigation measures. The introductory section, Section 5.1.1 in the DEIS, was replaced in its entirety. Section 5.1.2 in the DEIS has been modified using the errata format used to revise previous chapters for the FEIS.

The mitigation and monitoring measures identified in this chapter are a recapitulation of measures presented in Section 2.1.11 and Chapter 4.0. Measures were developed in response to impacts identified in Chapter 4.0 and during the scoping process. Mitigation and monitoring measures describe how project activities would be implemented to assure compliance with federal, state, and local laws, resource management goals and objectives for the KPPA, applicable ROW stipulations, and additional environmental protection goals identified in Interdisciplinary Team (IDT) analyses. Mitigation for possible violations of the MBTA, ESA, and BEPA are currently being negotiated with USFWS. All USFWS mitigation will be incorporated into BLM project requirements. All mitigation and monitoring measures identified in this chapter would be applied to the Proposed Action or Alternative A. Mitigation and monitoring for Phase I would be the responsibility of KENETECH and PacifiCorp; other entities may own all or parts of future phases and would be responsible, along with KENETECH, for mitigation and monitoring.

The BLM GDRA Manager would be the AO for the proposed project. Mitigation and monitoring measures identified in this chapter may be modified by the AO based on new information or to further minimize impacts. IDT recommendations would be developed during field site analyses conducted during review of subsequent NEPA documents and PODs and presented to the AO. Final mitigation and monitoring requirements would be determined by the AO.

Authorization to proceed with the implementation of this project on public lands would be contingent on receiving a completed POD from KENETECH and PacifiCorp and USFWS concurrence on the T&E species impact analysis. The POD for the first phase of development will be completed prior to issuing the FEIS for this project. Approval of the first phase POD will be contingent on the environmental analysis presented in the EIS and POD (see Section 2.1.2). Approval of subsequent phases would be contingent on completion and acceptance of future NEPA documents and PODs.

Mitigation and monitoring measures identified would be adhered to on federal, state, and private lands affected by federal undertakings, subject to landowner preference or agreements (see Section 8.2.5 in the FEIS).

5.1 MITIGATION MEASURES

5.1.1 Administrative Requirements and Applicant-committed Practices

5.1.1.1 Administrative Requirements

All phases of the Proposed Action would be conducted by KENETECH, PacifiCorp, other future Windplant owners and their contractors in full compliance with all applicable federal, state, and local laws and regulations and within the guidelines specified in the approved ROW easement, NEPA documents, and PODs. Project-related avian mortalities affecting species protected under the MBTA, ESA, BEPA, or state laws would fall within the enforcement jurisdiction of the USFWS and the WGFD. Negotiations concerning the federal laws protecting avifauna are underway, and it is possible that the project would operate without take permits. If permits are issued and permit stipulations are adhered to, the proposed project would be in compliance with

these laws. See Section 8.2.2 in this FEIS for details on this issue.

The NEPA documents for subsequent phases would contain the environmental analysis and site-specific mitigations for proposed development areas. Modification, deletion, or addition of mitigation measures or granting of exceptions would be addressed in the NEPA analysis for each subsequent phase. Public review of all proposed actions and alternatives, including modifications of practices prescribed in this analysis, would be provided in accordance with NEPA regulations (40 C.F.R. 1503, 1506.6). The POD for each phase or each new transmission line would contain a construction schedule and detailed location maps which the AO, in consultation with other agency personnel (e.g., WGFD, WDEQ, USFWS), would approve on a case-by-case basis following the conclusion of the NEPA process. The AO would also receive guidance from a technical review committee, whose functions are described in Section 8.2.3.3 in the FEIS. Public review of the draft POD for subsequent phases would be afforded during the NEPA process.

5.1.1.2 Applicant-Committed Project Wide Practices

KENETECH and PacifiCorp propose to implement the following project-wide mitigation measures to avoid, reduce, or eliminate project impacts. Project-wide mitigation measures may be waived on a case-by-case basis when deemed appropriate by the BLM after thorough analysis determines that the resource for which the measure was put in place would not be significantly impacted.

Surface Disturbance. Areas with high erosion potential and/or rugged topography (i.e., steep slopes, dunes, floodplains, unstable soils) would be avoided, where feasible. If disturbance in these areas is necessary, stringent erosion control and soil stabilization measures would be implemented immediately. In addition, surface disturbance or occupancy would not occur on slopes in excess of 25%, where feasible, nor would construction occur when soils are wet or frozen, whenever feasible.

In areas where surface disturbance occurs, the following measures would be implemented:

- Removal or disturbance of vegetation would be kept to a minimum through construction site management (e.g., utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, scalping, etc.).
- Topsoil would be salvaged prior to construction to facilitate revegetation. After construction, all salvaged topsoil would be spread evenly over all surfaces to be revegetated and seeded. All seeding would use an approved mixture of native and/or introduced species. An approved mixture of native species would be used during initial seeding. Because of the extended LOP, no topsoil would be stockpiled beyond completion of post-construction reclamation.
- Revegetation methods would include:
    - a) deep ripping of compacted soil prior to reseeding, where necessary;
    - b) broadcast or drill seeding, depending on site conditions;
    - c) fall seeding (September 15 to freeze-up), where feasible;
    - d) spring reseeding (after the ground thaws and prior to April 15) if fall seeding is not feasible;
    - e) utilization of native cool season grasses, forbs, and shrubs in a mixture specified by KENETECH and PacifiCorp and approved by the landowner or BLM;
    - f) addition of BLM-approved introduced species (e.g., crested wheatgrass, Russian wildrye) to the seed mixture if attempts at revegetation with native species are unsuccessful;
    - g) installation of waterbars on disturbed slopes with grades of

6% or greater to reduce erosion (waterbars may be installed on disturbed slopes with grades less than 6% in areas with unstable soils); and

h) possible fencing of sensitive reclamation sites.

- Vegetation and soil removal would be accomplished in a manner that would prevent erosion and sedimentation.

Cultural and Paleontological Resources. Paleontological and archaeological surveys would be completed prior to disturbance, with monitoring as necessary during disturbance of impacted areas with high resource potential. Paleontological or cultural resource sites would be avoided or mitigated, as necessary, prior to disturbance. Any cultural or paleontological resource discovered by the operator or any person working on his or her behalf would be immediately reported to the BLM. All construction operations within 100.0 ft (30.5 m) of such a discovery would be suspended as required by BLM regulations until written authorization to proceed is issued by the AO. An evaluation of the discovery would be made by the AO to determine appropriate actions to prevent the loss of significant cultural or scientific values.

KENETECH would continue to work with BLM and Native American tribes on mitigative measures for cultural resources through each phase of the project.

Riparian Area/Wetland Management. Construction would be avoided within 500.0 ft (152.4 m) of surface water or wetland areas, where feasible. Intermittent and ephemeral drainages would be protected from surface disturbance within 75.0 ft (22.9 m) of the channel or the inner gorge, whichever is closer, where feasible. Where wetlands, riparian areas, or stream channels must be disturbed, the following measures would be employed:

a) Wetland areas would be crossed during dry conditions (i.e., late summer, fall, or dry winters).
b) Streambeds would be crossed perpendicular to flow, where feasible.
c) Streams, wetlands, and riparian areas disturbed during project construction would be restored to pre-project conditions. If impermeable soils contributed to wetland formation, soils would be compacted to restore impermeability.
d) Recontouring and appropriate/adapted species would be used to revegetate the banks to aid in soil stabilization.
e) Revegetation operations would begin on impacted areas immediately after completion of project construction activities.

Temporary erosion control measures such as mulch, jute netting, sediment traps, or other appropriate methods would be used where necessary to prevent erosion and sedimentation until vegetation becomes established.

The 230-kV transmission line structures would be designed and located at least 40.0 ft (12.2 m) from pipelines where feasible, and conductors would be at least 30.0 ft (9.1 m) above ground level at all pipeline and road crossings. Structures would be located at least 100.0 ft (30.5 m) from all streams, where feasible. Stream crossings would be avoided during materials-hauling and structure-assembly and erection by using existing roads to access the ROW, where feasible. Where conductors must be strung across perennial streams, ropes would be used to haul the conductors across the stream. Intermittent or ephemeral channels would be crossed during periods of low or no flow.

Wildlife and Fisheries. Windplant impacts on wildlife are the subject of continuing study for this project. Because wildlife impacts are not completely understood at this time, monitoring will be an integral part of the mitigation program for wildlife. Studies of wildlife use of the Foote Creek Rim and Simpson Ridge areas are being conducted and would continue to assess Windplant impacts to wildlife. These studies are described in

Appendices A and B in the DEIS and in Sections 8.2.3 and 8.2.4 in the FEIS.

Off-site mitigation would be evaluated to help compensate for unpreventable mortalities. Off-site mitigation has not yet been considered because mortality rates are not yet known (Section 4.2.3). Other mitigation measures to minimize impacts to wildlife would include the following.

Construction would be scheduled and located to avoid sensitive areas during critical periods. KENETECH and PacifiCorp will schedule and locate facility construction with the following stipulations:

- Windplant facilities (e.g., turbine towers, roads, power lines) would be placed to minimize or avoid disturbance in areas with high value wildlife habitat (e.g., crucial winter range, wetlands, and riparian areas).
- To protect important big game winter habitat, activities or surface use would not be allowed from November 15 to April 30 within certain areas encompassed by the ROW grant. The same criterion would apply to defined big game birthing areas from May 1 to June 30.
- Known active sage grouse leks and adjacent areas [2.0-mi (3.2-km) radius from lek centers] would be avoided during the breeding and nesting seasons from March 1 through June 30. No construction activity would be conducted within 0.25 mi (0.4 km) of known nest sites; and project activities, other than those required for O&M within 0.25 mi (0.4 km) of existing roads, would be curtailed between 1 hr before daylight and 9:00 a.m. from March 1 through April 30.
- Construction within 0.75 mi (1.2 km) of active raptor nest sites (i.e., used within the last three years) would be avoided during the nesting season (February 1 through July 31). If the area must be impacted, construction would occur outside the nesting season. Once facilities are constructed, O&M activities would be allowed year-round throughout the Windplant. Extensive raptor nesting studies were completed as part of the baseline avifauna studies (Appendix A in the DEIS) and would continue as part of the monitoring program for the project (Appendix B in the DEIS).

State-of-the-art wind tower construction and design would be used. KENETECH has sponsored extensive research on the effects of Windplants on avian wildlife. The research is being conducted through the World Center for Birds of Prey, the Peregrine Fund, Raptor Research and Technical Assistance Center, and several universities, by a group of experts (the Avian Task Force) in the fields of bird behavior and physiology. As part of the research, the task force has been examining the effects of various turbine designs on bird behavior. The objective of these studies is to identify ways to vary turbine design and placement to reduce collision-related mortality. The avian task force has identified three critical steps toward minimizing avian collisions within Windplants:

- Initial plans for siting Windplants should take into consideration the entire annual cycle and pattern of avian use of the proposed project area. By the time the FEIS for this project is released, BLM will have one complete year of avian use data for the Foote Creek Rim area which will be used to evaluate siting options.
- The size and physical configuration of the Windplant, turbine spacing, locations of turbine corridors, etc., should be evaluated with respect to the kinds of birds and their activities in the area. Using data collected from the project area between 1993 and 1995, high use areas and known nesting areas will be identified and avoided, if feasible, during facilities siting.
- Turbines and towers should be designed to reduce collisions by reducing perching opportunities, and turbine rotors should be patterned to maximize their visibility to birds under a wide range of conditions. The Proposed Action would entail use of

tubular towers, and all aboveground power line structures within the Windplant would be equipped with raptor antiperching devices, thereby minimizing the number of new perches in the KPPA. The USFWS is recommending an experimental approach to painting turbine blades to test the effectiveness of painted patterns on reducing collision-related mortality. Therefore, selected blades will be painted an alternating pattern of black and white stripes while others will be painted a flat, non-reflective white. Other investigations being conducted by the task force are discussed in Section 5.1.3.11 in the DEIS; a complete summary report is available from the BLM.

The following tower construction and design measures would be implemented to minimize the potential impacts to raptors:

- individual plant facilities would be designed or equipped to prevent raptor perching (e.g., using tubular rather than lattice towers, equipping turbine nacelles and power poles within the Windplant with raptor antiperching devices).
- Poles for collection and transmission lines located within 0.25 mi (0.4 km) of sage grouse leks would be equipped with raptor antiperching devices to minimize the opportunities for raptors to prey on sage grouse. Poles located near prairie dog colonies within the BFF PMZ also would be equipped with raptor antiperching devices to minimize the take of prairie dogs or the potential take of BFFs by birds of prey.

Fencing would be used only where needed. Substations and other areas that would be hazardous to wildlife would be fenced as directed by the BLM to limit wildlife access to unsafe areas. However, all livestock control fences would conform to BLM Manual Handbook H-1741-1 for the passage of wildlife.

Environmental training would be provided for contractors and employees. KENETECH recognizes the sensitive nature of the natural environment in the KPPA and would institute an environmental training program for contract personnel and KENETECH employees involved with the project. The training program would establish goals to reduce impacts to the environment and would emphasize that failure to comply with program objectives could result in disciplinary action of the employee.

Poaching and littering policies would be implemented and enforced. KENETECH would implement policies designed to control poaching and littering and would notify all employees (contract and company) that conviction of a game violation would result in disciplinary action. Employees caught harassing or poaching big game would be disciplined with the full force of the law and dismissed if deemed necessary. Contractors would be informed that any intentional poaching or littering within the project area could result in their immediate release. In addition, firearms and dogs would not be allowed within construction areas during construction.

5.1.2 Preconstruction Planning and Design

Page 5-2, column 1, paragraph 2, line 2. Add "NEPA document and" before "POD".

Page 5-2, column 1, paragraph 3, bullet 3. Replace "100 ft (31 m)" with "75.0 ft (22.9 m)".

5.1.2.2 Hazardous Material Containment

Page 5-3, column 1. Replace paragraph 3 with the following paragraph: "All project activities would be in compliance with the HMS for the project (Appendix J in the FEIS) and Windplant owners' SPCCPs (to be developed prior to construction of each phase)."

5.1.2.3 Stormwater Pollution Prevention Plans

Page 5-3, column 1, paragraph 4, line 8. Replace "would accompany the POD for each phase" with

"would be developed prior to construction of each phase".

5.1.3 Resource-specific Mitigation Summaries

5.1.3.1 Climate and Air Quality

Page 5-3, column 2, paragraph 1, bullet 3, line 4. Insert "where feasible" after "transformers". Bullet 5, line 2. Insert "where feasible" after "blades".

5.1.3.3 Minerals

Page 5-4, column 1, paragraph 2, line 7. Insert "(see Section 8.2.9 in the FEIS)" after "BLM".

5.1.3.4 Geologic Hazards

Page 5-4, column 1, paragraph 4, line 1. Insert ", subsidence areas," after "landslide areas". Line 5. Replace "during the POD/NTP process." with "during the NEPA analysis and POD process. Windplant facilities would be located to avoid abandoned underground mines to prevent subsidence damages. If construction occurs on mined-out areas, they would be inspected by a professional geologist or engineer prior to construction to determine potential hazards or safety concerns.".

5.1.3.6 Soils

Page 5-5, column 1, paragraph 1. Insert the following bullet before bullet 1: " • restricting off-road vehicle travel by workers;".

Page 5-5, column 1, paragraph 2, line 9. Insert "NEPA document and" before "POD".

Page 5-5, column 2, paragraph 2, line 4. Replace "to be included in the PODs" with "for each phase".

5.1.3.7 Water Resources

Page 5-5, column 2, paragraph 3, line 2. Replace "100 ft (31 m)" with "75.0 ft (22.9 m)".

Page 5-5, column 2, paragraph 4. Add the following sentence to the end of the paragraph: "Potential alteration of surface water runoff patterns due to snow redistribution would be minimized by avoiding snow accumulation areas, where feasible."

Page 5-6, column 1, paragraph 2, line 3. Insert "except for adherence to hazardous material management plans and SPCCPs" after "necessary".

5.1.3.10 Vegetation

Page 5-6, column 2, paragraph 3, line 8. Insert "future NEPA documents and" before "PODs". Add the following sentence to the end of the paragraph: "If reclamation is unsuccessful after 5 years, further BLM-approved reclamation measures would be implemented until successful revegetation is achieved."

Page 5-8, column 1. Insert the following paragraph after paragraph 2: "Snow accumulation areas would be avoided and proper snow removal techniques implemented to minimize changes in plant community composition resulting from snow redistribution."

5.1.3.11 Wildlife and Fisheries

Page 5-8, column 2, paragraph 3. Add the following sentence to the end of the paragraph: "Following construction, disturbed areas not required for O&M would be revegetated with a mixture of native grasses, forbs, and shrubs, where feasible."

Page 5-9, column 1, paragraph 2, line 5. Insert "Appropriate speed limits would be 45 mph for access and maintenance roads in good condition and 30 mph where visibility is limited." after "feasible".

Page 5-9, column 1. Insert the following paragraph after paragraph 2: "Nongame mammals. Much of the mitigation already listed for big game would also reduce impacts to nongame mammals.

Minimizing disturbance, adherence to speed limits, and reclamation following construction would reduce impacts to small mammals and other nongame animals. Avoidance of snow accumulation areas, where feasible, would minimize changes in plant community composition due to snow redistribution."

Page 5-9, column 1, paragraph 3, line 3. Insert "for future phases" after "associated facilities". Line 15. Replace "WTG-induced" with "collision-related".

Page 5-9, column 2, paragraph 2. Add the following sentence to the end of the paragraph: "However, ordinary operation of already-constructed Windplant facilities would not be required to be curtailed or modified in the event a bald eagle or peregrine falcon builds and uses a nest within 1.0 mi (1.6 km) of project facilities."

Page 5-9, column 2, paragraph 3, bullet 3. Insert "future NEPA documents and" before "the PODs".

Page 5-10, column 1, paragraph 2, line 4. Insert "unless the AO, in consultation with the WGFD, grants exception to this stipulation" after "at any time". Add the following sentence to the end of the paragraph: "Seed mixtures used during reclamation would contain shrub species."

Page 5-10, column 1, paragraph 3, line 7. Replace "avian" with "collision-related".

Page 5-10, column 1. Replace paragraph 4 with the following paragraph: "No mitigation specifically designed to reduce impacts to amphibians and reptiles would be applied; wetland mitigations (see Section 5.1.3.10 in the DEIS) would help reduce impacts to these animals."

5.1.3.12 Threatened and Endangered/State Sensitive Species

Page 5-10, column 2. Add the following paragraph after paragraph 2: "Prior to construction, surveys for other TE&C species would be conducted. If any individuals are found, their habitat would be avoided, where feasible."

Page 5-10, column 2, paragraph 3. Line 6. Delete "drilling". Add the following sentence to the end of the paragraph: "However, ordinary operation of already-constructed Windplant facilities would not be required to be curtailed or modified in the event a bald eagle or peregrine falcon builds and uses a nest within 1.0 mi 1.6 km) of project facilities."

5.1.3.15 Land Use

Page 5-12, column 2, paragraph 3. Add the following bullet after bullet 3: "• avoid active quarries and potential quarry areas, where feasible;"

Page 5-12, column 2. Add the following paragraph after paragraph 3: "Roads would be properly maintained. Vehicles would be maintained and muffled to reduce noise and odors. These measures would reduce impacts to recreational users due to construction, the presence of facilities, noise, dust, and odor.

5.1.3.16 Visual Resources

Page 5-12, column 2, paragraph 4, line 2. Insert "NEPA analyses and" before "POD". Line 3. Insert "Except for rotor blades, all" before "Aboveground". Line 6. Delete "(e.g., Carlsbad Canyon or Desert Brown)". Line 7. Replace "Turbine blades would be non-reflective white or some other color scheme determined to improve rotor visibility to birds." with "Selected turbine blades would be painted a black and white striped pattern; others would be non-reflective white. This scheme has been recommended by the USFWS to test the effectiveness of painted patterns on reducing collision-related mortality.".

Page 5-13, column 1. Insert the following section after paragraph 2:

"5.1.3.17 Hazardous Materials

Hazardous material management and SPCCPs would be adhered to, along with implementation of appropriate monitoring, containment, and disposal of hazardous materials."

5.2 MONITORING

5.2.2 Snow

Page 5-13, column 1, paragraph 5, line 6. Insert "NEPA documents and" before "POD".

5.2.6 Noise

Page 5-14, column 1, paragraph 1, line 5. Insert "for future phases" after "implemented".

5.2.11 Hazardous and Solid Waste

Page 5-14, column 2, paragraph 4, line 2. Delete "(to be included in the PODs for each phase)".

7.0 REFERENCES, ABBREVIATIONS, AND ACRONYMS

7.1 REFERENCES

Add the following references:

Electric Power Research Institute. 1989. The technical assessment guide, Vol. 1, Electricity Supply, EPRI P-6587-L. Palo Alto, California.

Estep, J.A. 1989. Avian mortality at large wind energy facilities in California: Identification of a problem. California Energy Commission.

Hausel, W.D., G.G. Marlatt, E.L. Nielsen, and R.W. Gregory. 1992. Preliminary Study of Metals and Precious Stones along the Union Pacific Right-of-Way, Southern Wyoming. Geological Survey of Wyoming Open File Report 92-5. 79 pp.

Hausel, W.D., G.G. Marlatt, E.L. Nielsen, and R.W. Gregory. 1994. Study of Metals and Precious Stones in Southern Wyoming. Geological Survey of Wyoming Open File Report 94-2. 61 pp.

Mariah Associates, Inc. 1995. Unpublished wildlife observation data for the KENETECH Windplant Project. Available at Mariah Associates, Inc., Laramie, Wyoming.

Society of Automotive Engineers, Inc. 1975. Standard values of atmospheric absorption as a function of temperature and humidity. SAE ARP 866A, March 1975. Warrendale, PA.

U.S. Geological Survey. 1994. Unpublished data.

7.2 ABBREVIATIONS AND ACRONYMS

Pages 7-21 through 7-24. Add the following abbreviations and acronyms:

BOD	Biological oxygen demand
Btu	British thermal unit
CT	Combustion turbine
DOE	Department of Energy
EPRI	Electric Power Research Institute
H_2S	Hydrogen sulfide
HMS	Hazardous Materials Summary
IGCC	Integrated gasification combined-cycle
KRCRA	Known recoverable coal resource area
kV/m	Kilovolts per meter
lb	Pound
MOA	Memorandum of Agreement
N.D.	No date
NO_2	Nitrogen dioxide
PAH	Polynuclear aromatic hydrocarbons
POM	Polycyclic organic matter
SO_x	Sulfur oxides

6.0 CONSULTATION AND PREPARERS

Page 6-1, Table 6.1, line 27. Insert "Brenda Vosika, Mining Engineer" after "Bob Tigner, Planning & Environmental Specialist".

Pages 6-2 and 6-3, Table 6.1. Replace "Native American Tribes" section in DEIS with the following:

Native American Tribes

Comanche Tribal Committee	Wallace Coffee	Chairman
Eastern Shoshone	John Tarnesse Hamen Wise	Spiritual Leader Traditional Leader
Lower Brulé	Dwayne Goodface	--
Minneconjous	James Picotte	Director
Northern Arapaho Tribal Council	Francis Brown Burton Hutchinson	Traditional Elder Chairman
Northern Cheyenne	Steven Brady William Tall Bull Llevando Fisher	Traditional Leader -- Chairman
Oglala Lakota Nation	--	--
Oglala Sioux Tribal Council	Philip Under Baggage Wilber Between Lodges	-- Chairman
Rosebud Sioux Tribal Council	William Kindle	President
Shoshone Tribal Council	Alfred Ward	Chairman
Southern Arapaho	Virgil Franklin Alton Harrison	-- --
Southern Cheyenne	William Fletcher George Sutton	-- --
Uintah and Ouray Ute Tribes	Betsy Chapoose	--
Uintah Ute	Clifford Duncan	--
White River Ute	--	--

Page 6-4, Table 6.1, line 33. Insert "Wyoming State Land Office, Harold Kemp, Assistant Director" after "Wyoming State Board of Equalization, Tom Roberts, Executive Secretary".

TSS	Total suspended solids
TOC	Total organic chemicals
VOC	Volatile organic compounds

Page 7-24, line 6. Change "Wind turbine generators" to "Wind turbine generator".

8.0 COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

BLM would like to thank everyone who reviewed the DEIS for their comments. For commenters who wrote in support of the project, BLM appreciates your review and acknowledges your contribution.

8.1 PUBLIC MEETINGS

Two public meetings designed to allow area residents and others to verbally comment on the proposed project were held, one in Rawlins on February 8, and one in Laramie on February 9, 1995. The attendance records and summaries of the questions asked during the meetings and BLM's responses are presented below. Transcripts of each meeting are available from the BLM.

8.1.1 Comments from Rawlins Public Meeting

At the Rawlins meeting, seven people made comments or asked questions. Mr. Steve Skordas of Arch of Wyoming read a prepared statement which is reproduced in full (see comment letter E). BLM's response is presented in Section 8.2.9 in the FEIS.

Mr. Jay Grabow asked whether the ROW grant would apply to the full 500-MW project or to the first 70.5-MW phase only. This issue is discussed in Section 1.0 in the DEIS.

Speaker 3 asked if ranchers holding grazing leases (in this area, these are grazing permits under Section 3 of the Taylor Grazing Act) on public lands would be reimbursed for the loss of land. Because only 1-3% of the land surface would be disturbed by the proposed development, BLM has concluded that there would be no significant reduction in forage production on lands within permitted grazing allotments; therefore grazing lease payments would not be affected. In the event that substantial amounts of forage are lost, BLM would determine any decrease in available forage and reduce the permit accordingly. No compensation is provided when public lands are removed from grazing leases, with the exception, under current (July 27, 1995) grazing regulations, that permittees are given a two-year notice that a portion of their permit would be reduced.

Speaker 3 also asked which parties are given priority when land use conflicts arise. Land use decisions are made through the public process (NEPA and land use planning regulations), on a case-by-case basis. No priorities are implied, except where valid existing rights occur. Livestock grazing is a privilege, and no rights are implied by issuance of a grazing permit.

Speaker 4 asked if the DEIS addressed the potential reduction in air pollutant emissions that could be realized by developing wind energy compared with fossil fuel power plants. This issue is discussed in Section 4.1.1 in the DEIS.

Speaker 5 asked: "How tall are the towers and how long are the rotors?" The towers would be 80-120 ft (24-37 m) tall and rotors would be 108-128 ft (33-39 m) in diameter, as described in Section 2.1.3.1 in the DEIS.

Speaker 6 asked how many towers would be installed. The first phase of development would consist of 201 machines. The full Windplant would consist of approximately 1,390 machines, as described in Chapter 1.0 in the DEIS.

Speaker 7 asked if the turbines proposed for this project would have the same size rotors as machines in use in California (in reference to bird mortality). There are a variety of turbine types in Altamont Pass. Most of the turbines associated with high collision-related mortality were older machines. The KVS-33 is thought to have several design features that would reduce avian mortality; these are discussed in Section 8.2.5 in the FEIS.

8.1.2 Comments from Laramie Public Meeting

Seven people spoke at the Laramie meeting. Mr. Myron Wakkuri of Elk Mountain Outfitters asked a question concerning the outdoor recreation accessibility of the project area during and after construction. Specifically, would the public be restricted from areas around turbines during construction or for the LOP? BLM responded that, during construction there probably would be some limitations on access in the vicinity of construction areas. Since towers and other facilities would not be fenced, BLM is not anticipating any restrictions on public access within the Windplant.

Ms. Cathy Moody of Laramie asked how long monitoring would continue, would it continue for the LOP, and how it would be financed. BLM responded that KENETECH would hire professionals approved by BLM and appropriate wildlife agencies to conduct monitoring studies. BLM intends to monitor until impacts can be assessed; however the monitoring program would be flexible so that it could be modified in response to the most important issues and concerns. Details of monitoring are described in Appendix B in the DEIS and Section 8.2.3 in the FEIS.

Mr. J.O. Mingle asked about the origin of the 72.8% capacity factor estimated for the Foote Creek Rim portion of the Windplant. KENETECH responded that the analysis is based on the peak periods of electric demand in Colorado. For example, the PSCo compared their peak demand for electricity during the daytime and during winter with the distribution of wind speeds for the same periods, and determined that the Foote Creek Rim portion of the project would have a capacity factor of approximately 72.8%. Section 1.1.2 in the DEIS describes estimated capacity factors for various types of power plants. See also response to comment AP20.

Mr. Mingle then asked if the estimated capacity factor included time spent on turbine maintenance. The estimated capacity factor includes time spent during maintenance. For the proposed project, most maintenance would be completed during summer months when winds are less strong and when there is less demand for electricity in the region. Therefore, the maintenance schedule is designed to have minimal effect on the estimated Windplant capacity factor during peak periods.

Mr. John Gilp of Laramie suggested use of a supersonic whistle on the tips of turbine blades to warn birds away from turbines. The Avian Task Force is presently examining numerous ways in which collision-related mortality may be reduced. Mr. Gilp also commented that utilizing wind for economic gain would have a positive effect on morale for Wyoming residents.

Mr. Kent Schulte raised the concern that the large scale of the proposed project would preclude development of smaller wind projects or other renewable energy projects in Wyoming. BLM manages public lands using a multiple use concept and does not favor any one type of use over another. In cases where development of various resources conflicts with other developments, the choice of one vs. another is made through BLM review processes. Although other companies have shown an interest in possible wind energy development in southern Wyoming, only one proposal has been received to date. The proposal is for a small windfarm near Medicine Bow (see Section 4.0 in the DEIS).

Mr. Schulte also asked what "rate of return" could be expected from the proposed project. BLM would charge a rental fee for public land within the ROW which would be based on the amount of land utilized for the project plus the amount of electricity generated. Rate of return (or profit), *per se*, is calculated by the utilities that own the Windplant or buy wind-generated electricity. Earnings are regulated by the Public Service Commission/Public Utility Commission within each state. Earnings from the Windplant would be subject to the same types of calculations and regulations as other power plants.

Mr. Alan Redder asked if there were existing tax incentives for wind energy production. The

Energy Act of 1992 provides for a 1.5-cent/kWh production tax credit or a 1.5-cent/kWh production incentive (the latter is only available to public utilities like EWEB). The tax credit and production incentive are also discussed in Section 8.2.1 and in the response to comment N2 in the FEIS. Mr. Redder also asked if any state or federal monies would be used to fund the proposed project. The project is being financed by private investors only. BPA and the utilities expect to recover the cost of the projects through their rates.

Edward Hillar asked who manufactures the machines and where they are made. The machines are assembled in California from parts manufactured throughout the U.S.

8.2 RESPONSES TO WRITTEN COMMENTS

Over 460 individual written comments were received on the DEIS. Table 8.1 presents a list of written comments received on the DEIS. Many commenters focused on the same issues, although comments also covered a wide variety of concerns, topics, and corrections. During comment review, BLM identified 12 distinct issues that were frequently raised:

- the alternatives analysis should have included analysis of alternative project locations;
- avian mortality legal issues;
- adequacy of the monitoring program;
- adequacy of baseline data;
- lack of executable mitigation;
- concern that future environmental review would not be subject to NEPA accountability if the POD process is used to permit future phases;
- the precedence-setting nature of the proposed project;
- the adequacy of the cumulative impacts analysis;
- coal resource development potential;
- impacts to recreation;
- requests for a supplemental DEIS; and
- possible undue risk to wildlife if the project is developed as proposed.

These 12 issues are discussed in detail in Sections 8.2.1 through 8.2.12, respectively, in the FEIS so that logical and complete responses could be formulated, instead of piecemealing these all-encompassing issues together as individual comment responses. However, many other topics were raised in the comment letters; these are addressed as individual comment responses. In some cases, it was appropriate to respond to a specific comment individually and as part of the all-encompassing discussions.

Because the issues concerning the alternative location analysis and the monitoring program are complex, Sections 8.2.1 and 8.2.3 are divided into subsections which address particular aspects of these issues. For example, the section discussing alternative project locations has several subsections including economic feasibility, landownership, environmental analysis of alternative locations, initial site screening, and federal policy on development of renewable energy. Where possible, individual comments are keyed to the specific subsection that addresses the comment. In cases where a comment is directed at the issue as a whole, the commenter is referred to the entire section.

Following the 12 sections concerning major issues, the FEIS includes a photocopy of each comment letter received, presented in chronological order of receipt (Section 8.2.13). Each letter was labeled with a letter or pair of letters (i.e., letter A was the first letter received, letter AV was last). During BLM review, every comment within each letter was identified and given a number. The commenter's name(s) appears at the top of each comment letter in Section 8.2.13 together with its alphabetical identifier. Responses to each comment are keyed back to the alpha-numeric identifier for each comment. For example, the USFWS comment letter is labeled letter "AS". BLM identified 13 individual comments within the letter, which are designated AS1-AS13; responses are thus keyed to comments AS1-AS13.

The letter/response section is formatted in a double-column, newspaper style; therefore, the

Table 8.1 Written Comments Received on the DEIS for the KENETECH/PacifiCorp Windpower Project.

Commenter	Letter Identification	Page No.
Carbon County Concrete, Inc.	A	8-29
U.S. Department of Transportation - Federal Highway Administration	B	8-29
Wyoming State Geological Survey	C	8-29
Louisiana-Pacific Corporation	D	8-30
Arch of Wyoming	E	8-31
U.S. Bureau of Mines	F	8-31
C. L. Rawlins	G	8-32
Carbon County School District No. 2	H	8-32
Jay C. Grabow	I	8-32
Lynne Hull	J	8-32
Town of Saratoga	K	8-33
Patrick C. Eastman	L	8-33
Willard E. Dilley	M	8-34
Bern Hinckley	N	8-34
Commissioners of Carbon County	O	8-35
Bow Area Economic Development Commission, Inc.	P	8-35
Kenneth and Joan Jones	Q	8-35
Town of Medicine Bow	R	8-36
Connie Scigliano	S	8-36
Edison Development Company	T	8-36
Sandra M. Frost	U	8-37
F. Earline Hittel	V	8-38
Lloyd Dorsey	W	8-38
Carbon County School District No. 2 - Board of Trustees	X	8-40
South Central Industrial Association of Wyoming	Y	8-40
John H. Collamer	Z	8-41
William Saylor	AA	8-41
Ted Lapis	AB	8-43
U.S. Environmental Protection Agency	AC	8-43
Wyoming Association of Professional Archaeologists	AD	8-44
Wyoming Game and Fish Department	AE	8-44
Wyoming State Land and Farm Loan Office	AF	8-62

Table 8.1 (Continued)

Commenter	Letter Identification	Page No.
Wyoming Department of Environmental Quality	AG	8-62
KENETECH Windpower, Inc.	AH	8-62
Frank and Lois Layton	AI	8-63
Wyoming Outdoor Council	AJ	8-64
Barbara Parsons	AK	8-64
Biodiversity Associates/Friends of the Bow	AL	8-64
Native Ecosystems Council and Friends of the Bow[1]	AM	8-70
Wyoming Heritage Society	AN	8-75
PacifiCorp	AO	8-75
Richard J. Guenzel	AP	8-76
Audubon Council of Wyoming	AQ	8-87
Union Pacific Resources - Minerals	AR	8-88
U.S. Fish and Wildlife Service	AS	8-88
Carbon County Coalition	AT	8-90
Governor of Wyoming	AU	8-90
Ronald R. Wiggins	AV	8-91

[1] Letter received during the initial scoping period.

section should be read from the top right to the bottom left of each page. Each letter is reproduced in its entirety and is followed by responses to comments.

8.2.1 Alternative Project Location

This section provides responses to the following comments: J1, S2, U2, U4, V1, W8, AE5, AE12, AE15, AE25, AE56, AE58, AE59, AE95, AE126, AI1, AK2, AL5, AL13, AL14, AL15, AL19, AM1, AP9, AP10, AP17, AP19, AP22, AP24, AP26, AP27, AP66, AP68, AP69, AP73, AP74, AP75, AP83, AP86, AP102, AP107, AP130, AS2, AS9, AS10, AV2, and AV4.

Several commenters asserted that a wider range of alternatives, especially an alternative project location, should have been evaluated. Federal agencies are required to consider a reasonable range of alternatives in their NEPA documents. According to CEQ regulations, when there are a potentially larger number of alternatives, only a reasonable number, covering the full spectrum of alternatives, must be analyzed (CEQ, *Forty Most Asked Questions Concerning CEQ's NEPA Regulations*, 46 Federal Register 18026, March 23, 1981. Answer 1b). Reasonable alternatives are those which 1) will effectuate the purposes of the project (*Residents in Protest--I-35E v. Dole D.* Minn 1984, 583 F. Supp. 653, 659), and 2) are "practical and feasible from the technical and economic standpoint and using common sense..." (*Forty Questions*, Answer 2a).

Evaluation of alternative sites was considered but rejected from detailed consideration during alternatives development, as described in Section 2.4 of the DEIS. Site selection has been dictated by conditions set forth by federal and state utility regulations and the quality of the wind resource. Extant data on the wind resources in southern Wyoming suggest that, while the proposed project area is not the only place windpower could be developed, it is the best, and, given today's power-generation market, it is the only feasible place for the proposed project.

However, economic feasibility is only one factor considered during BLM's evaluation of the project; other factors such as the ability to achieve the purpose and need for the project, initial site screening, landownership within the project area, prior agreements with private landowners, and federal policy to promote development of renewable energy resources are also considered as discussed below.

8.2.1.1 Economic Feasibility and Project Purpose and Need

This section addresses comments relating specifically to economic feasibility of other project locations, comments AE12, AE25, AK2, AL13, AL14, AL15, AL19, AM1, AP19, AP69, AP73, AP86, and AS9.

As stated in the FEIS, the purpose of the project is "to provide wind-generated electricity from a site in Wyoming and to develop a further market for Wyoming-sourced wind-generated electricity." The viability of wind-generated energy (and thus the potential to develop a market for it) is dependent upon the quality of the wind resource and costs of generating and transmitting windpower from a given site.

Electric utility companies have been obligated to protect public interest by providing reliable service at low cost since the inception of utility regulation. Past utility investments in new generation have had to withstand regulatory review to determine if investment choices would provide reliable, low cost electricity to consumers; failure to meet these requirements could not be recovered via increased customer rates (i.e., utility stockholders would bear the cost of the investment). This requirement that utility investments must be "least cost" creates a strong financial incentive for utilities to make new resource investment decisions which will withstand scrutiny by regulators. Under the current regulatory climate, a process of "least cost planning" or "integrated resource planning" is used to ensure the low cost criterion is met. Most state public utility commissions, including the Wyoming Public Service Commission, either

encourage or require utilities to utilize least cost planning for purposes of resource acquisition (Energy Policy Act of 1992). According to Public Law 102-486 (Energy Policy Act of 1992):

> "The term 'integrated resource planning' means in the case of an electric utility, a planning and selection process for new energy resources that evaluates the full range of alternatives, . . . in order to provide adequate and reliable service to its electric customers at the lowest system cost . . . "

This definition is consistent with resource acquisition activities of utilities in the Rocky Mountain region and the Pacific Northwest.

Because of least cost planning requirements, utilities are extremely sensitive to price and cost when making resource investment decisions; therefore, it is crucial that the highest energy/lowest cost windsite is utilized for wind energy to be competitive. Furthermore, although the Northwest Regional Power Act requires BPA to give priority to projects that employ renewable energy resources, BPA is under pressure to reduce costs.

Development at sites with less suitable winds than Foote Creek Rim (for Phase I) would result in higher kWh costs (Table 2.9 in the FEIS) and the project would not be economically feasible. If Phase I is not constructed on Foote Creek Rim, participating utilities would have legitimate cause to cancel their contracts and abandon the project. Utilities will not choose renewable energy if it is much more expensive than traditional resources. Therefore, requiring analysis of an alternative site would not meet the project purpose and need.

Commenters suggested that the Medicine Bow Project or other proposals for windfarms in the area would fulfill the purpose and need for the project such that the No Action Alternative might be appropriate. However, no other proposed project would fulfill the purpose and need because the proposed project is the only project for which utility contracts have been executed. Therefore, it is the only project for which there is a realistic opportunity to provide windpower. Furthermore, BPA has a near-term goal of determining the cost and availability of windpower. No other Wyoming projects are in sufficiently advanced stages of planning and permitting to be viable near-term options for meeting BLM's or BPA's purpose and need. The No Action Alternative, therefore, would not fulfill the project purpose and need.

To evaluate development of an alternative site, the Applicant would need extensive site-specific information including, but not limited to:

- Several more years of detailed site-specific meteorological data. The accuracy of estimated cost per kWh of wind-generated electricity improves as the accuracy of meteorological data improve. The ability of wind developers to provide prospective buyers with accurate cost estimates therefore necessitates acquisition of detailed data on the wind resource. Because utilities are encouraged or required to use least cost planning when acquiring new resources, and because windpower only marginally meets the "least cost" criteria, utilities cannot contract for windpower if there are large uncertainties in the cost per kWh estimates.
- Information on the ability to obtain control over the required land and the costs of leasing the land. Again, the land lease fees are a factor in the kWh cost estimates; therefore, if the developer is uncertain of these costs, reliable power costs cannot be provided to potential customers, and utilities would not be able to contract for windpower. Furthermore, if the necessary parcels cannot be obtained, alternative sites are not feasible.
- The ability to negotiate economic interconnection and wheeling agreements with BPA or utilities.

These data are available for the Foote Creek Rim and Simpson Ridge areas; to obtain these data

from other sites would be very costly. Existing meteorological data from other sites (listed in Table 8.2 of the FEIS) are less comprehensive and accurate than the Foote Creek Rim and Simpson Ridge area information; however, these data show that the annual wind speeds at other sites average 5.6 to 12.3 mph (2.5 - 5.5 m/s) slower than on Foote Creek Rim and are thus less than adequate to be competitive in a least cost planning market. These sites were not analyzed in detail because they are not feasible locations for this project. Although these sites may be feasible for other projects, additional factors described below are also considered in BLM's evaluation of the proposed project site.

In response to comments concerning an alternative project location, BLM enlisted Dr. John Marwitz, Professor of Atmospheric Sciences at the University of Wyoming and foremost expert on the wind in southern Wyoming, to complete an independent evaluation of potential alternative wind development sites in southern Wyoming. Dr. Marwitz evaluated two questions:

- Is the process that KENETECH uses to evaluate alternative sites for possible wind energy development a reasonable process (i.e., are the conclusions KENETECH has drawn concerning development potential of various sites founded on reasonable data and data analysis processes)?
- Are the wind regimes in the Foote Creek Rim and Simpson Ridge areas the best sites for wind energy development?

To answer the first question, Dr. Marwitz was provided with a detailed report on KENETECH's site evaluation process. Dr. Marwitz used his own data, collected over the last two decades, on the characteristics of wind in southern Wyoming to address the second question. Results of the independent analysis are presented in Appendix I in the FEIS.

Dr. Marwitz's analysis concludes that the process that KENETECH uses to evaluate potential sites for wind energy development is a reasonable process and that the Foote Creek Rim and Simpson Ridge areas would provide the best wind energy development potential within southern Wyoming. NEPA requires analysis of all reasonable alternatives which are "those that are practical or feasible from the technical and economic standpoint and using common sense rather than simply desirable from the standpoint of the applicant." Based on the results of the independent analysis, evaluation of an alternative location for the proposed project is not reasonable from an economic standpoint and is therefore not a viable alternative for indepth analysis.

8.2.1.2 Initial Site Screening

Specific comments addressed in this section include AE59 and AP74.

In 1992, during preparation of the application for a ROW grant, KENETECH defined the wind resource area for this project as the Foote Creek Rim, Simpson Ridge, and Dana Ridge areas in Carbon County. KENETECH conducted several initial site screening studies within the wind resource area prior to finalizing their application. The initial screening process is described below.

On August 13, 1992, Bruce Morley, now of KENETECH, met with Pete Petera, Director, and Thomas Collins, Environmental Coordinator of the WGFD to discuss wildlife concerns within the wind resource area. Based on this consultation, the Dana Ridge area was excluded from the project area because mule deer were known to migrate along the base of the ridge to access winter range. Based on review of extant data, WGFD made no recommendations concerning avoiding or excluding portions of the Foote Creek Rim or Simpson Ridge areas.

In addition to eliminating the Dana Ridge portion of the wind resource area from the proposed project area, the Simpson Ridge project area was enlarged, at BLM's request, to facilitate siting the development away from the Hanna raptor concentration area. KENETECH added approximately 27 sections to the eastern Simpson Ridge project area to accommodate BLM's request.

Table 8.2 Average Annual Windspeeds for Locations in Southern Wyoming.

Location	Period of Record	Average mph	Average m/s
Arlington	Feb 74 - Apr 81	15.7	7.0
Buzzard Ranch	Dec 76 - Nov 77	15.9	7.1
Coyote Springs	Oct 76 - Apr 81	12.8	5.7
Elk Mountain	Jan 75 - Apr 81	13.4	6.0
Ferris	Mar 78 - Feb 79	10.3	4.6
Fish Hatchery	Jan 78 - Apr 81	12.8	5.7
Medicine Bow Airport	Dec 76 - Apr 81	11.9	5.3
Medicine Bow Airport	1977	12.3	5.5
Medicine Bow Airport	1978	11.9	5.3
Medicine Bow Airport	1980	11.9	5.3
Medicine Bow - SE	Jan 78 - Apr 81	13.0	5.8
Medicine Bow - SW	Jan 78 - Apr 81	13.2	5.9
Red Desert	Dec 76 - Feb 79	9.2	4.1
Rock River North	Oct 76 - May 80	12.8	5.7
Rock River South	Oct 76 - Apr 81	13.0	5.8
Upper Fish Hatchery	Oct 79 - Apr 81	14.5	6.5
Upper Wheatland Reservoir #1	Sept 79 - Apr 81	13.4	6.0
Vortac	Sept 79 - Apr 81	15.2	6.8
Wheatland Reservoir #1	Jan 78 - Apr 81	12.1	5.4
Wheatland Reservoir #2	Jan 78 - May 79	12.3	5.5

Source: Dr. John Marwitz, Atmospheric Sciences Department, University of Wyoming, June 1995.

In 1993, KENETECH hired Mariah Associates, Inc. to compile background information on selected resources within the Simpson Ridge and Foote Creek Rim project areas to be used during project planning. The evaluation was designed to identify factors that would affect the timing or location of development activities. Extant information on wetlands, sensitive plants, wildlife, cultural resources, soils, and geologic features within the project area was assembled and made available to the BLM by KENETECH as part of the initial ROW grant application.

Based on existing data and consultation with WGFD and BLM personnel, it was determined that the project area was suitable for the proposed development pursuant to relevant federal, state, and local laws. No serious concerns (e.g., large areas of crucial game ranges) which would warrant reevaluation of the proposed project area were identified in the existing information.

8.2.1.3 Environmental Analysis of Alternative Sites

Specific comments addressed in this section include AE95, AE126, AI1, AP9, AP68, AP75, AP83, and AS2.

Baseline field data collected for the DEIS suggest that wildlife use within the Foote Creek Rim area is more extensive than could be predicted from extant data in 1993. In particular, data collected document raptor and mountain plover use of Foote Creek Rim; comments indicate that field study results warrant analyzing the Simpson Ridge area in more detail and analyzing another site. Data for the Simpson Ridge area are not sufficiently detailed to determine whether wind development there would have a greater, lesser, or equal environmental effects compared with Foote Creek Rim. Because future phases of development in the Simpson Ridge area are integral to the project as analyzed in the EIS, they need not be analyzed as independent alternatives (*Environmental Defense Fund, Inc. v. Costle*, D.C. Cir. 1981, 657 F 2d 275). At the time utility contracts for Phase I were signed, meteorological data indicated that windspeeds were higher on Foote Creek Rim compared with the Simpson Ridge area; therefore, the contracts specify Foote Creek Rim for Phase I development because the site had the highest likelihood of meeting the participating utilities' needs.

The types of data needed to thoroughly analyze other sites (e.g., raptor and mountain plover relative use and abundance, etc.) are not available. Alternative sites cannot be screened using a parameter for which no data are available. Because other sites are not currently economically feasible for this project, it is not reasonable to obtain the environmental data needed to screen these sites. If another wind project is proposed for alternative locations, appropriate environmental data (e.g., raptor use data) would be collected and evaluated.

8.2.1.4 Landownership

Of the 60,619 ac within the project area, BLM manages approximately 16,973 ac (28%). Approximately 37,584 ac (62%) are privately owned. For Phase I, approximately 960 acres (19%) are federally owned, 640 acres (13%) are owned by the state, and 3,400 acres (68%) are privately owned. KENETECH has agreements in place with private landowners to lease their lands for Windplant development and an easement from the Wyoming State Land and Farm Loan Office for use of approximately 6,080 acres of state trust land in Carbon County. If BLM requires project relocation to an alternative site, these private landowners would lose income from their leases with KENETECH. Furthermore, KENETECH would have to negotiate leases with landowners in other potential sites to obtain information required to analyze the cost factors, although the wind resource in those areas is already known to be inferior to the proposed area such that they are not economically viable. Local communities and Carbon County would lose the economic and employment benefits (i.e., property taxes, impact assistance payments, increased employment) if the alternative site location is outside the county. Federal land, although it comprises a minority of

the project area, is needed to support an action occurring mostly on private land; the concerns of private landowners must be a factor in BLM's evaluation.

8.2.1.5 Federal Policy to Promote Development of Renewable Energy Resources

In 1992, in Rio de Janeiro, Brazil, and in 1994, in Berlin, Germany, world leaders and citizens from more than 200 countries assembled to address the issue of global warming. The mission is to "provide a higher quality of life for ourselves and a brighter future for our children". On an international scale, reduction of greenhouse gas emissions is being pursued by over 150 countries. On a national scale, the U.S. Federal Government is actively pursuing reducing greenhouse gas emissions. As a federal agency, BLM must observe the overall goals of the federal administration.

In 1993, the Clinton Administration issued the Climate Change Action Plan to reduce green house gas emissions to 1990 levels by the year 2000. The Action Plan includes measures to reduce all significant greenhouse gases, and it targets all sectors of the economy that emit greenhouse gases, from energy production companies to the forestry industry. The Action Plan recognizes that there are no simple methods for reducing emissions, but opportunities to reduce greenhouse gas emissions in cost-effective ways are distributed throughout the economy. The plan requires extensive cooperation among all levels of the administration, from Cabinet Secretaries and Administrators to program managers and staff within agencies. As a result of the federal directive, the Department of Energy (DOE) has obtained agreements from utilities nationwide to voluntarily reduce greenhouse gas emissions. Participating utilities are using a variety of techniques to reduce emissions, including but not limited to, improving the efficiency of generation and transmission, switching to lower-carbon fuels, ***investing in renewable generation***, enhancing the performance of existing hydropower and nuclear resources, improving conservation management programs, and undertaking forestry projects. The DOE is also expanding utility Integrated Resource Planning by:

- "increasing federal technical and financial support to state regulatory commissions to make utility investments in energy efficiency as profitable as supply side investments and for more effective demand and supply side planning; and
- increasing federal support for removing regulatory barriers to increased use of renewables and natural gas." (The Climate Change Action Plan, President William J. Clinton and Vice President Albert Gore, Jr., October 1993).

Federal support for development of renewable resources is not limited to the EPA and DOE. In 1994, the USFWS issued a statement supporting "the Administration's goal of developing and expanding renewable energy sources such as windpower. Therefore, the Service will assist the windpower industry with development of windpower technology that is not detrimental to wildlife."

While these agencies have stated policies to promote development of renewable energy resources, federal policy does not mandate renewable resource development that is not cost effective. For example, the Federal Energy Regulatory Commission recently ruled that state governments may not require utilities to purchase renewable energy at costs above avoided cost (the cost utilities avoid by investing in existing resources rather than investing in new power-generating facilities to meet demands). In addition, BPA is facing extreme price competition in the Pacific Northwest power market. BPA is under increasing pressure to reduce costs and will probably reduce their investment in renewable energy projects if these projects are not cost-competitive. Therefore, while there is a stated goal to develop renewables, there are also federal regulations in place that prevent developments that are not cost effective. President Clinton's Climate Action Plan calls for removal of these restrictions,

but, at present, cost still drives utility resource planning.

8.2.1.6 Summary

Specific comments addressed in this section include AE56. BLM considered the following factors to determine whether it was reasonable to analyze an alternative project location in detail:

- economic feasibility of other locations,
- results of initial site screening for serious concerns at the proposed site,
- practicality of completing an environmental analysis of alternative locations,
- proportion of federal land in the project area and existing agreements with private landowners, and
- federal policy on development of renewable energy resources.

Based on analysis of these factors, BLM determined that an alternative site would not be analyzed in detail.

NEPA requires federal agencies to consider a reasonable range of alternatives to a proposed action that will avoid or minimize adverse effect of these actions on the quality of the human environment. Alternatives analysis is governed by the rule of reason (i.e., an agency need only explore and evaluate reasonable alternatives [*Natural Resources Defense Council, Inc. v. Morton* (D.C. Cir. 1972) 458 F.2d 827, 834, 837; 40 C.F.R. 1502.14(a)]). When there are a potentially large number of alternatives, only a reasonable number, representing the full range of alternatives, need be examined in detail. For alternatives eliminated from detailed examination, an EIS need only briefly discuss the reasons for their elimination.

The range of alternatives to the Proposed Action BLM considered in the DEIS included a 40% reduced project, alternate project locations, an expanded or reduced project area, a one-phase project, and alternative energy sources -- these represent a full range of possible alternatives to the Proposed Action. Alternatives such as other turbine designs and facilities placement were not treated as alternatives because these types of technological design changes and facilities placement would be used as mitigation measures (i.e., the potential for making these types of changes is built into the Proposed Action and Alternative A). Pursuant to CEQ regulations, the DEIS briefly discusses reasons for eliminating several alternatives from detailed analysis. Therefore, given the siting constraints described above and the purpose and need for the project, a reasonable range of alternatives was evaluated.

8.2.2 Avian Mortality Legal Issues

Specific comments addressed in this section include W6, AC1, AE8, AE42, AE61, AE114, AE124, AE128, AL4, AL8, AL9, AL12, AM5, AP50, AP83, AP132, AP133, and AS11.

Several commenters expressed concern with potential violations of the MBTA, BEPA, and ESA arising from bird deaths at Windplant facilities, particularly collisions with turbine blades. Commenters suggested:

- dealing explicitly with the potential for violating laws;
- consultation with USFWS regarding acceptable compliance with these laws and efforts to "reasonably minimize the take of birds" and to document that consultation in the FEIS;
- disclosure of any permits issued, and outlining all requirements of the issued permits;
- acquisition of state and federal take permits is not mitigation as indicated in Table 2.11, page 2-42.

Avian mortality at wind energy facilities and potential violations of federal laws were identified during the scoping period for this project and are discussed in detail in Section 4.2.3.3 of the DEIS. During the spring and summer of 1994, BLM held three agency coordination meetings with USFWS and WGFD to discuss wildlife-related issues,

including legal and regulatory requirements of the MBTA, BEPA, and ESA.

In the DEIS, BLM cited and summarized relevant laws, identified procedures within the framework of the regulations by which takes could be permitted, and discussed probable procedures that could be followed based on USFWS regulations and policy. This presentation was developed in consultation with USFWS personnel.

At present, USFWS requirements have not been identified; KENETECH and USFWS are still in consultation to define permit requirements for this project. The USFWS letter commenting on the DEIS (letter AS) gives the best indication of how USFWS would enforce the MBTA, the BEPA, and the ESA relative to the proposed project. They state, "We anticipate issuing a special purpose permit under the MBTA to permit any such take. Incidental take of species listed under the ESA (bald eagles and peregrine falcons) will be handled through either Section 7 consultation or by a permit . . . Appropriate procedures for dealing with take under the BEPA are under consideration at this time." It is possible that no permit would be issued for take under the BEPA. If this is acceptable to USFWS and KENETECH, mortality studies would be monitored by USFWS; in the event of excessive mortality, USFWS would complete a thorough investigation to determine the extent, if any, of negligence on KENETECH's part to use all available information and technology to minimize mortality. The USFWS enforcement division is mandated to enforce the law; negligence is punishable by fines and imprisonment.

This may appear to suggest that the project would be authorized knowing that BEPA violations could occur. Although any death of an individual of a protected species may be a violation of the law, there is some disagreement in case law with respect to unintended mortalities or mortalities resulting from a species' interaction with altered habitats. Courts have reasoned that unintentional harm involving collisions or other passive circumstances do not trigger strict liability, and instead, call for examination of the reasonableness of the care taken [*United States v. FMC Corporation*, 572 F.2d 902, 908 (2d Cir. 1978) (pesticide contaminated lagoon); *United States v. Corbin Farm Service*, 444 F. Supp. 510, 535-536 (E.D. Cal. 1978) (pesticide applied in agriculture)' *United States v. Rollins*, 706 F. Supp. 742, 743-744 (D. Idaho 1989) (same); *Sweet Home Chapter v. Babbit*, 17 F.2d 1463, 1565 (D.C. Cir. 1994) (cert. granted 63 U.S.L.W. 3400, January 6, 1995). Examination of the efforts made to reduce mortality is consistent with the investigation procedures described above.

BLM agrees with the commenters who assert acquiring state and federal permits is not mitigation. However, permit provisions may include mitigation measures. Table 2.11 has been revised.

The following sentence has been added to the end of Section 4.2.3.3. "This EIS evaluates the full range of estimated avian mortalities and impacts (other than those related to other protected wildlife species) which might be covered by such permits or stipulations, if any, for the first phase of the project."

8.2.3 Monitoring Program

Specific comments addressed in this section include S3, S5, S6, AC1, AE1, AE10, AE11, AE14, AE30, AE57, AE78, AE89, AE116, AE123, AE127, AE128, AE133, AE151, AE162, AI1, AK1, AL7, AL19, AL20, AL27, AL29, AM3, AM5, AO2, AP3, AP10, AP12, AP17, AP22, AP31, AP32, AP34, AP36, AP57, AP81, AP89, AP104, AP109, AP118, AP147, AP154, AP158, AP162, AP163, AP168, AP169, AP170, AP173, and AS8.

Several commenters questioned the adequacy of the monitoring program. In particular, comments included:

1) the need for more intensive monitoring of T&E species known to use the project area and/or more intensive monitoring in general;

2) concerns that the weight of evidence approach to be used during monitoring will not adequately identify impacts;
3) establishment of criteria to initiate more intensive monitoring such as raptor population studies; and
4) concerns about the adequacy of some of the proposed field methods.

Note: The terms "baseline" and "monitoring" are used somewhat interchangeably in the DEIS and by various commenters. The terms overlap to some degree. For the purposes of the draft and final EIS for this project, baseline studies refer to data collected prior to development and should be considered "baseline monitoring". These data were collected from February 1994-March 1995 under the protocols described in Appendix A of the DEIS and from March 1995 and into the future using protocols described in Appendix B in the DEIS. Monitoring studies include all research conducted to determine project impacts, which would include data collected prior to, during, or after development ("post-development monitoring"). Comments questioning the adequacy of baseline data or baseline monitoring are addressed in Section 8.2.4.

8.2.3.1 Adequacy of Monitoring Program

Specific comments addressed in this section include S3, S5, S6, AE78, AE89, AE116, AE133, AL27, AP3, AP31, AP32, AP57, AP81, AP104, AP109, AP118, AP147, AP154, AP162, AP163, AP168, AP169, and AP170.

BLM concurs that monitoring intensity should be based on the level of concern for wildlife within the project area (e.g., all raptors [especially T&E species], mountain plover, big game, and sage grouse). The monitoring program employs surveys ranging from very intensive (e.g., raptor nest and carcass searches) to less intensive (e.g., prey base surveys). Each of the studies is designed to detect change; but not necessarily the causes of change. Once a change is detected, it would be the technical committee's responsibility to evaluate the impact (e.g., importance to a specific population) and recommend additional studies, if necessary, to determine cause-and-effect relationships.

For raptors, the variables being studied are key parameters that influence populations: identification of preferred hunting, foraging, and nesting areas; prey abundance; reproductive success; and collision-related mortality. Mountain plover foraging and nesting habitat and reproductive success would also be examined. To intensify the monitoring program (as requested by several commenters), BLM would have to:

- increase the level of effort spent evaluating the variables listed above,
- examine more variables, and/or
- implement population studies.

The proposed level of effort is commensurate with the level of concern for important biological functions of species at risk. For example, impacts to raptor reproductive success is a key concern, and thus, complete nest censuses of very large areas are being conducted. After several years of census, raptor territories would be identified, providing an important index to the health of local raptor populations. Carcass searches also would require a high level of effort because the data collected are critical to determining direct project impacts. The proposed level of effort should be adequate to detect changes in the variables being studied. However, if large numbers of mortalities are observed, but other studies are not detecting impacts, the monitoring program would be reevaluated.

The variables being examined are key to monitoring populations and are the most direct means for examining project impacts. If these key variables indicate substantial adverse changes in a given population, it may become appropriate to study additional variables. This would be evaluated by the technical committee.

Population studies typically require marking birds with radio-collars or wingtags and intensively monitoring a sample of the populations of concern. The WGFD has repeatedly stated that marking

birds, especially sensitive species, is not necessary unless the variables being monitored indicate that the Windplant may be having a substantial effect on one or more populations (personal communication, September 1994, with Bob Oakleaf, Nongame Coordinator, WGFD). The monitoring program (Appendix B of the DEIS) clearly states that population studies would be implemented if necessary (i.e., in the event that relative use, relative abundance, or reproductive success appears to be adversely affected by the Windplant or high mortality rates are observed). The technical committee would be responsible for evaluating data; assessing impacts; evaluating population studies, if needed; and recommending appropriate mitigations (see Section 8.2.3.2).

For big game, the monitoring program is designed to determine if big game are displaced from habitat in the Windplant area. More intensive study, such as tracing big game movements using radio-collars is not deemed necessary unless monitoring reveals that the Windplant is causing loss of habitat function within the project area. The technical committee would have the responsibility for evaluating the impacts, recommending implementation of more intensive studies (if necessary), and suggesting appropriate mitigations. A similar level of study is proposed for sage grouse.

In summary, the proposed monitoring studies are of sufficient intensity to detect changes in the most important variables affecting populations of concern. More intensive studies would be implemented if monitoring results indicate substantial Windplant-related effects on these populations, or if large numbers of mortalities are observed and the monitoring program is not detecting change in the parameters being studied. The technical committee would have the responsibility to recommend implementation of more intensive studies if the weight of evidence suggests that such effects are occurring. In addition, monitoring results from prior phases would be included in the NEPA documents for future phases (i.e., there would be full public disclosure and opportunity for public participation).

8.2.3.2 Criteria for Initiating Additional Studies

Specific comments addressed in this section include AE123, AE162, and AP173.

For species protected by the MBTA, BEPA, and ESA, the USFWS would set criteria for initiating more intensive studies as permit stipulations or in a Memorandum of Agreement (MOA) with the BLM and KENETECH. If an agreement on minimizing impacts cannot be made during consultation and negotiation, and if the operation of the project caused an asserted violation of federal law to occur (e.g., under the ESA), the USFWS (in conjunction with other federal agencies) could initiate legal proceedings to enforce the provisions of such law. These proceedings may lead to a court order requiring appropriate additional studies to be conducted. If project operation resulted in a violation of stipulations promulgated in the ROW grant, BLM may require additional studies to work towards correcting the violation or revoke the ROW grant on public land if KENETECH fails to correct the violation. For other species, criteria would be developed by the technical committee when more data on impacts are available. It is inappropriate to develop the criteria for inclusion in the FEIS because it would require exhaustive discussion of "if/then" speculative scenarios; it would also bind BLM to a set of criteria based on limited data which therefore may not be appropriate. Additional data would be evaluated as they are collected. Experts on the technical committee would determine criteria for supplementing or reducing the monitoring program.

8.2.3.3 Technical Committee

Specific comments addressed in this section include AC1, AE151, AK1, AL27, AO2, AP12, AP36, AP147, and AS8.

The technical committee is a key element to the success of the monitoring program because they

would assist BLM to evaluate and weigh the evidence collected during monitoring, identify project impacts, and evaluate mitigations. The technical committee would act in concert with the BLM IDT, advising the BLM AO throughout the authorizing process for each phase.

The technical committee would be formed during 1995 and would consist of personnel representing the BLM, USFWS, WGFD, and KENETECH. Each agency and KENETECH would appoint one to three people to serve on the committee; BLM would hold a kick-off meeting for committee members within six weeks of issuing the NTP for Phase I. Membership would be somewhat ad hoc, enabling participating parties to involve individuals to a degree based on specialties required, interest, and other commitments.

The technical committee's principal objectives would be to identify project-related impacts on wildlife and develop additional proposed mitigations for any unexpected impacts identified. The committee would perform a variety of tasks including, but not limited to:

- preparing a charter to describe committee functions, responsibilities, and goals;
- evaluating monitoring results from Foote Creek Rim, Simpson Ridge, and the off-site reference area;
- reviewing monitoring methods and recommending changes or additions (e.g., population studies), if deemed appropriate;
- developing and recommending mitigation measures for any unexpected impacts identified during monitoring;
- making recommendations for Windplant modifications (i.e., paint patterns, relocation of specific turbines, or other non-capital retrofits) based on monitoring data;
- evaluating monitoring data from other windfarms;
- reviewing research results from the Avian Task Force;
- working with KENETECH to recommend design alternatives for future phases; and
- advising the BLM AO, in cooperation with the BLM IDT.

As described in Section 8.2.6, the authorizing process would include NEPA analysis, a ROD, preparation of a POD, and issuance of an NTP. Technical committee responsibilities would begin as soon as the NTP for Phase I is issued. The technical committee would be expected to be involved in the primary steps of the authorization process for subsequent phases, beginning with preapplication planning with KENETECH, review of the application, provision and interpretation of data during preparation of the NEPA document and the POD, and advising the BLM AO, in cooperation with the BLM IDT, during decision-making.

The committee would meet a minimum of once annually but may conduct more frequent meetings, especially during the development of their charter and the initial review of monitoring information, particularly if substantial mortality occurs due to development of the first phase. The committee charter would describe the mechanisms by which committee members could call technical committee meetings in addition to the regular annual meeting. The technical work of the committee would be conducted during closed meetings to facilitate constructive discussion and prompt resolution of technical issues. After the technical discussions, the meeting would be opened to the public, and a summary of the minutes and resolutions would be presented. The public would have the opportunity to comment on the progress and adequacy of the monitoring studies.

KENETECH would be responsible for preparation of an annual monitoring and technical report, which would be made available to the public. The report would include a description of the technical committee activities for the year and a discussion of recommendations and actions promulgated by the committee.

The technical committee would be disbanded when it is determined that monitoring is no longer necessary. Monitoring would be terminated if 1)

impacts are shown to be minimal and adequately mitigated (as determined by the AO) or 2) the Windplant is decommissioned and all disturbed areas are reclaimed.

8.2.3.4 Criteria for Cessation of Windplant Operations

Specific comments addressed in this section include AE14, AL7, AL19, AL20, AL29, AM3, and AM5.

The DEIS clearly indicates that impacts could be significant, and because of this potential, BLM has committed to monitoring impacts. Monitoring is necessary to collect project-specific data on potential wildlife impacts. BLM would use the consultative process embodied in the technical committee to ensure maximum reduction of impacts. If the operation of the project caused an asserted violation of federal law to occur (e.g., under the ESA), then the USFWS (in conjunction with other federal agencies) could initiate legal proceedings to enforce the provisions of such law. These proceedings may lead to a court order limiting or enjoining project operation until specified actions are taken or other conditions met. If project operations resulted in a violation of stipulations promulgated in the ROW grant, BLM may require KENETECH to take measures to correct the violation and may revoke the ROW grant for use of public land if KENETECH fails to correct the violation.

8.2.3.5 Adequacy of Monitoring Field Methods

These issues are addressed in Section 8.2.13, Responses to Individual Comments.

8.2.4 Adequacy of Baseline Data/Uncertainty of Impacts

Specific comments addressed in this section include S3, S5, AE1, AE3, AE6, AE13, AE30, AE32, AE38, AE39, AE50, AE63, AE69, AE71, AE79, AE84, AE88, AE89, AE106, AE110, AE112, AE126, AE130, AE133, AE135, AL11, AL22, AL23, AL32, AP3, AP4, AP10, AP22, AP31, AP32, AP34, AP37, AP47, AP89, AP90, AP92, AP103, AP104, AP118, AP119, AP125, AP128, AP158, AP162, AP164, AP165, AP166, AP167, AP168, and AP169.

Several commenters questioned the adequacy of baseline data, including the following:

1) baseline data are not adequate to quantitatively evaluate project impacts (i.e., are not adequate to make an informed decision),
2) the project should be delayed until adequate baseline data are collected,
3) baseline data are not adequate to detect impacts during monitoring (i.e., to make meaningful comparisons with monitoring data), and
4) baseline data are not adequate to develop effective mitigation measures.

Pursuant to 40 C.F.R. 1502.22, BLM acknowledges that baseline data for some resources are insufficient to precisely estimate impacts or to develop complete mitigations for impacts prior to project development. The DEIS discloses the uncertainty of project impacts to certain resources, especially raptors. For example, on page 4-46 of the DEIS, it is stated "The proposed Windplant would be the first industrial scale Windplant in Wyoming, and potential raptor mortality is unknown."

With respect to No. 1 above, complete environmental information is never available for any affected environment. Considering the size of Wyoming and its remoteness, there is very little environmental information about most areas. The conventional practice in NEPA analysis is to use extant information unless critical issues compel the gathering of additional data. For the KENETECH project, additional data were collected for noise, snow, visual quality, avian use, and raptor nesting.

Determination of whether additional data should be collected for any NEPA analysis is governed by a "rule of reason". Federal officials balance the need, cost, utility, and applicability of data that could be obtained when deciding to collect

additional data. Considering the variability of environmental factors that influence wildlife populations, three years of baseline data will not provide (with any certainty) a complete picture of those populations. Balancing this uncertainty with the cost of collecting the data, BLM's position as a minority landowner in the project area, and the loss of potential income to adjacent private landowners and the applicant has led BLM to determine that existing data are sufficient to make an informed and reasonable decision on the KENETECH project.

Absolute certainty of impacts cannot be obtained with more baseline data. Because of this inevitable uncertainty, BLM is requiring monitoring through which impacts would be evaluated. Furthermore, given the weight of evidence from existing data, the DEIS has stated that impacts would or may be significant for many important resources (e.g., all avian wildlife, elk, noise, visual resources) which gives substantial weight to these resources during the decision-making process.

Based on review of case law pertaining to adequacy of baseline data [e.g., *Scientists' Institute for Public Information v. Atomic Energy Commission* (D.C. Cir. 1973) 481 F.2d 1079, 1092], BLM has determined that the requirement that an EIS describe the impacts of a proposed action is subject to a rule of reason, and one of the functions of the EIS is to indicate the extent to which impacts are unknown. Baseline data need only be sufficient to enable BLM to make an informed decision in selecting one of the alternatives analyzed in the DEIS. Pursuant to NEPA (especially 40 C.F.R. 1502.15, 1502.16, and 1502.22), BLM analyzed data from a wide variety of sources, including the collection of over a year of data on avian wildlife, to assess potential impacts. The DEIS provides sufficient information to suggest that some impacts could be significant, and analysis of additional baseline data cannot provide greater weight to consideration of these resources during decision-making.

It also should be noted that BLM has not yet issued the ROD for this project, and baseline data for the purposes of decision-making are still being analyzed. Because of the thorough analysis presented in the EIS, BLM believes that existing data are sufficient; however, BLM has the authority to require additional data collection and analysis if, during decision-making, it is determined that baseline data are inadequate to make an informed decision.

The unavailability of definitive baseline data does not violate NEPA [see, for example, *Scientists Institute for Public Information v. Atomic Energy Commission*, 481 F.2d 1079, 1092 (D.C. Cir. 1973); *Jicarilla Apache Tribe v. Morton*, 471 F.2d 1275, 1280-1281 (9th Cir. 1973)]. As the court said in *Jicarilla*, "If we were to impose a requirement that an impact statement can never be prepared until all relevant environmental effects were known, it is doubtful that any project could ever be initiated." BLM concurs that additional data gathering would yield additional perspective, but it is clear that there is no reasonably foreseeable impact of such significance to warrant delay of Phase I development.

With respect to No. 2 above, although agencies have affirmative information gathering responsibilities, NEPA does not preclude agencies from pursuing a project because its environmental effects are speculative or unknown (*State of Alaska v. Andrus*, D.D. Cir 1978, 580 F.2d 465, 473 *vacated in part on other grounds*, *Western Oil and Gas Ass'n v. Alaska*, 1978, 439 U.S. 922). Furthermore, the rule of reason dictates that an agency need not delay a project pending receipt of additional information. Uncertainty is one of the factors considered during the decision-making process.

Where environmental impacts are uncertain, it is within an agency's discretion to decide that the benefits of a project outweigh the benefits of delaying the project pending receipt of additional information. Several factors may influence an agency's decision on delaying a project, including but not limited to, the possibility of obtaining

more information, the value of information obtained relative to decision-making, and the consequences of delay. If the BLM chose to delay the project until more information is acquired, the project would be cancelled and the purpose and need would not be fulfilled.

With respect to No. 3 above, collection of more baseline data may improve the probability of detecting impacts during monitoring, but it is impossible to know how useful additional data would be relative to the cost to obtain it. KENETECH would provide at least three years of baseline wildlife data from the Simpson Ridge area prior to development in that area unless environmental concerns make Foote Creek Rim unsuitable for development. BLM and the WGFD agree that it is not reasonable to collect three years of baseline data on Foote Creek Rim prior to development because this would represent an unacceptable project delay.

In response to No. 4 above, the Avian Task Force work has led to an increased confidence that the combination of tubular towers, upwind machines, lower rotor speeds, and painted patterns on rotors should result in reduced levels of collision-related mortality. These substantial mitigations are built into the Proposed Action and Alternative A. At present, it is not possible to predict how the project size and spacing or avian use patterns will affect actual mortality rates; as such, additional mitigation measures cannot be developed until impacts are evaluated. BLM has committed to assessing wildlife impacts during monitoring. Development of appropriate mitigation measures would be determined by a technical committee who would be responsible for scrutinizing monitoring data (including avian mortality data at Foote Creek Rim and three years of baseline data from the Simpson Ridge area), evaluating the nature and degree of impacts, and developing additional mitigation measures. Work completed by the technical committee would be an essential part of NEPA documents prepared for each subsequent phase of development. Pursuant to NEPA, data collected from prior phases would be included in subsequent NEPA documents.

8.2.5 Mitigation

Specific comments addressed in this section include AE4, AE9, AE11, AE15, AE17, AE18, AE19, AE21, AE36, AE37, AE39, AE41, AE43, AE53, AE96-98, AE103, AE104, AE106, AE110-112, AE116, AE118, AE128, AE133, AE136, AE137, AE139, AE142, AE147, AK1, AL1, AL2, AL3, AL5, AL6, AL9, AL18, AL19, AL30, AP6, AP8, AP10, AP11, AP13, AP15, AP17, AP22, AP31, AP33, AP40, AP41, AP46, AP48, AP49, AP52, AP53, AP54, AP62, AP63, AP65, AP77, AP79, AP82, AP83, AP101, AP104, AP105, AP108, AP109, AP117, AP135, AP137, AP144, AP153, AP154, AP155, AP157, AP158, and AP163.

Several commenters asserted that BLM failed to develop sufficient mitigation for impacts, especially impacts to wildlife. Commenters stated that:

- executable mitigation measures are needed,
- mitigation would not be achieved via the POD process,
- the DEIS should set forth a range of contingencies for mitigation,
- off-site mitigation should be proposed for impacts that cannot be mitigated on-site, and
- project impacts on private lands should be mitigated.

Some executable mitigation for anticipated impacts has been designed, by KENETECH and PacifiCorp, into the Proposed Action. For example, the Proposed Action includes the use of tubular instead of lattice towers; the Avian Task Force has indicated that tubular towers may substantially reduce risk to raptors. Furthermore, upwind, variable speed machines are also thought to reduce risk to avifauna. Some rotor blades would be painted with a pattern recommended by the Avian Task Force; application of this mitigation on a test basis would be determined by the USFWS. The transmission line would be constructed to prevent raptor electrocution. Furthermore, during initial planning, the site was

located away from known mule deer migration corridors and raptor nest concentration areas. Other executable mitigations (e.g., reclamation of disturbed areas) are also included in the DEIS (see Chapter 5.0 in the DEIS and FEIS).

BLM concurs that for some potential impacts such as big game displacement from habitat in the vicinity of the Windplant, executable mitigation measures have not yet been developed. As data are obtained and analyzed, it may be possible to develop appropriate mitigation measures; this would be one of the primary functions of the technical committee. However, NEPA does not require agencies to develop a complete plan to mitigate environmental harm before the agency can act (*Robertson v. Methow Valley Citizens Council*. 1988. 490 U.S. 332, 350). NEPA is essentially procedural; it does not mandate results, but prescribes the necessary process. NEPA clearly mandates agencies to discuss mitigation, but does not require agencies to mitigate if the agency decides other values outweigh the environmental costs.

Consistent with NEPA, CEQ regulations state that agencies may choose to approve projects without requiring all feasible mitigation [40 C.F.R. 1505.2(c)]. The DEIS for the project need only discuss and evaluate practicable mitigation measures so the BLM can make an informed decision. The DEIS contains an extensive discussion of potential mitigation measures which make such a choice possible.

Mitigation measures are presented in Chapter 5.0 of the FEIS. They are further detailed in the POD for Phase I, and as such, are incorporated into the Proposed Action and conditions of approval in the ROW grant. As the project proceeds, deficient measures would be modified.

BLM's position is that NEPA is procedural. NEPA requires BLM to first identify impacts and then use the analysis process to examine, develop, and implement measures that will minimize impacts from the Proposed Action. NEPA does not require all impacts to be mitigated, nor does it require development of measures in anticipation of any and all impacts (see FEIS, Section 8.2.5). BLM has proposed mitigation for ***reasonably*** expected impacts. The monitoring and subsequent phase analysis will allow identification of unanticipated impacts and implementation of appropriate mitigation measures.

NEPA requires consideration of only reasonable and practicable mitigation. Many impacts from the wind energy project are uncertain or cannot be determined at this time. BLM has required those measures that are tied to known impacts or that are accepted as reasonable and prudent procedures. For uncertain impacts, rather than developing a suite of potential measures, many of which may prove to be unnecessary, BLM is proposing a phased development with NEPA analysis prior to approval of each phase. The extensive environmental and project monitoring will allow implementation of mitigation measures when adequate information demonstrates their necessity.

BLM does not have the authority to impose federally required mitigation measures on private land. This is not inconsistent with NEPA because it is not practicable to impose requirements where BLM has no legal authority to do so. Where the landowner agrees, KENETECH has committed to follow BLM mitigation measures on private land.

Because of the numerous comments concerning the reliability of the POD process to permit future phases, BLM would conduct a complete NEPA analysis for future phases. As part of the NEPA process, reasonable and practicable mitigation measures would be evaluated. Furthermore, BLM and KENETECH have committed to using monitoring information from previous phases to help design future phases with fewer impacts on the human environment.

Presenting a suite of executable mitigations in the FEIS, while feasible, would bind BLM to mitigations which may be inappropriate once more data are collected. Therefore, BLM is giving the technical committee responsibility to assist BLM in evaluating monitoring results, identifying impacts,

intensifying monitoring (if necessary), and recommending mitigations for specific impacts.

Because BLM does not require off-site mitigation for impacts that cannot be mitigated on-site, some impacts may not be mitigated. Impact- and resource-specific mitigations would be included in the NEPA documents for subsequent phases, and thus, would be available for public comment.

As indicated in the DEIS (page 4-1), BLM lacks authority to enforce mitigation measures on private land. However, Carbon County and the State of Wyoming have indicated that the Special Use Permit and the Industrial Siting Council permit waiver required for the project will be expressly conditioned such that all federal land use requirements would be adhered to on private and state lands as well as federal land, subject to private landowner consent.

8.2.6 Plan of Development Approval Process for Subsequent Phases

Specific comments addressed in this section include AA2, AE16, AE22, AE31, AE37, AE96, AE144, AL28, AL29, AL32, AO3, AP3, AP7, AP13, AP15, AP16, AP28, AP31, AP32, AP35, AP36, AP46, AP154, AP155, AP156, AP157, and AQ3.

Several commenters expressed concern that approval of subsequent phases of the project via a POD would not provide for adequate public review, development of appropriate mitigation measures, or proper administration of project development by BLM. In response to this concern, BLM would complete formal NEPA analysis for each subsequent phase after Phase I. The level of NEPA analysis (i.e., development of a supplement to this EIS, preparation of an EA or EIS tiered to this EIS, or granting a categorical exclusion) would be determined for each phase based on the level of concern about impacts from future development.

The following concerns were specifically stated:

- the POD is not subject to the same degree of scrutiny and public disclosure as a NEPA document;
- mitigation may not be accomplished through the POD process;
- mitigation contingencies or programmatic stipulations should be provided in the FEIS because "deferring such decisions to the POD without well developed direction eliminates NEPA accountability"; and
- operators would not accept mitigations not included in a NEPA document.

The proposed project is extensive in both size (1,390 turbines over 60,619 ac) and in development time (10 - 12 years). To avoid piecemealing the discussion and treatment of project impacts, the applicant requested BLM to prepare the environmental analysis on the full potential development. Because subsequent phases have not been proposed, BLM was unable to identify site-specific impacts beyond Phase I. Phase I impacts and mitigations are discussed in detail in the EIS; project-wide impacts are discussed generally, and cumulative impacts from full development are assessed. The NEPA documents and PODs for subsequent phases would identify site-specific impacts and mitigations as well as reevaluation of cumulative impacts, where appropriate.

Although BLM cannot accurately predict full-project impacts, it is reasonably certain that current technology (including modification to the turbine towers, painting blades, and use of a variable speed, upwind turbine) constitute adequate measures to minimize impacts from Phase I. In addition, KENETECH would conduct extensive monitoring studies which would help identify unanticipated impacts. The NEPA process would permit full public disclosure of monitoring information, site-specific impacts and mitigations; the PODs for subsequent phases would provide site-specific environmental and engineering information used to accomplish development and implement mitigation measures.

The role of the POD in this project is described is Section 2.1.2 of the DEIS. Section .42C of the Bureau Right-of-Way Manual recognizes that, "on large projects where final alignments and site-specific mitigating measures have not been finalized prior to issuing the right-of-way," the POD will be reviewed and a NTP issued after ROW approval. This guidance contemplates instances in which NEPA review would be conducted for a ROW grant without all of the site-specific information.

Because of public concern, BLM would require full NEPA analysis, in addition to POD submittal, for each subsequent phase of this project. Upon receipt of a draft POD for a subsequent phase, BLM would review all available information, including monitoring data and recommendations from the technical committee, public comments, and research from other wind energy facilities. The adequacy of existing NEPA documentation would be determined and supplemented as necessary in accordance with 40 C.F.R. 1502.9(c) and 1502.20. A public review period on the POD and supplemental NEPA analysis would be provided. All public comments would be considered before a ROD or NTP for any subsequent phase is issued. Reviewers should view this EIS as programmatic regarding the full project and site-specific for Phase I only. BLM will not issue NTPs for subsequent phases until all environmental impacts and public concerns have been addressed. Sections 2.1.2 and Figure 2.1 in the DEIS, which describe the POD process, have been modified to state that subsequent phases would require NEPA documentation as well as POD preparation.

To increase public information on interactions of birds and wind energy facilities, BLM is seeking to sponsor a symposium or conference on the subject in 1996 or 1997.

40 C.F.R. 1506.1(a)(2) and (c)(3) charge federal agencies to take no action before the issuance of an ROD that would, "Limit the choice of reasonable alternatives." or would, ". . . prejudice the ultimate decision on the program." One commenter claimed PODs developed prior to environmental analysis violated these provisions. However, 40 C.F.R. 1506.1(d) states, "This section does not preclude development by applicants of plans or designs or performance of other work necessary to support an application for Federal State or local permits or assistance." PODs are a required supporting document for a ROW grant. BLM has taken no action that would preclude consideration of reasonable alternatives or prejudice our final decision on this project. Furthermore, much of the information required for a POD also must be used to define the proposed action for the NEPA analysis.

8.2.7 Precedence-setting Nature of the Project

Specific comments addressed in this section include AE2, AE24, AE94, AP1, AP3, AP14, AP25, AP78, AP102, AP110, AP135, and AP155.

Two commenters contend BLM failed to disclose the precedence-setting nature of this project. "This is the first proposal of this magnitude within the unique climatic and biological conditions of southern Wyoming." They point out "The procedures and analysis used for this project could influence similar future decisions." They also point out that this project differs from more conventional ROW actions and request BLM to elaborate on this fact relative to analysis of impacts and decision-making.

The significance of a project is a factor in determining if it may be approved following a Finding of No Significant Impact (resulting from preparation of an Environmental Assessment) or if a more comprehensive EIS must be prepared. From the beginning, BLM recognized the precedent-setting nature of the proposal, its scope, and the unique and uncertain risks it might pose (40 C.F.R. 1508.27[b] [5 and 6]) and made a decision that this project would result in significant impacts on the human environment and that an EIS should be prepared. Preparation of an EIS provides an elevated level of analysis compared with other NEPA documents and is appropriate for

large, precedence-setting projects such as the Proposed Action.

When potential risks from the project were identified, BLM required extensive, yet reasonable, baseline data collection, including avifauna baseline studies, noise modeling and analysis, snow redistribution analysis, air quality modeling, a Class I paleontological study, and an extensive literature review of wildlife displacement from development areas. BLM further requested implementation of wildlife monitoring studies to evaluate and track uncertain effects. These studies required a level of effort far beyond previous requirements BLM has made for data gathering for an EIS.

BLM ROW actions in Wyoming are typically linear facilities such as access roads, pipelines, and power lines. The wind energy project differs from the typical ROW action by being a site facility, instead of the usual a linear facility (e.g., pipelines, transmission lines). Its size of over 60,000 ac is also distinctive. BLM has issued site ROWs in Wyoming for large facilities such as natural gas processing plants.

Issuance of ROWs for wind energy facilities on Public Lands in California is the typical method of authorization. This procedure has been used since the early 1980s in the BLM Palm Springs and Ridgecrest Resource Areas. Utilization of the ROW grant allows BLM to provide for wind energy development concurrently with other uses of public land such as grazing, oil and gas exploration, and construction of transportation and communication facilities. ROW grants for wind energy facilities allow BLM to administer, through the POD and Terms and Conditions of the ROW grant, the operation and maintenance of the facility. Although the proposed project is the first and largest of its kind proposed in Wyoming, it is not outside the bounds of BLM's regulations and experience of public land uses.

BLM expects that the procedures and analyses used to evaluate this project would influence future decisions, but future decisions would not be unduly influenced by prior decisions in the manner precedence is used in court cases. BLM has acknowledged that the project is new and some impacts are unknown, and intends to monitor, learn from Phase I, and make decisions and modify requirements for future phases and other wind generation projects based on what is learned and public concerns.

8.2.8 Cumulative Impact Analysis

Specific comments addressed in this section include W1, W2, AE1, AE7, AE20, AE30, AE94, AE97, AE102, AE105, AL33, AP34, AP80, AP111, AP112, AP118, AP121, and AP131.

Four commenters were concerned with the adequacy of the cumulative impact assessment in the DEIS; specifically, that:

1) cumulative impacts had received inadequate treatment,
2) displacement effects should be disclosed,
3) baseline and monitoring studies were inadequate to determine the extent of cumulative impacts,
4) cumulative impacts may be more significant than BLM assumed,
5) the significance of cumulative impacts to non-crucial big game ranges should be considered, and
6) cumulative impacts from other, future wind energy development projects should be considered.

In addition, the significance criteria used in the DEIS to evaluate impacts to wildlife was criticized for lack of a scientific or regulatory basis. In the DEIS, it was stated that "impacts to big game would be considered significant if project-related activities resulted in a loss of greater than 1% of the existing crucial big game range for a particular herd unit." The rationale for this criterion was provided in Section 4.2.3.1 in the DEIS; in response to several comments concerning the 1% criteria and cumulative impacts, this issue in elaborated below.

In response to Nos. 1 and 2 above, the cumulative impacts analysis employed a multi-step process. First, the cumulative impact analysis area was defined for each resource. For example, the cumulative impacts analysis area for big game were the boundaries of various herd units, which oftentimes included areas well outside of the KPPA. Then BLM identified all existing disturbance/development within an area of potential cumulative impacts for each resource and quantified the amount of ground disturbance associated with known developments. Using this approach, the overall percentage of land area lost within a given cumulative impact analysis area was calculated. BLM also identified possible future developments including the proposed Medicine Bow windfarm and an 80-ac coal lease, and possible effects from these projects were considered during the cumulative impacts analysis. BLM acknowledges that continued incremental impacts to big game ranges from any action would have negative influences on big game populations. Because of the current significant cumulative disturbance within big game ranges within and adjacent to the KPPA, disturbance due to the proposed development would constitute a contribution to the significant cumulative impact.

Unfortunately, impacts such as habitat loss due to displacement cannot be quantified using existing data (i.e., cumulative impacts cannot be assessed because project-specific impacts are uncertain). Therefore, the cumulative impacts analysis presented in the DEIS is adequate to the extent that existing data are adequate; the adequacy of baseline data is discussed in Section 8.2.4. Because of these uncertain effects, BLM has committed to monitoring these resources to determine the type and significance of project-specific and cumulative impacts. The monitoring program is discussed in Appendix B in the DEIS and Section 8.2.3 in the FEIS.

In response to No. 3, the adequacy of baseline data and the monitoring program are discussed in Sections 8.2.4 and 8.2.3, respectively.

Regarding No. 4, the BLM realizes that there could be substantial risks to wildlife. As a result, an EIS was prepared and possible significant impacts were identified. Cumulative impacts also may be significant; however, the analysis presented in the DEIS represents BLM's best interpretation of available data to assess cumulative impacts. Several commenters identified the possible risk to wildlife as a significant issue; it is discussed in detail in Section 8.2.12.

Regarding No. 5, the BLM was requested to address cumulative impacts to noncrucial big game ranges. Direct project impacts to all habitat classifications, including noncrucial ranges, are given in Table 4.10 in the DEIS. Impact analysis and protection measures have typically focused on that component of a species' habitat and/or life cycle requirement where the animals are most vulnerable. For example, BLM requires seasonal construction restrictions on crucial winter ranges during crucial winter periods when big game species are under the greatest stress from climatic factors and food is least available. Loss of noncrucial habitat due to the proposed project is unlikely to significantly impact big game populations because these habitats are not critical to population stability, and very little noncrucial habitat would be directly disturbed by the proposed project (see Table 4.10 in the DEIS). Displacement effects in noncrucial habitats would be monitored.

In response to No. 6, southcentral Wyoming has a documented world-class wind resource. The KENETECH project is the first attempt to develop this resource on an industrial scale. If this project is successful, other wind energy projects may be proposed for future development. At present, with the exception of the Medicine Bow Energy project (see page 4-3 of the DEIS), there are no wind energy projects proposed in the region. Proposed development of the Medicine Bow project would initially involve placing wind turbines on private land. Processing the ROW application for use of the surrounding 10 federal sections has been suspended because the schedule for development of these sections is uncertain. Other wind energy

developers have shown interest in southern Wyoming, but potential developments are in very preliminary stages (e.g., gathering meteorological data). BLM is monitoring the meteorological data collection activities. Some companies have suspended their efforts and withdrawn from the region. There are no prospective projects anticipated in the short term (one to three years). Changes in wind energy development potential and possible cumulative impacts would be considered in the supplemental NEPA analysis prepared for future phases of this project, in addition to NEPA analysis for other projects when they are proposed.

Cumulative impact assessment areas for big game species are shown on Maps 3.10 to 3.13. BLM has utilized a significance threshold of 1% disturbance in crucial big game ranges. This rationale is discussed in Section 4.2.3.1, Big Game, Significance Criteria. Although BLM has no scientific evidence to demonstrate that a loss of 1% of crucial habitat will result in a significant impact to any species, this threshold was used as a prudent measure to judge potential project impacts. In the absence of other, substantiated criteria, BLM uses the 1% criterion to prompt a more indepth analysis of potential impacts (i.e., preparation of an EIS).

As shown in Table 4.11 in the DEIS, existing disturbance already exceeds 1% of crucial winter range in all herd areas associated with the proposed project. Therefore, impacts are already significant, and any additional disturbance would be considered significant. This is the highest level of significance that can be given during a NEPA analysis, and significant impacts are weighed most heavily during the decision-making process. For the proposed project, the 1% criterion affords big game species the greatest level of consideration.

No development is presently proposed in crucial ranges. BLM will defer any decisions on the placement of wind energy facilities in crucial ranges until KENETECH makes a proposal to initiate development in these areas. BLM will evaluate possible impacts of development in crucial winter range during subsequent NEPA analyses, as described in Section 8.2.6, using the most current information available.

8.2.9 Coal Resource Development Potential

Specific comments addressed in this section include C1, E1, T1, AL28, and AR1.

Several comments were received about the potential to develop coal resources located within the eastern portion of the Simpson Ridge Project area. Commenters indicated that:

- there is a large marketable and economically viable coal resource in the project area and potential for its development exists in the fairly near future (i.e., within five years); and
- there would be a potential loss of federal royalty payments if coal development was precluded by wind energy development.

BLM was requested to remove eight sections from the project area.

The Carbon Basin Known Recoverable Coal Resource Area (KRCRA), classified by the U. S. Geologic Survey in 1975, underlies the eastern portion of the Simpson Ridge portion of the KPPA. When the DEIS was prepared, there were no active federal, state, or private coal leases or proposed coal development plans. However, in February 1995, the State of Wyoming issued a coal lease on 160 ac located in the SE ¼ of Section 16, T21N, R80W within the Simpson Ridge project area. In December 1994, the Wyoming Board of Land Commissioners granted an easement to KENETECH Windpower for wind energy facilities in the same section.

Coal resources in the Hanna Basin and Carbon Basin KRCRAs are described in Section 3.1.3.1. A review of comments and current coal development potential information has resulted in a revision of the following DEIS sections concerning coal development potential (presented earlier in the FEIS): (1) page v, paragraph 3, (2) Table 2.11, page 2-38; (3) Section 3.1.3.1, Coal;

(4) Section 3.5.3, paragraph 3, and (5) Section 4.1.3.

The compatibility of wind energy facilities and coal mining activities cannot be determined until the following information becomes available: (1) location of wind turbine towers, (2) location of coal seams to be mined, and (3) mining method. BLM has sufficient information on the location of coal seams to determine that a potential conflict exists between wind energy facilities and coal mining. The Windplant would be more compatible with an underground mining operation than a surface mine, provided there was no risk of subsidence. Surface mining and Windplant operation would probably be incompatible, unless developers could arrange a cooperative agreement.

KENETECH Windpower has not made specific plans for development in the KRCRA portion of the Simpson Ridge project area. No coal company has presented site-specific mining plans in the Simpson Ridge project area. An evaluation of the effect of concurrent use of public land by these two industries would be made when applications for development are received.

BLM proposes to issue a ROW grant for all federal lands in the KPPA. Development of subsequent phases could only proceed after NEPA analysis of each subsequent phase as described in Section 8.2.6 and issuance of an NTP following completion of the NEPA process and preparation of a POD. If wind energy development is proposed in an area of minable coal resources, the NEPA analysis would provide adequate information for BLM to reach a decision on this issue. If a federal coal lease application is filed before wind energy development is proposed, BLM would use the coal lease NEPA analysis to reach a decision regarding concurrent development. BLM would take into consideration wind energy and coal development proposals on private land in reaching a decision regarding federal lands.

8.2.10 Mitigation of Impacts on Public Recreation Lands

Specific comments addressed in this section include W3, AE62, AE135, AE148, AP29, AP44, AP85, AP151, AP152, and AP161.

Approximately 35-40% of land within the KPPA is public land (federal and state), and much of this is accessible and currently available for public recreational use. Legal access by foot is available to the two public land parcels (960 ac) on Foote Creek Rim. There is no improved road access into these parcels. In the Simpson Ridge area, there is legal access via improved roads to 3,240 ac of public land. This land is within the private/public checkerboard and no parcel is larger than 640 ac. In addition to these lands, WGFD currently holds a recreation easement covering over 2,000 ac of private land within the Foote Creek Rim area. Historically, hunting within the easement area has been minimal. KENETECH would obtain a quitclaim for the portion of the WGFD easement to be developed (about 30 ac). Because the remainder of the easement would remain available for public use, only minimal impacts to public recreation within the easement would result. The proposed development would not occupy the lands of the Wick Wildlife Unit.

In exchange for direct (i.e., loss of access to 30 ac) and indirect (e.g., loss of aesthetic quality, big game displacement) impacts on recreational opportunities on public land, KENETECH would give the state of Wyoming an easement over approximately 640 ac for incorporation into the Wick Wildlife Unit. Other mitigations are discussed in Chapter 5.0.

8.2.11 Preparation of a Supplemental EIS

Specific comments addressed in this section include AL5, AL13, AL14, AL17, AL19, AL35, AP9, AP26, AP66, AP107, and AP130.

Two commenters requested that a supplemental DEIS be prepared and circulated so that important information regarding evaluation of alternate sites

and alternative turbine designs would be subject to public scrutiny.

The CEQ regulations require the circulation of a supplemental EIS if:

(i) the agency makes substantial changes in the Proposed Action that are relevant to environmental criteria, or

(ii) there are significant new circumstances or information relevant to environmental concerns and bearing on the Proposed Action or its impacts (40 C.F.R. 1502.9[c]).

Although the comments do not assert that the Proposed Action has changed, several comments claim that a supplemental DEIS may be needed for the project because of additional information which the comments assert must be included in the EIS. However, as explained below, none of the new information called for by the comments requires the preparation of a supplemental DEIS.

The decision whether to prepare a supplemental EIS is subject to a "rule of reason". *Marsh v. Oregon Natural Resources Council* (1989) 490 U.S. 360. A supplemental EIS is not needed "every time new information comes to light." *Id.* Rather, a supplemental EIS is only required if a major federal action remains, and "if the new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered..." *Id.* at 373-374. As one court stated, new information does not necessitate the preparation of a supplemental EIS unless it "provides a seriously different picture of the environmental landscape such that another hard look is necessary" *State of Wisconsin v. Weinberger* (7th Cir. 1984) 745 F.2d 412. None of the additional information called for by the comments (e.g., information with respect to the infeasibility of alternative sites or turbine designs, the disclosure and adequacy of methodologies employed, the project's impacts to raptors, etc.) reveals any significant new or more serious environmental effects than were disclosed in the DEIS such that supplementation would be required.

Additional information has been included in the FEIS for the project to clarify why alternative sites were not considered in detail in the DEIS. This information does not reveal any significant new impacts from the project; therefore, additional analysis (i.e., a supplemental EIS) is not required.

8.2.12 Risk to Wildlife

Specific comments addressed in this section include J1, S3, V1, W1, W4, W6, AE1, AE40, AE57, AE91, AE103, AE104, AE119, AE121, AE131, AL8, AL10, AP10, AP22, AP34, AP53, AP75, AP76, AP83, AP94, AP120, AP126, AP133, AP134, AP138, AP143, AP150, AP157, AP158, AP160, AQ2, AS7, and AS8.

Several commenters were concerned that the project would impose undue risk to wildlife; specifically, that:

- facilities would not be located away from known wildlife use areas,
- BLM should not experiment with wildlife resources on such a large scale,
- many species that would be impacted cannot withstand any further loss of habitat,
- TE&C species cannot withstand much mortality, and that
- BLM must assure the public that wildlife would be protected.

These issues are closely interconnected with the issues of alternative site analyses (Section 8.2.1) and mitigation (Section 8.2.5).

The DEIS clearly states that the project may have significant impacts on certain wildlife, and these findings will be weighed during the decision-making process. During initial site screening, however, it was determined that there were no serious concerns for development within the proposed project area. The site screening process indicated that there were two areas that should be avoided - Dana Ridge, which contains a mule deer

migration corridor and the RCA in the Simpson Ridge area. As a result of the initial screening, KENETECH abandoned their proposal to develop Dana Ridge and expanded the Simpson Ridge project area to facilitate locating the project away from active raptor nests.

Unfortunately, detailed data on raptor use, big game movements, and mountain plover distribution are not normally collected by wildlife management agencies, and thus the project areas could not be screened for these attributes. Baseline data collected for the DEIS on raptor use and mountain plover distribution suggested to some commenters that Foote Creek Rim was a risky place to begin development. Impacts cannot be known until development proceeds. By requiring monitoring and forming the technical committee, BLM and USFWS have the mechanisms for evaluating impacts. If the operation of the project causes an asserted violation of federal law to occur (e.g., under the ESA), the USFWS (in conjunction with other federal agencies) can initiate legal proceedings to enforce the provisions of such law. These proceedings may lead to a court order limiting or enjoining project operation until specified actions are taken or other conditions met. If project operation causes a violation of the ROW grant, BLM can require KENETECH to take measures to correct the violation and may revoke the ROW grant for use of public land if KENETECH fails to correct the violation. Several comments implied that by the time USFWS determines impacts are too great, unacceptable adverse impacts may have occurred. Part of the decision-making process would be to assess possible overall costs associated with wildlife impacts vs. overall benefits of developing wind energy, which has a long-term benefit for all living organisms. BLM is aware that permanent costs, such as loss of peregrine falcons and/or bald eagles or permanent displacement of mountain plovers from Foote Creek Rim may occur; these will be weighed during decision-making and, if the project is approved, monitored.

At the request of several commenters, an overlay of proposed turbine string locations is provided in Appendix H and can be used to compare proposed turbine locations with baseline data on raptor and mountain plover distribution on Foote Creek Rim. BLM concurs that there is extensive raptor and mountain plover use on Foote Creek Rim. However, there is no evidence to suggest that Foote Creek Rim has higher or lower raptor use than other ridges within the wind corridor, because other ridges have not been studied as intensively. Use patterns may change from year to year. Furthermore, it is possible that raptor and mountain plover use patterns would change following development. Because no other sites are economically feasible for this development at this time (see Section 8.2.1), BLM has determined that it is not reasonable to complete an area-wide evaluation of avian use. If, during decision-making, BLM determines that possible impacts present too great a cost, BLM can take the No Action Alternative.

Under NEPA, BLM must consider reasonable and practicable mitigations for impacts to wildlife, but is not mandated to assure the public that all wildlife would be maximally protected. A detailed discussion of BLM's responsibilities on this matter is presented in Section 8.2.5.

8.2.13 Comment Letter Reproductions and Individual Responses to Comments

The following section includes photocopies of each letter presented in the order received. The organization of this section is described at the beginning of Section 8.2 in the FEIS.

A. Carbon County Concrete, Inc.

Carbon County Concrete, Inc.
P.O. Box 176
Saratoga, WY 82331
307/326-8911

January 19, 1995

U. S. Bureau of Land Management
Rawlins District Office
Attn: Walt George
P.O. Box 670
Rawlins, WY 82301

RE: Kenetech Windpower Inc.
Windpower plant project

Dear Mr. George:

My name is Tom McGuire and I am writing in regards to the above mentioned project. I am asking if you would expedite the permitting process for the wind farm in any way possible.

I feel it will be an economic benefit to the county and ecologically it is very sound energy production.

Sincerely,

T.P. McGuire

Thomas P. McGuire
President

TM/md

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JAN 25 1995
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RAWLINS DISTRICT

C. Wyoming State Geological Survey

WYOMING STATE GEOLOGICAL SURVEY
BOX 3008, UNIVERSITY STATION • LARAMIE, WYOMING 82071-3008
(307) 766-2286 • FAX 307-766-2605
STATE GEOLOGIST - Gary B. Glass

GEOLOGICAL SURVEY BOARD
Ex Officio
Governor Jim Geringer
Donald B. Rubin Terry F. Rosen
Gary B. Glass
Appointed
D.L. Blackstone, Jr. Michael Flynn
Jimmy L. Goodley Nancy M. Dowiger
Bayard D. Reid

SENIOR ECONOMIC GEOLOGIST (Metals) W. Dan Hausel
STAFF GEOLOGISTS — Coal P. Daniel Vogler
Geologic Hazards James C. Case
Geologic Mapping Alan J. Ver Ploeg
Industrial Minerals/Uranium Bob E. Hahn
Oil and Gas Bradley H. De Bruin
PUBLICATIONS Editor Richard W. Jones

January 26, 1995

RECEIVED
JAN 27 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Walter E. George, Great Divide Resource Area
Bureau of Land Management
P. O. Box 670
Rawlins, WY 82301

Dear Mr. George:

We have reviewed the draft Environmental Impact Statement on the Kenetech/PacifiCorp Windpower Project and submit the following comments:

1 We have several questions and (or) corrections about Section 3.1.3.1, Mineral Resources. In the subsection on Coal on page 3-5, we wonder if the statement that only the northwestern portion of the Simpson Ridge area has coal development potential is in error. We believe the highest development potential would be in the eastern half of the Simpson Ridge area. On the same page, the statement that no coal has been
2 recovered from the Rock Creek Coal Field is in error. There has been no recent production, but Map 3.2 on page 3-8 shows two mine adits within the project area. Admittedly, there has not been much production.

3 In the Coal subsection continued on page 3-6, it is alluded that mining interest in coals in the Hanna Coal Field is not as great as in the Powder River Basin because Hanna Basin coals are more deeply buried. This is not quite true. There are strippable reserves in both basins. The lesser development is more related to the higher stripping ratios found in the Hanna Coal Field. These higher ratios are more a function of coal thickness than simply depth. Most coals in the Hanna Coal Field are much thinner than the thick coals mined in the Powder River Basin.

4 In the Coalbed Methane subsection on page 3-6, the "Ferris" Formation is misspelled "Harris".

5 In the Locatable Minerals subsection on page 3-6, the identified gold placer occurrences in the project area are not mentioned. Our Open File Reports 92-5 and 94-2 discuss these occurrences.

6 In Section 3.1.3.2 on Geologic Hazards (page 3-7), it is stated that there has been no surface subsidence in the KPPA. This is in error. There certainly was extensive coal mine subsidence in Sections 26 and 35 of T22N, R80W, which is within the project area. At one time, there was also a fire in the old underground workings in this same area.

Serving Wyoming Since 1933

B. U.S. Department of Transportation, Federal Highway Administration

U.S. Department of Transportation
Federal Highway Administration

Wyoming Division
1916 Evans Avenue
Cheyenne, WY 82001-3764

January 24, 1995

Draft EIS,
Kenetech/PacificCorp
Windpower Project

FILE: 410

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Initials	Route
	AM
	MIN
	MULTI
	RANGE
	ADMIN
	CL

Ms. Karla Swanson
Area Manager
Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

Dear Ms. Swanson:

We have reviewed the above referenced Draft EIS and conclude that transportation issues are adequately addressed. If we can be of any further assistance please call Rod Vaughn, at 772-2012, ext. 48.

Sincerely yours,

Rod Vaughn

RODNEY D. VAUGHN, P.E.
For FREDERICK A. BEHRENS, P.E.
Division Administrator

Walter E. George
Bureau of Land Management
January 26, 1995
Page Two

6 cont. This same statement about "no subsidence" is made again at the bottom of p. 4-16 (right column). In Section 5.1.3.4, dealing with Mitigation and Monitoring of Geologic Hazards (page 5-4), mine subsidence is also not mentioned. Since the EIS preparers were unaware of the mine subsidence which already occurred in this area, the danger of potential mine subsidence is likely greater than it would be if it had been considered in the project's planning process.

If you have any questions on these comments, please contact me about any of the comments on coal or mine subsidence and Dan Hausel about the comment on gold placers.

Sincerely,

Gary B. Glass

Gary B. Glass
State Geologist

GBG/sb

cc: Wyoming State Clearing House
Dan Hausel

Comment C1: See Section 8.2.9 in the FEIS.

Comment C2: The text has been modified accordingly.

Comment C3: The text has been modified accordingly.

Comment C4: The spelling has been corrected.

Comment C5: The text has been modified accordingly.

Comment C6: The text has been modified accordingly.

Thank you for this opportunity to comment. I am looking forward to seeing the final EIS on the Kenetech Wind Energy Project.

Sincerely:

David F. Slater
Resource Manager
Louisiana-Pacific

P.S./mjs

D. Louisiana Pacific Corporation

Louisiana-Pacific Corporation

P.O. Box 809
Saratoga, Wyoming 82331
307/326-5241

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BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

February 1, 1995

Walter E. George
Project Leader
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301

Re: Keneteck Wind Energy Project (DEIS)

Dear Mr. George:

I have read the draft on the environmental impact statement for the Kenetech Wind Power Project. Wind energy seems like a great idea for the future. I hope this project moves forward with very little delays in government bureaucracy. In the mitigation measures to be implemented in the (EIS) I hope some areas will be more clarified.

1 #13: No surface disturbance within 0.75 miles of a active raptor nest. (within the past three years) from February 1 - July 31. These nests should be monitored on a monthly basis to be sure the nest has not been abandoned, to allow project activities to continue.

2 #16: To protect important big game winter habitat and big game birthing areas no activities or surface use would be allowed during November 15 - June 30. What does activity or surface use mean? Does this mean no vehicular activity in the area. if so, how is the operation and maintenance personnel going to maintain or operate the expensive wind powered turbines. located in the crucial big game areas?

3 #20: Approval from BLM, WGFD and USFWS would be required prior to construction in crucial areas. So by agreement with these three government agencies, work could be performed under certain conditions. As the (DEIS) reads certain areas would be shut down to any surface disturbance for a minimum of 9 months. Leaving only three months for work to be performed. Does this mean only during construction or when the Kenetech Wind Power Project is in operation?

Comment D1: Nests would be monitored annually to determine activity status. In proposed development areas, KENETECH may choose to monitor nests more frequently to enable project activities to proceed within 0.75 mi (1.2 km) as soon as nests become inactive (i.e., it is abandoned or chicks have fledged).

Comment D2: The stipulation that precludes surface use/activity in important big game winter range and birthing areas pertains to construction only. Construction would be prohibited in these areas during critical periods. After Windplant development, routine O&M activities may occur in these areas year-round. O&M activities requiring use of cranes or other heavy equipment would be restricted as stipulated.

Comment D3: See response to Comment D2. This response also applies to stipulations governing activity in crucial winter ranges and near raptor nests.

Comment E1: See Section 8.2.9 in the FEIS.

E. Arch of Wyoming

ARCH OF WYOMING

P.O. Box 460
Hanna, Wyoming 82327

February 10, 1995

Mr. Walt George, Team Leader
U.S. Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

Subject **Draft EIS Kenetech / PacifiCorp Windpower Project**

Walt:

I would like to congratulate you and your team on a well executed and organized presentation of the Draft Environmental Impact Statement for the Kenetech Windpower project held February 8 in Rawlins. The meeting was very informative and interesting.

I have enclosed a transcript of the statement presented verbally on February 8 during the meeting.

Thank you for your time in answering questions prior to the public meeting and I look forward to visiting with you in the future.

Sincerely,

Stephen C. Skordas
Manager, Engineering and Environmental Affairs

caw
Enclosure

pc. file/KENETECH.ltr

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Arch of Wyoming is presently involved in surface and underground coal mining in the State of Wyoming. Our Medicine Bow Surface Mine in the Hanna Basin is currently producing approximately 2.0 mm tons per year.

We present no opposition to the Kenetech Windpower Project. However, would like to comment on a statement made in the Executive Summary of the Draft EIS for the Windpower Project. This statement reads "No coal or uranium development and only limited oil and gas development are presently occurring within the KPPA and the potential for extant development of these resources in the foreseeable future is low."

Considering the condition of the Hanna Basin coal industry in the late 80's and the first few years of the 90's, it is understandable that this conclusion could be drawn. However, the coal industry is a very dynamic industry because of both market swings and technologic advances. Recent developments in both of these have led Arch of Wyoming to believe that there is a large marketable and economically viable coal reserve within the scope of this study area that has the
1 potential for development in the fairly recent future.

We further believe that with proper project and resource planning and design that the mining of this coal reserve and the Windpower Project can be done with functional compatibility. Arch of Wyoming therefore requests that the potential of coal development within this area be reviewed and would suggest that a multiple use strategy be considered.

F. U.S. Bureau of Mines

From: CHERYL PALMER (CHERYL PALMER)
To: WALT GEORGE
Date: Monday, 13 February, 1995 13:26
Subject: Kennetech

A representative from the Bureau of Mines called stating they have no comments.

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BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

G. C.L. Rawlins

February 18, 1995

Walter George, Project Director
Bureau of Land Management
Rawlins District Office
Rawlins, WY 82301

Dear Mr. George:

This is public comment on the Kenetech wind generation proposal. I have seen a slide presentation by Kenetech and also viewed the proposed site. Having been employed in environmental monitoring and air quality issues, I recognize the issues involved in the decision to permit such a project.

I favor the proposal for an initial 201 turbines and also the proposed expansion to 1,390 turbines, should the first phase prove successful. The redesigned towers will reduce raptor mortality to a very low level. (If the BLM is genuinely concerned about raptor mortality, you should cancel the permits of several of your sheep grazers who continue their longtime practice of shooting and baiting predators on public-land grazing allotments. They kill more raptors and create more adverse impact on wildlife in one year than this project would in a century.)

The visual impact is no greater than that involved in other forms of power generation, and the subsidiary impacts are much fewer. The absence of waste pits and ponds makes this project much easier on the wildlife than any present oil and gas operation.

The statement by Arch Minerals that coal development may be possible leads to an analysis of benefits and costs, in which coal development is the loser. Coal mining should be considered as a possible future land use, but as one having a shorter project life, much greater adverse impact, and far less public benefit.

The major factor in your reasoning should be that oil, gas, and coal are nonrenewable and will run out. This being the case, Wyoming's famous wind—that all of us curse, native-born and pilgrims alike—may be our blessing in disguise: clean, renewable power for generations to come.

Sincerely,

C. L. Rawlins

RECEIVED FEB 22 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

≈≈ C. L. Rawlins / P.O. Box 51 / Boulder, WY 82923 / (307) 537-5298 ≈≈

I. Jay C. Grabow

RECEIVED MAR - 3 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

March 2, 1995

Mr. Walt George
Bureau of Land Management
P. O. Box 670
Rawlins, WY 82301

Re: Kenetech Windpower Draft EIS

Dear Walt:

After reviewing the draft EIS on the referenced project I would like to submit the following comments in support of the proposed project:

1. It is extremely exciting to see the potential harnessing Carbon County's consistent wind in such a productive manner.

2. It appears that this industry could flourish in our area, thus creating some stability in our economic climate.

3. Impacts on our lands and way of life appear to be very minimal with the potential benefits being tremendous.

4. Windpower appears to be so clean and non-destructive compared to most other forms of power generation.

I strongly support the development of this project. It appears that BLM has done a very commendable job in defining issues and mitigation measures which make this project very acceptable.

Sincerely,

Jay C. Grabow

Jay C. Grabow
816 W. Spruce
Rawlins, WY 82301
Phone: 307-324-4808

H. Carbon County School District No. 2

CARBON COUNTY SCHOOL DISTRICT NO. 2

LARRY MOWRY, SUPERINTENDENT

CENTRAL ADMINISTRATION OFFICE
P.O. BOX 1530 (307) 326-5271
SARATOGA, WYOMING 82331

L.D. JACKSON HILSTAD, ASSISTANT SUPERINTENDENT

February 28, 1995

Walter E. George, Project Leader
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301

RE: *Kennetech/Pacific Corporation*
Wind Power Project
Arlington, Wyoming

Dear Mr. George:

I am writing this letter in support of Kennetech/Pacific Corporation's Wind Power Project at Arlington, Wyoming.

This proposed project would be a great economic boon to both Carbon County School District No. 2 and Carbon County by creating more jobs, and increasing the assessed valuation and tax base of our School District and County.

It appears to us that the proposed project is an environmentally sound means of producing electricity and one that should certainly be tried in the Arlington area.

I urge you to support and approve this wind project.

Sincerely,

Larry Mowry
Larry Mowry
Superintendent of Schools

RECEIVED MAR - 1 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

LM:mv

We are an EQUAL OPPORTUNITY EMPLOYER with schools located in the following communities:
Elk Mountain, Encampment, Hanna, McFadden, Medicine Bow and Saratoga

J. Lynne Hull

1414 KEARNEY LARAMIE, WYOMING 82070 USA
PHONE (307) 745-8400
FAX c\o (307) 745-6132

March 4, 1995

RECEIVED '95 MAR -6 08:19 BUREAU OF LAND MANAGEMENT GREAT DIVIDE RESOURCE AREA RAWLINS, WY

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

Dear Sir,

Like most other longtime Wyoming residents, I am astounded to learn from the news this week that Wyoming has a shortage of wind. This is the only possible explanation for the idea that the BLM, governors Sullivan and Geringer, and the acting director of the Game and Fish Dept. would even consider allowing Kenetech and PacifiCorp to place wind turbines in an area where they will almost undoubtedly result in the deaths of endangered wildlife. Clearly this shortage of wind necessitates an EIS which only considers one possible location for the project, even though that site is absolutely prime nesting and migration habitat for eagles, hawks and perigrine falcons.

As an environmentalist, I truly want to support alternative energy. I know PacifiCorp has worked hard for raptor safety on their transmission lines.
1 *I urge the BLM to deny the use of the currently proposed site and consider placement of the project in an area with less impact on wildlife, particularly on endangered and threatened species.*

Sincerely,

Lynne Hull

Initials	Route
	AM
	MIN
	MULTI
	RANGE
	ADMIN
	CF

Comment J1: See Sections 8.2.1 and 8.2.12 in the FEIS.

amortization scheme over the units of energy produced as compared to the return on the initial investment schedule of putting a new fossil fuel plant on line.

We recognize and support that this technology is an excellent approach to satisfy new energy demand or replace energy formerly produced by hydro-electric plants. For Wyoming this project makes environmental sense; the energy will be produced locally while we will not accrue the impacts of airborne particulate or boiler ash.

Thank you for including the Town of Saratoga in the assessment process.

Sincerely,

Bradford C. Cary
Mayor, Town of Saratoga

K. Town of Saratoga

TOWN OF SARATOGA
P.O. Box 486
Saratoga, Wyoming 82331
March 2, 1995

RECEIVED
MAR - 6 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Mr. Walter E. George, Project Leader
United States Department of the Interior
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, Wyoming 82301

RE: KENETECH Windpower Project

We appreciate your consideration in providing the Town of Saratoga with the KENETECH Windpower Draft EIS and Executive Summary.

Saratoga's Mayor and Council Members support this project and appreciate the efforts of the participating corporations and managing agencies to make this project a reality. We recognize the extent to which KENETECH has prepared technical and financial feasibility studies. The draft EIS demonstrates that there has been an attempt to identify and examine the related issues and an evaluation of alternatives.

Carbon County has experienced numerous boom and bust cycles as a result of exploitation of the timber and minerals industries. The KENETECH Project will be beneficial to the County in that it promotes a diversification of the current limited industrial base sector of the economy. The wind farm concept is a logical tangential extension of the energy business that has been an essential component of Wyoming's revenue sources for many years. This project allows Wyoming to participate on the ground floor of an alternative energy source. As the technique proves itself technically and economically feasible, it could result in additional environmentally acceptable energy development for Wyoming's future.

This project is incremented in terms of capital investment and disturbances. This concept lessens the impact on our communities in terms of demand for residential housing and services. In fact the associated employment potential may contribute to the smaller municipalities that have been negatively impacted by the downturn of coal marketing from this area. Segmented development of the windmill sites will minimize and spread surface disturbance and accommodate interim reclamation within the farm. This aspect demonstrates a legitimate concern for the brittle environment. The incremented investment of the capital will produce a preferred

L. Patrick C. Eastman

Patrick C. Eastman
P.O. Box 162
Elk Mountain, WY 82324
307-348-7455

RECEIVED
MAR - 7 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

March 6, 1995

Mr. Walt George
Rawlins District Office
Bureau of Land Management
P. O. Box 670
Rawlins, WY 82301-0670

Dear Mr. George:

I wish to express my support for the proposed Kenetech Windpower, Inc. project in the Arlington - Elk Mt. area. Approval of this power generation project will provide economic benefits and much needed employment for the area with minimum environmental disturbance or effect.

In nearly forty years association with construction projects and mining ventures, I've observed that both small and large game animals quickly adapt to these activities and suffer no harm. And, once operational, the project would have no effect of consequence on these animals.

Regarding avian mortality, there are probably more bird fatalities associated with nearby interstate highway traffic than this project will generate. The bird populations will no doubt adjust very well to the turbines, resulting in minimal loss which, when projected over the entire area of species habitat would result in no measurable decline in any species.

The benefits to be gained from this project so overwhelmingly outweigh any and all of the possible detriments, I would urge approval with minimal constraint at the earliest possible date.

Yours truly,

Patrick C. Eastman

M. Willard E. Dilley

Willard E. Dilley
Chief Naturalist (Ret.), National Park Service
1915 Cinnamon Teal Drive
Jackson Hole, WY 83001

RECEIVED MAR - 7 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

March 4, 1995

Mr. Walter George
Bureau of Land Management
Box 670
Rawlins, WY 82301

Dear Mr. George:

I have reviewed the January 1995 draft of the Environmental Impact Statement for Kenetech/Pacific Corp's Windpower Project. It is a remarkably impressive assembly of information.

My background includes nine years of experience as Chief Naturalist with Grand Teton National Park. During these years I became familiar with the Wyoming environment and its wildlife. My comments are confined to this area of the report.

The EIS devotes many pages delineating the areas where the windpower project and wildlife cross paths. Little note is made of wildlife's ability to adjust to intrusions into its environment. One can drive on many Wyoming highways and see thousands of pronghorn paying little attention to the noise and bustle of highway traffic. Deer move onto the wind-swept buttes of Jackson Hole to feed on exposed vegetation. They become so accustomed to people and traffic that many roam the streets of Jackson. In the winter, elk, normally shy and wary of people, soon adjust to sleds of people out on the National Elk Refuge.

We are all concerned about diminishing numbers of Mountain Plovers. The decline could result from many factors. They have a long flight to their wintering grounds where land use changes are occurring. Here in Wyoming their breeding range has changed little in many years. There appears to be little information about the reaction of the Mountain Plover to man's intrusion into their breeding range. If their reactions are similar to the closely related Killdeer, they are very tolerant of man's activities.

The Sage Grouse are unlikely to desert a lek because of a wind turbine or power line. Sage Grouse have for many years used the end of a runway of the Jackson Hole Airport as a lek.

Bureau of Land Management
March 4, 1995
Page 2

Neither bird watchers nor photographers have caused the Sage Grouse to move their dancing location.

Clean air benefits our vegetation, our wildlife, and man himself. I do not understand the long delay in tapping this valuable Wyoming energy resource.

Yours truly,

Willard E. Dilley

Willard E. Dilley

N. Bern Hinckley

March 5, 1995

Mr. Walter George
Rawlins District - Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301

RE: Kenetech proposal

Dear Mr. George:

1 I am writing not to oppose the Kenetech project, but to criticize the manner in which is was presented to the public at the February 9 meeting in Laramie. While Mariah was ostensibly retained to provide the BLM and the public with an objective scientific evaluation of the environmental impacts of the proposed project and associated alternatives, Ms. Classi's quite competent presentation was focused primarily on the history and economic status of wind power and on what a great project this was. I would expect little difference had Mariah been hired directly by the applicant to run a public relations campaign.

Your own presentation suffered from the same compromise of credibility. Several of the folks sitting near me and I were genuinely confused about whether you were a Kenetech V.P. or a BLM spokesman. I by no means wish to cast the BLM or the public in an adversarial relationship with Kenetech, but you would do much to reduce public skepticism if you assumed the role of dispassionate guardian of the public interest rather than promoter of private industry.

As for the project, I was disappointed to read Kenetech Business Manager Frank Morley quoted as emphasizing the importance of "federal tax credits" in establishing wind power as a viable competitor in electricity generation (Casper Star Tribune, March 5, 1995, p. 1). As I recall Ms. Classi's presentation, the need for taxpayer support was one of the "myths" about wind power she was determined to dispel for us. Your own brochure, "The KENETECH Windpower Inc. DEIS - Electricity from Thin Air", states that "A comparison of power costs ... shows that wind-generated electric power is cost-
2 competitive with new construction of fossil fuel-powered plants and hydropower resources." So what's the truth? (Bottom line: Would this project be proceeding in the absence of federal subsidy?)

3 I am not opposed to use of tax policy to encourage potentially useful future technologies, but economics are a key component of the public interest review. If the viability of this project is dependent upon tax breaks, we should carefully consider the impact of a project abandoned down the road because the tightening federal budget can no longer offer support. This possibility recommends inclusion of appropriate reclamation plans and bonding in any approved permit.

Please proceed with caution, include appropriate safeguards for the present and future public interest, and try to maintain the objectivity (real and perceived) of BLM and their consultants.

Sincerely,

Bern Hinckley
508 S. 11th
Laramie, WY 82070

cc: Mariah Assoc.

RECEIVED MAR - 8 1995

Comment N1: Mariah's presentation provided educational information concerning the history and technology of the windpower industry. Because this is a new industry for Wyoming, it was appropriate to provide general, educational material during the public meetings, to inform meeting participants and DEIS reviewers. As noted, the presentation focused on the history and economic status of windpower and provided an overview of the economic factors associated with wind development. The presentation did not include any discussion of "what a great project this was", except to say that with the current technology and wind regime in southern Wyoming, windpower is cost competitive with fossil fuel-generated electricity. A transcript of the presentation is available from the BLM.

The objectives of BLM's presentation were to 1) identify BLM's preferred alternative, which, in this case, is the Proposed Action, 2) to discuss issues raised during preparation of the DEIS, and 3) to describe how the project could be implemented with minimization of potential impacts. Because full development is BLM's preferred alternative, the presentation focused on issues surrounding the Proposed Action, including results of over 18 months work with KENETECH (as well as other agencies) to design a project that would minimize potential impacts. Given that the purpose of public meetings is to receive public comments, it was not deemed appropriate to discuss the details of various issues -- the DEIS provides extensive detail which will be considered during decision-making.

Comment N2: Based on the current economic climate within the utility industry (see Section 8.2.1), the project would not proceed as

proposed without the federal tax credit of 1.5 cents/kWh for each kWh of wind-generated electricity produced.

Comment N3: Detailed reclamation plans would be included in the POD for each phase of development. BLM is considering requiring a bond to cover costs of reclamation should the facility be abandoned. BLM does not usually require bonds from utility companies (who would be the owners of the first phase and possibly subsequent phases) because of their size, financial stability, and long-term commitment to service.

P. Bow Area Economic Development Commission Inc.

Bow Area Economic Development Commission Inc.
P.O. Box 372
Medicine Bow, WY 82329
(307) 379-2505

March 10, 1995

Mr. Walt George
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301

Dear Mr. George,

Thank you for attending the Kenetech Windpower Public Meeting of March 9th, in Medicine Bow. I was able to attend both the Governmental meeting and the public meeting. Kenetech has overwhelming support from the community of Medicine Bow. Any potential adverse impacts of the project are over-rided by the economic impact for all of Carbon County. Please continue to do all that you can to expediate the application process for Kenetech Windpower, Inc. If we can do anything to further assist and insure the success of this project, please do not hesitate to contact us.

Sincerely,

Kay L. Embree

Kay L. Embree, President

cc

RECEIVED
MAR 13 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

O. Commissioners of Carbon County

Art Zeiger, Chairman
Gary Graalman
Linda Fleming

Commissioners of Carbon County
Rawlins, Wyoming 82301

P.O. BOX 6
RAWLINS, WY. 82301
1-307-328-2671

March 7, 1995

Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301

Dear Sirs:

The Carbon County Commissioners are in support of the Kenetech/PacifiCorp Windpower Project.

We are proud of Carbon County being a leader in energy production and will welcome the diversity the wind generated power will bring to that production.

We feel the project will be an economic asset to the county. We also feel the recent modification in the towers will prove to be beneficial.

Sincerely,
BOARD OF COMMISSIONERS

Artlin Zeiger, Chairman

Gary Graalman, Commissioner

Linda Fleming, Commissioner

RECEIVED
MAR - 9 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

O. Kenneth & Joan Jones

Mr. & Mrs. Kenneth Jones
P.O. Box 122
Medicine Bow, WY 82329

March 13, 1995

Mr. Walt George
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301

Dear Mr. George,

We were able to attend the recent public meeting with Kenetech Windpower, Inc. and the Wyoming Industrial Siting Council. We are life-long residents of Carbon County and feel that this project should have the cooperation of the BLM. Please do all that you can to speed up the process so that Kenetech can get this project under way.

Sincerely,

Kenneth & Joan Jones

Kenneth Jones
Joan Jones

RECEIVED
MAR 13 1995
BUREAU OF LAND MANAGEMENT

R. Town of Medicine Bow

TOWN OF MEDICINE BOW
P. O. BOX 156
MEDICINE BOW, WYOMING 82329-0156
TELEPHONE 379-2225

March 16, 1995

RECEIVED MAR 17 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301-0670

RE: Kenetech/Pacificorp Windpower Project

Attention: Walt George

Dear Mr. George:

On behlaf of the Mayor and Town Council of the Town of Medicine Bow, Wyoming, I am writing this letter to inform you that at their Regular Meeting on March 13, 1995, they went on record to give their full support of the Kenetech/Pacificorp Windpower Project in Carbon County, between Arlington and Hanna, Wyoming.

Sincerely,
Carol D. Cook
Carol D. Cook
Town Clerk/Treasurer

Comment S1: The appropriate citation has been added to this table.

Comment S2: See Section 8.2.1 in the FEIS.

Comment S3: See Sections 8.2.3.1, 8.2.4, and 8.2.12 in the FEIS

Comment S4: BLM is following regulations and procedures under Section 106 of the Historic Preservation Act to protect historic an traditional cultural properties and minimize project impacts to th same. BLM is also consulting with Native American tribes as required by the American Indian Religious Freedom Act (AIRFA concerning affects on traditional cultural properties and contemporar religious practices by Native Americans. In addition to formal consultation, BLM required the preparation of an ethnohistoric report to determine the nature and extent of individual tribal involvemen with the traditional cultural properties in the project area.

Project facilities would be placed to avoid all historic or cultura features in the Phase I project area. For Phase I, BLM an KENETECH are negotiating with affected tribes to provide protection to traditional cultural values present in the Foote Creek Rim area. As other areas are proposed for development, mitigatio for cultural resources would be developed pursuant to Section 106 of the NHPA and AIRFA.

Comment S5: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment S6: See Section 8.2.3.1 in the FEIS.

S. Connie Scigliano

RECEIVED MAR 17 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

Walter George, Project Leader
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

March 6, 1995

Dear Mr. George,

Although I support nonpolluting resources such as the Kenetech/Pacific Windpower Project, I have several concerns regarding this proposed project. Please pass my concerns onto the appropriate individuals.

1 Chapter two, page 2-34 lists the Estimated Power Output from the alternate sites. The information does not reference where the energy information was obtained. Additionally, the impact did not address the alternate sites. The EIS does not address in specifics why the alternate sites were dismissed. The bottom line
2 is that alternate sites need to be discussed in detail.

Were Medicine Bow, Chugwater, and Kemmer looked at as possible alternate sites?

I am extremely disturbed that the wind turbines would be built in an area which is so heavily populated with raptors. Of greatest concern is that Peregrine Falcons are in the area and
3 they fly at 77% of turban blade height.

I am also concerned about the possible impact the turbines would have on the Nesting Mountain Plovers. Since the Mountain Plovers are a candidate for listing, I think more studies need to be done to assess the possible the impact on the plovers.

4 I am also concerned about the cultural resources which will be impacted. Is there any plans to preserve the cultural sites?

5 The bottom line is that more baseline data and monitoring need to be done before this site goes in. ALTERNATE SITES NEED TO BE
2 RESEARCHED FULLY BEFORE THE PROJECT PROCEEDS. ADDITIONALLY, IF
6 THE TURBINES DO GO IN, A MORE EXTENSIVE MONITORING PROGRAM NEEDS TO BE IMPLEMENTED.

Wyoming is known for its natural resources. Lets not destroy the state for economic gain. Wyoming's equity is in the land. This project has the potential of destroying a lot of wildlife and wildlands.Thank you for your time.

Connie Scigliano Connie Scigliano
P.O. Box 1443
Laramie, Wyoming 82070

T. Edison Development Company

EDISON DEVELOPMENT COMPANY
ONE FIRST NATIONAL PLAZA ✱ CHICAGO, ILLINOIS
Address Reply to:
POST OFFICE BOX 767 ✱ CHICAGO, ILLINOIS 60690

RECEIVED MAR 20 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

March 16, 1995

Mr. Walter E. George
Project Leader
Bureau of Land Management
P. O. Box 670
Rawlins, WY 82301

Subject: Draft Environmental Impact Statement for the Kenetech/PacifiCorp Windpower Project Carbon County Wyoming

Dear Mr. George:

Edison Development Company appreciates the opportunity to comment on the Bureau of Land Management's draft environmental impact statement dated January 1995 regarding the proposed Kenetech/PacifiCorp wind project in Carbon County Wyoming ("EIS"). In general, EDC encourages the development of economically viable wind power projects in Wyoming. For example, EDC assisted in the development of the U.S. Department of Interior's Boeing MOD-2 wind turbine built on EDC's Medicine Bow Ranch. Thus, we support your efforts to consider wind development in this part of Wyoming with its natural advantages.

However, EDC strongly objects to the probabilities, and resulting conclusions, contained in the EIS regarding future coal production. The EIS greatly understates the potential for future coal mining operations in this region and, accordingly, does not sufficiently address this issue. EDC has substantial mineral and surface rights to a large low-sulfur coal reserve that is directly east of the proposed Simpson Ridge project area. In fact, two of the sections in the Simpson Ridge project area overlie the coal reserve and are within the fenced area of EDC's Medicine Bow Ranch (i.e., sections 12 and 14 of R80W, T21N). Several coal companies are interested in purchasing EDC's property and developing the coal reserve. It is very possible that this coal reserve could be developed within the next five years. Yet, the EIS states that future coal development is unlikely in the near future (see section 3.1.3.1 of the
1 EIS) and concludes that the wind project's affect on future mineral development is "negligible" (see page 2-44). The first sentence of the second paragraph on page v of the Executive Summary contains a similar reference. The EIS must be revised to reflect the potential for coal development in Carbon County, Wyoming. EDC recommends that the Simpson Ridge project area be slightly reduced in size in order to accommodate future coal development in this region. Specifically, sections 1, 2, 3, 10, 11, 12, 14 and 15 of R80W, T21N should be excluded from the Simpson Ridge project area in order to allow for future coal mining activities. This small reduction in the project area will still provide the wind project developers with ample sites within the modified Simpson Ridge project area to locate their windplants. It is important to understand that the other major owner in the coal reserve is the U.S. government. Thus, the potential loss in future jobs and tax revenue to the State of Wyoming and the U.S. government that could result from not making this small modification greatly

1 cont. outweigh any minor inconvenience to the developers. In addition, EDC recommends
2 that the BLM encourage the wind project developers to consider the distinct possibility of coal mining operations in their future windplant site plans.

3 EDC also recommends that Alternative No. 3 for the proposed transmission line be selected by the BLM. The other alternative transmission lines, in particular Alternative No. 2, would adversely affect development of the coal reserve.

Once again we thank you for the opportunity to comment on the draft EIS. As always, we have found the BLM to be a very cooperative and professional organization. Please contact Mr. Dennis Keller if you have any further questions regarding our comments (312/394-8370).

Sincerely,

Jim Small
Vice President

JAS:DFK:gch

U. Sandra M. Frost

March 17, 1995

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

RECEIVED
MAR 20 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Dear Sir,

Re: Draft EIS for Kenetech/Pacificorp Windpower Project
Carbon County, Wyoming

The draft EIS was most interesting reading. I would like to make a few comments regarding the site locations, the wildlife populations, and the recreational use.

Introductory statements mention that the 1,390 turbines in the final project will generate 500 MW, or 5.5% of the projected 9,000 MW needed within twenty years. Cost effective wind-generated power comes from steady winds of over 15 mph. The Foote Creek Rim has an average wind speed of 21.5 mph. On page 2-33 the EIS states that Simpson Ridge wind efficiency is 90% of Foote Creek Rim's. There is no average wind
1 speed given for Simpson Ridge.

2 The wildlife abundance and diversity on Foote Creek Rim contrasted to that on Simpson Ridge is amazing. Nowhere in the report is there any statement which correlates and elucidates the vitality of Foote Creek Rim as habitat.

Pronghorn antelope, mule deer, white-tail deer and elk are on Foote Creek Rim. Disturbance and disruption from construction and operation will modify the elk behavior patterns. Simpson Ridge does not seem to have white-tail deer or very many elk (depending upon the winter forage conditions). Foote Creek Rim has 165 raptor nests with a density of .44/mile; Simpson Ridge has 141 raptor nests with .75 /mile and the transmission lines have 121 nests in their vicinity. The 65 active nests are used by red-tailed hawks and ferruginous hawks. The Mountain Plover, a Federally listed C2 species, nests on top of Foote Creek Rim. Along the Eastern side of Foote Creek Rim are ponds and lakes. Waterfowl and shorebirds have been observed flying over the rim with 45% flying at the height of the turbines. The greatest number of Passerines occurs on the eastern side of Foote Creek Rim.

Of the Federally designated Threatened and Endangered Species found in the project area: Bald Eagles were observed on Foote Creek Rim and one nest found; twenty-seven Peregrine Falcons were observed on Foote Creek Rim and 21 of the 27 were flying at turbine rotor height (U.S. citizens have directed a great deal of money and effort to establish a healthy Peregrine population such as seems to be here.); Black-footed Ferrets were historically sighted near here; and the Mountain Plover was observed and nests found on top of Foote Creek Rim. Inclusively speaking, 15 Threatened and Endangered species occur on Foote Creek Rim.

Comment T1: See Section 8.2.9 in the FEIS.

Comment T2: Possible conflicts between wind energy and coal development would be analyzed during the preparation of future NEPA documents if new applications for development (coal or wind) are received.

Comment T3: In deciding whether to grant a ROW to PacifiCorp for transmission line construction, BLM will consider the fact that Alternate Transmission Line Nos. 1 and 2 would adversely affect development of coal reserves in the Simpson Ridge area.

3 People interact with the project area a great deal. Travelers on Interstate 80 and residents of Arlington will view the project on top of Foote Creek Rim. Right now the rim has a scenic quality rating of 14 (B). The EIS does not state what the upper limit is for rating. Simpson Ridge rates an 8 (C). Hunting season brings an influx of hunters. Almost 15,000 big game animals in the project area were harvested in 1993. There were approximately 18,000 hunters with 93,295 recreation days in the project area during the hunting season of 1993. This is a lot of people in the project area!

4 In conclusion, based on the relatively close wind generation capacity of the two areas, Foote Creek Rim and Simpson Ridge; on the much greater diversity and richness of the wildlife population, use and habitat of the Foote Creek Rim and based on the great numbers of hunters in the Foote Creek Rim; **I suggest an Alternate Plan where development of wind turbines takes place on Simpson Ridge ONLY.** In fact, go ahead and increase the numbers of turbines at the Simpson Ridge site or enlarge the Simpson Ridge site.

Sincerely,

Sandra Frost

Sandra M. Frost
262 N. 6th
Laramie, Wyoming 82070
(307) 742-0724

Comment U1: Annual wind speeds in the Simpson Ridge area average 18-26 mph.

Comment U2: Avian use of Foote Creek Rim was intensively studied during 1994 and 1995. BLM concurs that the area supports a diverse and abundant fauna which is described in Chapter 3.0 of the DEIS. However, comparable data from the Simpson Ridge area will not be available until several months or more of monitoring have been completed. Therefore, it is impossible to compare the relative abundance and use of these two areas or to state definitively that Foote Creek Rim is superior habitat. Furthermore, baseline data show that the Simpson Ridge area contains many more raptor nests than on or adjacent to Foote Creek Rim, suggesting that this area is superior raptor nesting habitat. BLM is implementing a monitoring program (see Appendix B of the DEIS and Section 8.2.3 of the FEIS) to improve baseline data for the Simpson Ridge area. Due to the limited extent of data and the need to provide wind-generated electricity in the near future, it is not reasonable to examine relocating Phase I within the Simpson Ridge area. See also Section 8.2.1 in the FEIS.

Comment U3: According to Table 3.39 in the DEIS, the maximum rating for a Scenic Quality Inventory would be the sum of the maximum rating for each key factor (i.e., 32+). As footnoted, a rating may exceed 5 for Scarcity if given written justification; hence, the upper limit could slightly exceed 32.

Comment U4: See response to Comment U2 in the FEIS.

Comment V1: See Sections 8.2.1 and 8.2.12 in the FEIS.

V. F. Earline Hittel

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301

Dear Sir:

I have read the Draft EIS on the Kenetech/Pacificorp Windpower Project and I feel that the danger to both
1 the migratory and the resident birds in that area dctates the the project should be moved to a different part of Wyoming, especially in light of the developers statements that the project is only being proposed to test the economics of wind power.

I do belive that wind power is a resource that should be researched but surely there are areas that a project could be developed that wouldn't endanger so many birds.

When tht effects of reduced habitat in the northern and southern hemispheres is considered, it would be a shame to put another obstacle such as a windfarm in the path of so many species of migatory and resident birds.

Thank you,

F. Earline Hittel

F. Earline Hittel
36 Begonia
Casper, WY 82604

W. Lloyd Dorsey

Lloyd Dorsey
P.O. Box 667
Wilson Wyoming 83014
307-733-4746

RECEIVED
MAR 22 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

March 20, 1995

To:

Walter George, Project Leader
BLM
Box 670
Rawlins, Wyo. 82301

Re: Comments on Draft EIS of Kenetech/Pacificorp Windpower Project.

The following are important concerns I have involving the Draft EIS on the proposed Kenetech/Pacificorp Windpower Project in Carbon County, Wyoming. Reference pages, maps, and tables from the Draft EIS are noted where applicable; quotations are from the Draft EIS text. Statements not in quotes are mine.

Pronghorn Antelope

p. 3-34. "The entire Foote Creek Rim area is considered winter/yearlong pronghorn range." "The majority of the Simpson Ridge area (61.8%) is pronghorn winter/yearlong range."

1 The pronghorn antelope in the KPPA can ill-afford further usurpation of their range, especially considering the cumulative adverse impact of industrial and transportation and resource development throughout the state and region.

Elk

p.3-44. "All of the Foote Creek Rim area is considered winter/yearlong habitat for (elk)" as is "65% of the Simpson Ridge area." Also, on p.4-39 it mentions the "...habitat disturbance and potential displacement (of elk) " as a result of the Windpower Project.

1 My comment is the same relating to elk as to pronghorn (above).

Sage Grouse

p.3-58. "Forty-four sage grouse leks occur within the KPPA and its adjacent.....buffer." 8 active leks, 36 historic.

1 My comment is the same relating to sage grouse as to pronghorn (above).

Bioregional Cumulative Adverse Impacts

map 4.1. This map is a good illustration of some of the recent industrial, transportation, and resource development projects in southern Wyoming which have adverse impacts to the native wildlife species
2 and sagebrush/grassland ecosystem. This ongoing, and cumulative, displacement of wildlife, artificially induced mortality of wildlife, and destruction of wildlife habitat continues at an accelerated pace. The BLM has been irresponsible in their management practices vis-à-vis

comment on Draft EIS of Windpower Project
by Lloyd Dorsey
p.2

2 cont. wildlife in this bioregion.

Wick Unit

p.3-32. 77.1% of the Foote Creek Rim area is in the Wick Wildlife Habitat Management Unit which is managed by the WGFD "to provide quality year-round habitat for all wildlife species", and, "to provide public access for quality experience with wildlife."

3 This unit should not be used for any industrial or resource development purposes since the mandate for these WGFD WHM Units runs counter to development ethics.

Rare Species

table 3.18 (p.3-66, p.3-67) This table lists 33 plant and animal species known or potential to the KPPA which are listed or candidate species for protection by the ESA. These plants and animals encompass species as diverse as the bald eagle, the mountain plover, the eastern short-horned lizard, and the Ute lady's tresses.

4 It is unconscionable that the BLM as a land management agency would permit industrial usage of land within their jurisdiction which would surely be injurious to the habitat and individuals of such rare species.

Amphibians & Reptiles

p.3-64. Three amphibian and three reptile species are likely to occur within the KPPA.

5 Throughout the state and region amphibians and reptiles are declining due to habitat loss as a result of development. These categories of animals are often the last considered when analyzing project proposals because they are not readily seen by the public and therefore do not get much press. Yet amphibians and reptiles are virtually intolerant to adverse habitat impacts.

Birds

p.4-45. "....(I)t is relatively certain that some migratory birds or other protected species would collide with Windplant structures...."
p.4-44. "The USFWS has contended that....avian collision related mortality may constitute violations of the MBTA, the BEPA, and the ESA."

6 It is unacceptable to the American public that species such as the bald and golden eagles, peregrine falcon, and ferruginous hawk, all rare species struggling for survival and subjects of considerable conservation efforts, would be killed in significant numbers by this Windplant Project. Evidence in existing windpower projects is stark

comment on Draft EIS of Windpower Project
by Lloyd Dorsey
p.3

6 cont. testimony to this fact.

This again would be an unconscionable and indefensible misuse of the public trust on the part of the BLM by granting the project request.

Visual Impacts

p.4-92,93. Also, visual simulations in Appendix F. "....(V)isual impacts (of the Windplant) would be significant." "The (wind)towers provide a change in scenery from the undeveloped grasslands and sagebrush found .....around the KPPA."

7 The BLM, as the primary permitting land and mineral management agency in southern Wyoming, has certainly succeeded almost beyond comprehension over the years in changing the scenery on nearly the entire natural landscape. That this could even remotely be considered good when objectively analyzed and on the scale to which it has occurred, and continues to occur, defies comment.

General Comments

In 1995 it is much easier to wreck the land than it is to protect the land. The entire American industrial infrastructure as it now exists is set up, and poised, to destroy natural landscapes simply by engaging the wheels of progress in motion. This can be readily accomplished by making some phone calls and faxes, having administrative assistants shuffle some papers, let the lawyers get the necessary permits (which are seldom, if ever, in doubt) and then firing up the bulldozers and backhoes and setting them loose. A time proven process. Unfortunately, the political climate is conducive to this style of development and land management as evidenced by the nearly carte blanche industrial and development permitting processes of the BLM and Forest Service throughout the West.

To wreck the land, public land management agencies simply have to go through the motions of complying with the NEPA process and quickly produce a document with preferred alternatives which fortuitously mimic industry's wants and desires. The recent plague of mining, oil, gas, and coal development throughout the West is ample testimony. However, land protection usually involves congressional action often taking years and having to run through a seemingly impossible gauntlet of political and bureaucratic maneuvering. It, by contrast, is extremely difficult and rarely successful. A prodevelopment environmental review can take as little time as several weeks, and even before completion, the noise of the earth destroying machines is heard rumbling in the background. It is an all too familiar scenario.

Any perceived need or desire expressed by Kenetech Windpower Inc. to establish a windplant in order to generate revenue for themselves,

comment on Draft EIS of Windpower Project
by Lloyd Dorsey
p.4

and that indeed is the sole reason for their project application, should be superceded by the interests of the public at large in those resources and values placed in jeopardy by the project. If Kenetech's proposed project were truly a nonpolluting source of electrical power generation, then the inherent destruction of a significant portion of a presently healthy and functioning and natural sagebrush/grassland ecosystem would not be included in the project proposal. It is about as nonpolluting as a dam on the Columbia River.

8 If large scale windplants are ever to possess merit, proponents of such projects must learn to locate them in existing (and nonrestorable) ecological sacrifice zones, such as: rights of way for interstate highways, strip mines, croplands, urban centers, etc.. Only then can these projects be judged in a favorable environmental light.

Recommendation

9 It is for the above reasons that I recommend the No Action Alternative for this proposed Windpower Project.

Thank you for your consideration in this matter.

Sincerely,

Lloyd Dorsey

Comment W1: See Sections 8.2.8 and 8.2.12 in the FEIS.

Comment W2: The elk habitat within the project area is noncritical habitat; habitat loss is not likely to affect populations. See also Section 8.2.8 in the FEIS.

Comment W3: The Wick Wildlife Habitat Unit was purchased by the WGFD in 1964 to provide winter range for elk. The Unit is now managed to provide quality year-round habitat for all wildlife species which use the Unit. Additionally, WGFD acquired recreational access easements from private landowners adjacent to the Wick Unit. These lands are shown on Map 3.9 (page 3-33) of the DEIS. In the DEIS, the double-hatched area depicting the area of recreational access easements was mislabeled in the map legend. The label should read "Recreational easements acquired from the Bear Creek Cattle Co. as part of the Wick Wildlife Habitat Management Area." Also, Section 18, T19N, R78W, was incorrectly identified as recreational easement lands. This section in the project area is federal land. A revised Map 3.9 is in Chapter 3 of the FEIS.

No project area lands are located in the Wick Wildlife Habitat Unit. Phase I lands in Section 24, T19N, R79W, are located on private lands where WGFD has a recreational easement. To compensate WGFD for loss use of easement benefits from project facilities on 30 ac in Section 24, KENETECH provided a replacement easement for 640 ac located in Section 2, T19N, R79W.

Existing legal access to the Wick Unit or recreational easement lands in the Wick Area will not be restricted by the project. The project area and proposed turbine strings or individual towers would not be fenced. The general public may not cross lands where no recreational easement is provided without permission of the private landowner. Main access roads to the project area are proposed for these private lands. See Section 8.2.10 in the FEIS.

Comment W4: See Section 8.2.12 in the FEIS.

Comment W5: Impacts to reptiles and amphibians are considered in Chapter 4.0 of the DEIS. Because only about 3% of the total land area would be disturbed due to development, impacts to these animals are expected to be minimal. In addition, mitigations for wetlands and riparian areas, which are important habitats for these animals, would also help minimize impacts to reptiles and amphibians.

Comment W6: See Sections 8.2.2 and 8.2.12 in the FEIS.

Comment W7: BLM is responsible for the balanced management of public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield to produce a combination of uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources.

Comment W8: See Section 8.2.1 in the FEIS.

Comment W9: Thank you for your recommendation. The No Action Alternative is still a viable alternative and will be considered during decision-making.

X. Carbon County School District No. 2, Board of Trustees

March 20, 1995

Walter E. George
Project Leader
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301

Re: Draft Kenetech/PacifiCorp Windpower Project
Environmental Impact Statement

Dear Walter;

The following are comments in regards to your DEIS on the Kenetech/PacifiCorp Windpower Project.

Wind energy, a renewable resource, appears to be a great idea for a future power source. The idea of converting this resource into an environmentally clean useable product is exciting. This concept will be another opportunity for our students/staff to enhance their educational backgrounds in our school district.

Other pluses for our district will be the 29 full time Wind Smiths to operate and maintain the completed 500 - MW Windplant. Also, all the construction workers for the different phases (@126) will help our tax base in the county.

Your DEIS adaquately addresses proper mitigation measures in regards to four specific resources - big game, cultural, visual, and migratory birds - which appear to be the most potentially significant. We commend you for these efforts.

This project will be very positive for our school district and county. The dollars generated will be a welcomed addition for our schools.

Thank you for this opportunity to comment as you move ahead to bring this project to fruition.

Sincerely:
Robert D Merrill - Chairman

Carbon County School District #2
Board of Trustees

RECEIVED
MAR 27 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Y. South Central Industrial Association of Wyoming

SCIA

South
Central
Industrial
Association
of Wyoming

P.O. Box 700
Rawlins, WY 82301

March 22, 1995

Mr. Walter George, Project Leader
BLM Rawlins District Office
P. O. Box 670
Rawlins, WY 82301

RE: Draft Environmental Impact Statement
Kenetech/Pacificorp Windpower Project

RECEIVED
MAR 23 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Dear Walt;

Our Association represents the major industries of Carbon County, Wyoming. We are concerned with economic development opportunities which will enhance the lives of the citizens of this area. In addition, we encourage additional industry because of the benefits that accrue to all of us with a more diverse base to support a stable workforce and tax structure.

Wind energy, a renewable resource, appears to be a great idea for a power source. The prospect of converting this clean resource into an environmentally useable product is exciting. This proposed project will be another opportunity for our local school districts to enhance the teachers'/students' educational background with a local example of this state-of-the-art technology.

Other pluses for our area will be the jobs created. We welcome the estimated 29 full-time windsmiths needed to operate and maintain the completed 500 MW wind plant. The economy and tax base of the area will also be improved during the construction phases which are projected to result in employment of about 126 workers.

Your draft EIS addresses adequately the proper mitigation measures in regards to the four major resources--big game, migratory birds, and cultural and visual concerns--which appear to have potential significance. We commend you for these efforts.

This project will be very positive for the citizens of this area. The dollars generated will be a welcomed addition for our school districts and county government. The project shows a positive commitment to business development in our area which coincides with Governor Geringer's pledge that "Wyoming is open for business".

Thank you for this opportunity to comment as you move ahead to help bring this project to fruition.

Sincerely,

David F. Slater /ms

David F. Slater
President
South Central Industrial Association

DS:mb

Z. John H. Collamer

O. Box 465
aratoga, WY. 82331
20 March 1995

Mr. Walter E. George, Project Leader
United States Department of the Interior
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, Wy. 82301

RECEIVED MAR 22 1995 BUREAU OF LAND MANAGEMENT

RE: KENETECH Windpower Project

I support this project, and applaud the effort put forth by the people involved to make this project a reality. I have made Carbon County my home for 55 years. In this time I have witnessed three booms in the coal industry two in the forest industry and a boom and bust cycle in the oil industry all of which have taken their toll on Carbon County and the State of Wyoming.

The KENETECH project will be benifical to Carbon County and the State in many ways. It will help replace revenues lost to decreased mining and timber harvest. It will give some diversification to the limited industrial sector of the economy. While having a significant impact on county revenues it will not greatly impact the communities in terms of housing and services. The employment potential may benefit several of the smaller comunities that have lost jobs due to decrease in mining in the area.

KENETECH'S willingness to identify and examen the issues and especially to have a monitering plan built into the wind farm coming on line makes this company and this project a logical extension of the engergy business in Carbon County and the State. This project allows Wyoming to participate on the ground floor of an alternative engergy source. With the monitering to see that the process is technicaly, economically and enviromentally feasible it could result in an additionally acceptable engergy development for Wyoming and other areas of the United States.

I recognize and support this technology as an excellent way to satisfy new engergy demand or replace engergy produced by hydroelectric plants. This technology will minimise the impact to the brittle environment, the community and its' infrastructure while providing economic development for the County

Thank you for the opportunity to participate in the assessment process.

Sincerely

John H. Collamer DVM

4 cont. In particular, the analysis would be more complete if results were also obtained for other wind directions (also in cold, dry weather as in the DEIS model, p. 4-24), and considered their expected frequency throughout the year. In addition, Map 4.2, p. 4-25, should indicate the parameters that were used to generate that profile (e.g., Phase I 70.5 MW only, wind direction 250°, etc.), whether or not additional models runs are made.

5 5. Section 2.2 Alternative A in the project description, p. 2-32, should clearly state that the expectation for Alternative A would be to develop the Foote Creek Rim area to the full 200 MW, unless restricted by BLM for environmental concerns, as discussed on p. 4-90, last paragraph.

The following references were unclear or prompted unanswered questions:

6 6. The following statement on p. 4-31, Section 4.2.1 Vegetation, subsection 4.2.1.2 Proposed Action, paragraph 4, was confusing:

> "Shifts in the species composition may be significant in localized areas, but the overall mosaic within the KPPA probably would not change by greater than 50%...therefore, areawide impacts are not expected to be significant."

From the context, I suspect 50% was meant to be 5%; 50% would certainly be significant (particularly given a criteria of 20%, p. 4-29).

7 7. In Section 4.1.1 Climate and Air Quality, p. 4-6, paragraph 3, a Pacific Northwest Utilities analysis showed that "between 1989 and 1994, negotiations were completed for 1,276.5 average MW of new resources." Is this regionally or nationally? What does "average" refer to (e.g., annual, per plant)?

8 8. Will application of a "petroleum resin" (p. 4-9, second paragraph) for dust suppression on roads have any impact on water runoff?

The following information would be particularly useful earlier in the document, as noted in each case. These items tended to be included much later in the discussion, or omitted.

It would be helpful to:

9 9. ...include a description of the origin and likely duration of the 1.5¢ Production Tax Credit used to calculate comparative costs in Table 1.2 (p. 1-7) and Table 2.9 (p. 2-34). Also in Table 2.9, the difference between "transmission costs" and "wheeling costs", if any as applied to the estimates, was not clear.

10 10. ...include references to applicable water quality standards in Table 3.4 Surface Water Quality Data, p. 3-17.

11 11. ...include the explanation of both Criteria A and Criteria D for NRHP assessment of cultural resource sites with the introduction of these terms in Section 3.3 Cultural Resources, p. 3-78, second column. (A description is provided in the DEIS on p. 4-72, after much of the discussion referring to the criteria.)

12 12. ...include a definition of Class I and Class III paleontology surveys,, to which numerous references are also made (also p. 3-78).

13 13. ...in Section 3.5 Land Use, indicate generally the degree of occupancy of the "residential structures" shown within or near the KPPA on Map 3.20, p. 3-107. (This may or may not be the same as indicated on p. 4-26, bottom of first column.)

AA. William Saylor

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 3
To W George	From W Saylor
Co. BLM	Co. Univ of IL
Dept.	Phone # 217-333-3890
Fax # 307-324-5423	Fax # 217-244-1717

March 23, 1995

Walter E. George, BLM Project Leader
KENETECH/PacifiCorp Windpower Project
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

RECEIVED MAR 24 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

Subject: Comments regarding Draft Environmental Impact Statement DES-95-2
KENETECH/PacifiCorp Windpower Project, Carbon County, Wyoming

Dear Mr. George:

Thank you to your office for the prompt transmittal of a copy of the Draft EIS for the KENETECH/PacifiCorp Windpower Project. I respectfully wish to submit the following comments regarding the document. The purpose of my review was general, as a student of environmental planning with an interest in sustainable power generation and utility planning, and some familiarity with other environmental mitigation programs.

First, I found the EIS to be an extraordinarily comprehensive and balanced document. Its discussions of possible cumulative impacts, lifecycle issues concerning various resources, definitions of technical terms, and explanations of many model parameters and calculations for the non-expert reader were all quite notable. The document should serve well as a decision-making tool. The following comments are mostly pertinent questions I found unresolved in the DEIS.

Major concerns include:

1 1. As noted in the erratum accompanying the DEIS, the recommended action was omitted from the DEIS. The final EIS should identify not only the preferred action, but also the preferred transmission line route alternative, with a discussion of the rationale for its selection.

2 2. The Plan of Development (POD) for each phase, in which site-specific design and mitigation plans would be identified, is emphasized as being an integral part of the impact assessment process. Section 2.1.2, p. 2-5, notes that the POD process "would be a binding provision of the NEPA document." The POD would also have supplemental and more site-specific information than the DEIS. As such, it seems the opportunity for local public review of PODs before approval should be explicitly guaranteed, perhaps by publication of its availability for viewing at a local public office and by direct notification of its availability to interested private parties. The numerous descriptions of the role of the POD throughout the document did not suggest that this would be the case.

3 3. The PODs should also make clear, in particular, the responsibilities of the parties and the likely actions to be taken if reclamation (i.e., revegetation) is deemed unsuccessful five years after the previous attempt (Section 4.2.1.1, p. 4-29).

Other concerns include:

4 4. The noise impact model (Section 4.1.8, pp. 4-23 to 4-28) appeared to be limited in its consideration of only average (if conservative) conditions rather than a range of conditions.

14 14. ...indicate that the Employment and Population estimates in Tables 4.18 - 4.22 (pp. 4-77 to 4-82) are *total* each year, rather than *additional* each year, due to the project.

15 15. ...list the Stormwater Pollution Prevention Plan (SPPP) and the Hazardous Materials Management Program (HMMP) explicitly, under their approval agency, in Table 1.3 Federal State, and County Authorizing Actions, p. 1-9.

The following are typographic errors in the DEIS:

16

16.	p. 1-9	Table 1.3	Under "Wyoming Department of Environmental Quality - Water Quality Division": "(33 U.S.E. Sections 1251-1376)" should be "(33 U.S.C. Sections 1251-1376)" [appears twice]

17

17.	p. 4-86	Table 4.23	Under "Local Sales, severance,..." for Proposed Action: "Annual average: $ 302,999" should probably be multiplied by 10 ("$3,029,994"), if it was obtained by dividing the "total during LOP: $121,199,776" by the LOP (40 years), as the other annual averages seem to have been calculated.

I hope you find these comments useful. Again, thank you for sending the document; it is a thorough compilation that will serve as a good resource. Please do not forward a copy of the Final EIS, however, as I am unsure of my future address.

Thank you again, and good luck with the project.

Sincerely,

William Saylor
Department of Urban and Regional Planning
907-1/2 W. Nevada St.
Urbana, IL 61801

Comment AA1: See text modifications in the Executive Summary in the FEIS.

Comment AA2: See Section 8.2.6 in the FEIS.

Comment AA3: The POD for each phase would contain site-specific erosion control and reclamation plans, revegetation success standards, and actions to be taken if revegetation is unsuccessful.

Comment AA4: The wind direction selected for use in the analysis of potential project-related noise impacts was based on wind data from the area. The wind in the area is from the west at 250° more than 55% of the time. Because this is the direction which would result in the highest noise levels at the nearest noise-sensitive areas, the westerly wind direction was used for the analysis in the DEIS. The analysis used conditions whereby the greatest potential for noise impact would exist.

Comment AA5: Text has been added per your request. See Section 2.2 in the FEIS.

Comment AA6: The text has been modified accordingly. See Section 4.2.1.2 in the FEIS.

Comment AA7: The analysis was completed in the Pacific Northwest, not nationally. Average MW is defined the average amount of energy (number of MW) supplied or demanded over a specific period of time.

Comment AA8: Most dust suppressants are only partially porous and impede infiltration. Therefore, surface water runoff from roads treated with dust suppressant would probably be greater than from untreated roads. Ditches and culverts would be designed to accommodate the additional runoff. Non-polluting suppressants (e.g., environmentally benign polymer resins) would be used.

Comment AA9: Congress enacted the 1992 Energy Policy Act, which included institution of a 1.5 cent/kWh production tax credit for utilities buying into renewable energy resources. The production tax credit provides 15 mills/kWh for generation from wind and biomass resources for the first 10 years of power plant operation and applies to all power plants utilizing renewable energy in service prior to July 1999. The tax credit is in 1993 dollars and escalates with inflation. The Energy Policy Act also instituted a 1.5-cent/kWh production incentive for renewable resource facilities owned by public utilities. The production incentive, which affects EWEB's part of the project, can be received for up to 10 years, but must be appropriated by Congress (it has not been yet). A facility must be placed in service before September 30, 2004 to be eligible for the incentive. The impact of the production incentive is not reflected in the cost data in the DEIS or FEIS. Transmission costs and wheeling costs are synonymous.

Comment AA10: Surface water quality standards do not exist for hardness, calcium, magnesium, sodium, or sulfate. WDEQ-WQD standards for the remaining categories are as follows (WDEQ 1990; personal communication, May 16, 1995 with Robert Gumtow, WDEQ-WQD, Cheyenne, Wyoming):

- pH should not be <6.5 or >9.0 for any surface waters.
- Chloride must not exceed 860,000 and 230,000 micrograms/liter (acute and chronic values, respectively) for Class I-III streams; there are no standards for Class IV streams.
- Activities should not result in an increase in turbidity (which is the closest to a TDS standard that there is) of >10 nephelometric turbidity units (NTUs) for Class I and II streams or an >15 NTUs for Class III streams.
- Suspended sediments must not exceed levels that could result in significant degradation of beneficial uses or aesthetics.

Comment AA11: Definitions of eligibility criteria have been added to the text. See Section 3.3 in the FEIS.

Comment AA12: Class I and III surveys for paleontological and cultural resources are of similar type. Class I surveys involve searches of existing literature and databases for known resource types and locations. Class III surveys involve on-the-ground, comprehensive searches of the project area by qualified archaeologists or paleontologists approved by the BLM. All surveys are documented in a report submitted to BLM. Cultural resources reports are also reviewed by the State Historic Preservation Officer and the Advisory Council on Historic Preservation.

Comment AA13: There are no occupied residences within the KPPA. The closest occupied residences to the project area are the highway department residences west of Highway 13 at Arlington.

Comment AA14: Footnotes have been added to Tables 4.18-4.22 accordingly.

Comment AA15: The table has been modified accordingly.

Comment AA16: The text had been modified accordingly.

Comment AA17: Table 4.23 has been modified accordingly.

AB. Ted Lapis

3/26/95 11:45PM Ted Lapis 307 672 0062 Mr. Walt George 13073261474 Pg 1 of 1

1726 Warren Ave.
Sheridan, WY 82801

Walt George
U.S. Bureau of Land Management
1300 3rd St.
Rawlins, WY 82301

RECEIVED
MAR 26 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

March 26, 1995

Dear Walt,

I am writing to express my support for developing Kenetech's Wyoming Windplant. I believe this project will prove that recent technological advances have made it possible to harvest wind energy's potential benefits, to provide cost effective electric power.

The latest generation of wind power technology has proven competitive in several different areas. This new technology deserves a chance to earn its way into our power supply. Kenetech has been able to attract investor owned utilities to support the project. People that know power generation are investing their money in Wyoming Windplant because they believe the investment will pay-off. Kenetech's proven ability to attract power generation expert investors, is the best indicator project benefits will remain viable over the long-term.

Power generation is an important Wyoming industry. Broadening our resource base by adding wind to our area's existing coal, hydro, and gas powered generation will strengthen Wyoming economically. Reliability and flexibility of our power supply will improve with different types of power sources.

Wyoming needs new economic development. Kenetech's representative Bruce Morely has stated a desire to hire and train local people to run and maintain the equipment. He has also stated a desire to purchase materials locally when possible. Good jobs and local purchases will provide Wyoming with substantial economic benefits.

The Medicine Bow-Rawlins area has been hard-hit economically by reduced energy sector employment. The Wyoming Wind Project will offer opportunities for people living in the area to harness a resource, instead of making wind the butt of jokes. In my opinion, seeing turbines turning wind power into electric power is a positive visual impact for this site. Economic benefits will help off-set some of the negative siting impacts.

I am concerned about the impact of the wind farm on birds, especially raptors. Unsensored biologist's evaluations are critical to develop a credible program to monitor this project's effects. Kenetech has made design modifications in the wind turbine and tower to reduce bird strikes. Kenetech's experience with design modifications in Minnesota and California indicates these new improvements effectively reduce bird strikes.

NEPA requirements led to the development of the new design. The NEPA process is neither cheap or infallible, but Kenetech's experience, shows that the NEPA process improves products and processes. Successful completion and operation of this project at competitive costs, will show skeptics that NEPA can reduce energy investor's risk. Discovering essential costs early on, will prevent unnecessary frustration, wasted efforts, monetary losses caused by having to go back and deal with unanticipated problems.

Nothing new can be done without taking some worthwhile risks. Wyoming Windplant's potential benefits outweigh anticipated negative impacts. I am confident that private enterprise working with US BLM, can successfully harness wind energy to supply electric power, without adversely affecting our environment. I look forward to seeing Kenetech's wind turbines harnessing Wyoming's wind to provide us cost-effective electricity.

Sincerely,

Ted Lapis

AC. U.S. Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

MAR 24 1995

Ref: 8WM-MF

Area Manager
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301

Re: EPA review of the draft
Environmental Impact Statement (EIS)
for the Kenetech Windpower project

Dear Sir:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Region VIII office of the Environmental Protection Agency has reviewed the subject document.

The project appears to have much merit as a "Green" alternative to the fossil fuel or nuclear type of power production projects. The use of the wind as a renewable energy source is very commendable. It is recognized that the proposed project will have an impact on raptors. EPA encourages all parties involved with the environmental problems of the proposed project to continue the meritorious efforts that have been made up to this time.

Based on the procedures EPA uses to evaluate the environmental impacts of the proposed action and alternatives and the adequacy of information provided, the EPA Region VIII rates the draft EIS as category EC-2 (Environmental Concerns, Insufficient Information). While the project appears to comply with laws and regulations administered by EPA, we have environmental concerns due to the impact of the proposed project on raptors. The BLM is encouraged to work with the U.S. Fish and Wildlife Service to do everything that's reasonable to minimize the take of birds. 1

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RE:

EPA appreciates the opportunity to review the subject document and all the effort which went into the preparation of it. If you have any questions, please contact either me, at (303) 293-1701, or Carl Heskett of my staff, at (303) 293-1557.

Sincerely,

J. William Geise, Jr.
Acting Chief
Environmental Assessment Branch
Water Management Division

Comment AC1: See Sections 8.2.2 and 8.2.3.3 in the FEIS.

AD. Wyoming Association of Professional Archaeologists

WYOMING ASSOCIATION of PROFESSIONAL ARCHAEOLOGISTS

Walt George, Project Leader
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY. 82301

March 24, 1995

Dear Mr. George,

The Wyoming Association of Professional Archaeologists (WAPA) has reviewed materials relating to the Kenetech Wind Energy Project and its DEIS. We offer the following.

A project of this size and scope will probably not be able to avoid impacting historic properties. Provided that the appropriate mitigative efforts designed to reduce or eliminate impacts to historic properties are conducted and reported upon, the WAPA has no objections to implementing the project. BLM is the lead federal agency for the Kenetech project, so BLM should insure that cultural resource inventory, evaluation and mitigation occurs for all project elements, regardless of land status.

1 We are aware that significant American Indian conflicts exist concerning the project. We ask that BLM work closely with American Indian groups to resolve these conflicts in a spirit of mutual cooperation. We defer to tribally recognized American Indian specialists for identification and resolution of traditional cultural properties, sacred sites and other conflicts.

WAPA appreciated the interested party status afforded the organization and would like to receive a copy of the Final EIS and Record of Decision. Thank you for an opportunity to comment.

Sincerely,

David Vlcek

David Vlcek, 1995 President

RECEIVED MAR 27 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

AE. Wyoming Game and Fish Department

WYOMING GAME AND FISH DEPARTMENT

RECEIVED MAR 20 '95 GOVERNOR'S OFFICE

March 17, 1995

RECEIVED MAR 27 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

EIS 7485
Bureau of Land Management
Rawlins District Office
Draft Environmental Impact Statement
Kenetech/PacificCorp
Windpower Project
SIN: 94-010
Carbon County

WYOMING STATE CLEARINGHOUSE
ATTN: JULIE HAMILTON
OFFICE OF THE GOVERNOR
STATE CAPITOL
CHEYENNE, WYOMING 82002

Dear Ms. Hamilton:

The staff of the Wyoming Game and Fish Department has reviewed the draft Environmental Impact Statement for the Kenetech Wind Energy Development Project on the Rawlins District. We offer the following comments for BLM's consideration.

Terrestrial Considerations:

1 Given the motion, noise, close spacing, multiple rows, low blade sweep, extensive distribution, and sensitive locations of the wind turbines of this project, it is probable turbine strings will impact a variety of habitat functions. In accordance with 40 CFR 1500.2(e), 40 CFR 1502.14, 40 CFR 1502.16, and 40 CFR 1508.8, those concerns should receive rigorous treatment in the analysis.

2 The DEIS should adequately disclose the precedent-setting nature of this action. This department encourages the development of renewable energy technologies, but we are concerned that those technologies are made compatible with wildlife resources. This is the first proposal of this magnitude within the unique climatic and biological conditions of southern Wyoming. The procedures, analyses, and conclusions ultimately approved in the FEIS will irretractably affect future decisions about similar proposals. It is imperative to base

Headquarters, 5400 Bishop Boulevard, Cheyenne, WY 82006-0001

Comment AD1: See response to Comment S4 (above).

Ms. Julie Hamilton
March 17, 1995
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2 cont. this decision on sound technical information, to appropriately site the project, and to develop adequate monitoring and mitigation provisions. The uncertainty about impacts and the precedent-setting nature of the decision elevate the level of significance in accordance with 40 CFR 1508.27 (b)(5) and (6).

3 We are concerned by the lack of adequate baseline data on which to base comparison of monitoring and mitigation results. Scientifically accurate data are essential for precedent-setting projects with a high degree of uncertainty.

4 Mitigation effectiveness has not been adequately addressed in the DEIS, yet it is required in the analysis (Federal Register 46(55), 18026-18036, 3/23/1981).

During the scoping process (40 CFR 1501.7), we identified potentially significant wildlife issues for analysis in the EIS (letters dated 2/23/94, 6/3/94, 6/28/94, and 7/14/94). After reviewing this DEIS, it is our finding the following issues are substantial and did not receive adequate treatment: 1) rationale for eliminating alternative sites; 2) development of adequate baseline wildlife information; 3) cumulative effects analysis; 4) law enforcement and compliance issues; 5) explicit, executable mitigation for defined impacts; 6) impact assessment criteria; and 7) executable provisions that tie mitigation to monitoring results. Our specific comments follow:

5-11

1) RE: Alternatives Analysis (Sec 2.4) -- 40 CFR 1502.14(a) requires agencies to rigorously explore and objectively evaluate all reasonable alternatives ... including [40 CFR 1502.14(c)] reasonable alternatives outside the jurisdiction of the lead agency. Additional federal guidance (Federal Register 46(55), 18026-18038, 3/23/1981) states that reasonable alternatives include those that are practical and feasible from a technical standpoint. We are concerned the alternatives considered in detail by BLM conflict with 40 CFR 1506.1(a)(2).

12

40 CFR 1502.33 stipulates, "If a cost-benefit analysis relevant to the choice among environmentally different alternatives is being considered for the proposed action, it shall be incorporated ... as an aid in evaluating the environmental consequences. To assess the adequacy of compliance with sec. 102(2)(B) of the Act the statement shall, when a cost-benefit analysis is prepared, discuss the relationship between that analysis and any analysis of

unquantified environmental impacts, values, and amenities." The latter include wildlife resources, public recreation, etc.

12 cont. This DEIS functionally considers only one alternative -- wind energy development in the KPPA. If economics is the foundation for eliminating ecologically sound alternatives, then it needs to be far better documented. NEPA does not allow profit margin or terms of a client contract to become the driving force behind the amount of impact to environmental resources society must accept. The DEIS has failed to establish whether other sites in Wyoming could be developed profitably or feasibly and therefore, does not provide sufficient justification for eliminating them from further consideration. BLM should disclose the specific physical and economic terms which define feasibility and should provide satisfactory justification for eliminating alternative sites, or include them in the analysis.

13 2) RE: Baseline Wildlife Information (Section 3.0) -- Baseline wildlife information in this DEIS fails to adequately characterize the affected environment, support a quantitative analysis of impacts, or enable development of effective mitigation. 40 CFR 1500.1 requires disclosure of accurate scientific information to the public and agency officials. 40 CFR 1501,2(b) requires that environmental values must be identified in adequate detail to support technical analyses. 40 CFR 1502.22 requires agencies to acquire information which is essential to a reasoned choice among alternatives, provided the overall costs of obtaining it are not exorbitant. If information cannot be obtained, the agency is required to evaluate reasonably foreseeable impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

Wildlife information for Foote Creek Rim was collected from February through November, 1994. Very little resource information has been collected in the Simpson Ridge area, which is also covered in this NEPA document. Preparers acknowledge "no seasonal movement patterns have been delineated for antelope ..." (p 3-39) and "... specific mule deer movement patterns within the KPPA are unknown ..."(3-42). Specific use patterns for elk (p 3-46) are also not well defined. Raptor distribution and activity patterns received somewhat greater attention (pp 3-47 to 3-52), but one field season does not provide statistically

sound data for comparative analyses. Seasonal use patterns are not well defined. A total of 308 raptor nests were located during the 1994 survey. Based on consultant work at coal mines, we anticipate many additional nests exist and will be discovered in subsequent years of monitoring. Substantial peregrine falcon activity at Foote Creek Rim suggests the possibility of nesting and migration (p 3-71), but these functions have not been defined. Mountain plovers nest on Foote Creek Rim and some gross distribution patterns are evident (p 3-72); however, additional delineation of use patterns is necessary for accurate impact prediction and documentation of changes.

13 cont. One season of data collection is not adequate to establish a reliable baseline for impact prediction and future documentation of project-induced changes, particularly for a large scale project of precedent-setting significance [40 CFR 1508.27(6)]. Kenetech's consultant, WEST Inc., agreed at meetings held on 7 and 28 October, 1994, that multiple years of data collection would be essential to develop any meaningful analysis of existing conditions and to support inferences about project-induced change. It was determined 3 years would be a reasonable compromise without unduly disrupting the project. Since the project is planned in phases over a 10-12 year period, additional data collection for the first phase (201 turbines) scheduled for construction on Foote Creek Rim in 1995 was excused, provided at least 3 biological years of monitoring are completed prior to all future phases. This agreement was incorporated into the draft monitoring protocol (dated 11/5/94) before release of the DEIS (see Introduction, page 1).

14 Kenetech subsequently requested waiver of the requirement to gather 3 years of data if development on Foote Creek Rim is preempted by unforeseen circumstances. We agreed in concept, provided a standard of need was defined and met. The statement which appears in Appendix B (p B-6) does not reflect that agreement. ["However, if KENETECH decides not to proceed with further development at Foote Creek Rim, due to wildlife or other concerns ..."] Please change this to, "However, if wildlife or other concerns prevent KENETECH from proceeding with further development at Foote Creek Rim, then KENETECH may apply for a BLM Notice to Proceed

for the Simpson Ridge area. The application shall thoroughly document the reasons development cannot proceed on Foote Creek Rim."

We are also very concerned by statements made throughout the DEIS which imply the BLM AO assumes discretion to curtail or modify monitoring and baseline data collection or shorten the lead time: "The need for additional baseline environmental data collection for future phases will be determined by the AO at least 1 year prior to development" (p 2-8); "Site-specific field data collected within the KPPA have been used to design an intensive monitoring program (Appendix B) to be implemented with [?] the construction of each phase" (p 5-9).

14 cont. We request a firm commitment to initiate the wildlife monitoring program commencing at least 3 years prior to the initiation of all phases (excluding phase 1), continuing through the operational period of all phases for at least 3 biological years after the last phase comes on line. At that time, sufficient data should exist for the interdisciplinary team to make a defensible recommendation whether monitoring should continue. If monitoring detects specific problems at any time, the need for specialized studies of a more detailed nature can be assessed in accordance with the protocol on page B-49: "A technical committee made up of experts from the cooperating agencies and Kenetech representatives will be established to meet and discuss the results of the monitoring studies and evaluate methodology. The need for further study will be based on reasonable criteria proposed by the technical committee." Please eliminate any provision in the FEIS suggesting BLM will assume discretion to define and modify future monitoring and baseline data collection without proper consultation.

3) RE: Prediction of Wildlife Impacts -- There is a lack of relevant data from similar wind farm projects to support prediction of long-range impacts this project will have on wildlife. BLM acknowledges many of the impact predictions are speculative (pp 4-57, 4-58, 4-61). Although Kenetech commits to provide an intensive monitoring program once turbines are in place, there is no commitment to correct problem turbines. We are uncomfortable with after-the-fact analysis, unless Kenetech provides an affirmative commitment to correct significant adverse impacts, should

14 cont. they occur, even removal of turbines if no other measure is adequate.

15 4) RE: Mitigation -- The DEIS contains no executable provisions to mitigate adverse impacts to wildlife or wildlife habitat. 40 CFR 1500.2 (e) requires federal agencies to identify reasonable alternatives that will avoid or minimize adverse effects. This has not been done. 40 CFR 1500.2 specifies agencies shall "... use all practicable means ...to... minimize adverse effects of their actions upon the quality of the human environment. 40 CFR 1502.14(f) requires federal agencies to "... include appropriate mitigation measures not already included in the proposed action or alternatives." 40 CFR 1502.16(h) requires federal agencies to discuss "... means to mitigate adverse environmental impacts (if not fully covered under 1502.14(f). Most importantly, 40 CFR 1502.3 stipulates, "... Mitigation and other conditions established in the environmental impact statement or during its review and committed as part of the decision shall be implemented by the lead agency or other appropriate consulting agency. The lead agency shall ... include appropriate conditions in grants, permits or other approvals."

16 The latter requirement is a key issue. The lead agency cannot support or defend its selection of an alternative by referencing a mitigation process that may never achieve mitigation. Throughout this DEIS, BLM defers specific mitigation to an internal process called the Plan of Development or POD (Sec 2.1.2). BLM states, "Because of the indeterminate impacts of the Windplant on specified resources, particularly cultural resources, birds and big game, BLM has included provisions in the EIS for agency consultation and public involvement during POD development and monitoring." However, the POD is not subject to the same degree of scrutiny and public disclosure as an EIS. It is inappropriate to defer substantive NEPA compliance issues to an external process without more definitive, enforceable direction (specific mitigation contingencies).

17 BLM claims it has no authority to mitigate impacts to public resources which occur on private surfaces unless the surface owner concurs (p vi, p 2-29, and p 4-1).

18 This appears inconsistent with NEPA, which requires use of all practicable means to minimize adverse effects and an effective means for implementation of those measures. If

18 cont. impacts are anticipated on private lands, then the project proponents (and the lead agency) should negotiate contractual mitigation agreements which can be reliably executed and therefore, affirmatively support the decision. A mitigation agreement can be with the private landowner or, if that individual is not receptive, mitigation can be relocated to other suitable federal, state, or private surfaces. The point is, NEPA requires use of all practicable means to mitigate. Negotiation of a mitigation strategy before the NEPA document is written is one practicable means of assuring impacts on private land will be mitigated. The option of relocating mitigation to

19 public land always exists. We request BLM provide a plan to mitigate impacts on private land in executable format within the FEIS.

20 NEPA does not impose or authorize a "threshold of significance" standard which must be met before mitigation is triggered. "Significance" exists if it is reasonable to anticipate a cumulatively significant impact on the environment [40 CFR 1508.27(7)]. BLM has acknowledged a cumulative significant impact to crucial winter range already exists (Table 4.11). Therefore, project impacts must be treated as significant. Specific mitigation for defined impacts (e.g. disturbance in crucial winter range)

21 should be developed for inclusion in the FEIS. Mitigation of adverse impacts which are foreseeable, but cannot be quantitatively predicted, should be rigidly tied to monitoring results, and compulsory mitigation contingencies should be defined in the FEIS (e.g. turbine retrofitting or relocation, habitat enhancement projects, development of

22 alternative sites, etc.). Unless compulsory procedures to implement mitigation are included in the FEIS, mitigation may not be accomplished through the POD process.

23 5) RE: Displacement Effects (p iv) -- In addition to big game displacement caused by human activities, displacement and reduced habitat effectiveness from noise and motion effects of turbines are substantial concerns. Please acknowledge.

24 6) RE: Precedence-Setting Action (pp 1-1 and 2-1) -- We believe CEQ regulations clearly place precedent-setting actions in a category demanding more rigorous analysis (40 CFR 1508.27(b)(5 and 6). It is important to disclose the precedent-setting nature of this project in detail early in the analysis. Kenetech would be the first

24 cont. industrial-scale, commercial windfarm sited in southern Wyoming, and clearly affects resources that are unique to any existing wind energy project. The project is also substantially different from conventional ROW applications in scale, scope, intensity, operation and impact. The DEIS should elaborate how this proposal differs from other, more conventional ROW actions.

25 9) RE: Description of Wind Resource (p 1-6) -- The DEIS fails to adequately compare wind resource characteristics at a variety of sites throughout the 62-mi wide "wind corridor." The KPPA and Medicine Bow sites encompass a fraction of the corridor, suggesting there could be many suitable alternatives. This information should be included (40 CFR 1502.22).

26 10) RE: GDRA RMP (p 1-8) -- The DEIS should disclose that the GDRA RMP did not consider or evaluate commercial windfarms of the scale proposed for this project (see 40 CFR 1502.9).

27 11) RE: Table 1.3 (p 1-9) (authorizing legislation) -- In addition to the Fish & Wildlife Coordination Act, other applicable regulations include 40 CFR 1502.19(a) & 40 CFR 1503.1(a)(2)(i), State agencies authorized to develop and enforce environmental standards (ie, Wy Game & Fish Act), and 40 CFR 1501.7(a)(1), Scoping.

28 12) RE: Powerline Designs (p 1-19) -- Olendorff et al. 1981 has been updated and recently distributed to many BLM offices.

29 13) RE: Displacement Effects (p 2-2 - 2-4, Tables 2.1(a), (b) and (c) -- Acreages and types of disturbance shown in these tables do not account for displacement of wildlife or loss of habitat function in areas surrounding disturbed sites. Although noted elsewhere in the DEIS, the tables should also be footnoted.

30 14) RE: Cumulative Impacts (p 2-5) -- BLM has not provided evidence that the baseline wildlife studies or monitoring protocols are adequate to determine cumulative impacts (see 40 CFR 1502.9). Most of Phase I will rely on less than 1 year of data. At least 3 years of baseline information is needed (and was agreed to with WEST). BLM should stipulate in the DEIS that notice to proceed with PODs for subsequent phases should be contingent on obtaining at least 3 years of baseline wildlife data.

31 15) RE: Baseline Information from Simpson Ridge (p 2-8) -- The DEIS acknowledges that information for the Simpson Ridge portion of the project is incomplete. Much of this information is required to support an adequate environmental analysis (see 40 CFR 1502.9). This lends rationale for evaluating Phase I at Foote Creek Rim as an independent alternative.

32 16) RE: BLM Discretion to Alter Information Requirements (p 2-8) -- The monitoring protocol (appendix B) require at least 3 years of baseline data prior to each phase. BLM should remove the provision affording the AO discretion to make decisions about baseline and monitoring requirements. This contradicts the agreement with Kenetech executed through their representative, WEST. One year of data collection is inadequate.

33 17) RE: Avian Task Force (p 2-9) -- Does the avian task force have any specific hypotheses they recommend testing in this proposal? Has their input been solicited?

34 18) RE: Human Disturbance (p 2-15) -- Please describe measures that could reduce the timing, frequency, and duration of disturbance to wildlife by project personnel.

35 19) RE: Powerline Impacts (p 2-19) -- Please indicate the extent to which riparian habitats and other sensitive areas will be altered by powerline construction (e.g., tree clearing). How will these impacts be compensated?

36 20) RE: BLM Reclamation Policy (p 2-28) -- Does the BLM reclamation policy (BLM 1990b, not a) provide mitigation off-site if on-site mitigation is not feasible? If not, please develop programmatic procedures for inclusion in the FEIS to mitigate LOP impacts.

37 21) RE: Project-Wide Mitigation (p 2-28) -- We reiterate our concern that many of the project's impacts may not be mitigated through the POD process. NEPA regulations require that mitigation effectiveness be demonstrated. The DEIS should define an adequate, dependable process which assures mitigation will be implemented. The DEIS should set forth a range of contingencies rather than depending upon PODs.

38 22) RE: Impact Assessment (p 2-28) -- For impact assessment, adequate baseline data (with controls) are required to base comparison of monitoring results. We have not seen assurances that an adequate Before/After/Control/Impact design has been provided (see Ecology 67:929-940, 73:1936-1404; Ecological Applications 41:3-41), or that adequate predisturbance information will be collected.

39 23) Mitigation of Impacts to Avian Species (pp 2-8 and 2-28) -- What are the specific recommendations from Kenetech's Avian Task Force for this project? We see no evidence that

40 baseline information was used to site windplants away from areas of high avian use for Phase I (compare Map 2.1 with Maps 3.14-3.17). The map comparisons also suggest the size and spacing of the windplant have not been adjusted to

41 reduce impacts. What types of off-site mitigation are contemplated to mitigate high avian mortality rates if they should occur?

42 24) RE: MBTA Takings (p 2-29) -- There is no discussion regarding MTBA takings. How will mitigation for the

43 initial phase of the project (not just "subsequent" phases) be achieved? Again, the DEIS should include mitigation contingencies.

44 25) RE: Design Modifications (p 2-29) -- Please describe modifications Kenetech has made at other sites to mitigate impacts and the effectiveness of these modifications.

45 26) RE: Retrofitting limitations (p 2-29) -- The statement on p 2-29, "Retrofit of prior phases would not include replacement of capital items (e.g., rotors, tower, nacelles)" is unacceptable. If towers are taking raptors, the USFWS may require the project operator to implement whatever retrofitting is found necessary to resolve the problem. Retrofitting may include tower decommissioning, relocation, replacement, or installation of parts or devices designed to take care of the problem. Text should clearly acknowledge these contingencies.

46 27) RE: Collection Lines (p 2-29) To minimize avian collisions within wind plants, we suggest burying collection lines from the end of turbine strings to windplant substations where feasible. Raptor guards should be installed to

46 cont. prevent perching on any collection lines that are not underground. Please incorporate these design standards in the FEIS.

47 28) RE: Winter Range Exclusion (p 2-31) -- Please clarify how the winter range exclusion would be applied to both the construction and operational phases of the project. Define "certain areas" encompassed by the ROW grant. These should be delineated on a map.

48 29) RE: Powerline Construction (p 2-31, Item 12) -- Will transmission lines be routed to avoid grouse leks, raptor nests, wetlands, and other sensitive habitats?

49 30) RE: Raptor Nest Protective Buffers (p 2-31, Item 13) -- Limiting this restriction to "active" raptor nests conflicts with stipulations in the GDRA RMP. BLM raptor surveys are usually conducted after the unsuccessful nests

50 have already failed. Existing inventories are not likely adequate to determine if a raptor nest was active within the last 3 years. Raptor studies for this project were initiated late in 1994. Have all potential nesting areas been adequately searched for 3 or more years?

51 31) RE: Sage Grouse Lek Protective Buffers (p 2-31, Item 17) -- Limiting this restriction to "known active" leks appears inconsistent with the GDRA RMP wildlife stipulations.

52 Again, inventory data have typically been inadequate to verify activity at leks. What is meant by the restrictions on construction activities around "known nest sites?" Does

53 this mean around leks? Will impacts to leks on private land be avoided or mitigated? The DEIS should so state. How many leks would not be mitigated?

54 32) RE: Impact Analysis Categories (Table 2.11) -- The table should acknowledge potential disruption of big game movement patterns and reduction in habitat effectiveness are also potential environmental consequences.

55 33) RE: Exceptions to Construct within Sensitive Resource Areas (p 2-32, Item 20) -- The DEIS should define defensible, objective criteria an AO must observe to authorize construction activities in sensitive locations protected by federal or other regulations.

56 34) RE: Alternative A (p 2-32) -- Alternative A adds little constructive input to the analysis. The range of alternatives and their analysis are fundamental components of NEPA decision making (40 CFR 1502.2 and 1502.14).

57 35) RE: Environmental Costs (p 2-33) -- In comparing costs of alternative sites, were wildlife or environmental costs or potential mitigation costs calculated and included?

58 36) RE: Alternatives Considered but Rejected (p 2-33) -- We have noted other alternatives within and near Kenetech's project area which should be analyzed. The DEIS documents significant resources that would be impacted by Phase I at Foote Creek Rim.

59 37) RE: WGFD Clearances (p 2-35) -- Please elaborate what the 1992 consultations and WGFD clearance involved. What was proposed, reviewed, cleared, and who cleared it?

60 38) RE: Impact Categories (p 2-38) -- Swift fox and mountain plover should be added to Table 2.11

61 39) RE: Compliance with Wildlife Laws (Table 2.11) -- Acquiring federal and state permits for incidental take of federally protected birds is not mitigation.

62 40) RE: Land Use (Table 2.11) -- Please discuss how changes to the utility of lands for recreation will be compensated.

63 41) RE: Baseline Wildlife Information (Section 3.0) -- The DEIS relies on baseline wildlife data that are inadequate to support the analyses, to provide valid comparison with monitoring results, or to design effective mitigation. Detailed information about resources in the Simpson Ridge area and along transmission line routes are missing. CEQ regulations require essential information for a reasoned decision in the EIS (40 CFR 1502.22(a)). Several other

64 documents are not yet available for review (e.g., biological assessment). We wish to review and comment on these.

65 42) RE: Vegetation Baseline Data (p 3-24) -- Mapping vegetation types is an essential component of habitat delineation. The proposal to complete mapping in future PODs does not fulfill data collection and analysis required to characterize resources affected by this NEPA decision and

65 cont. to support mitigation alternatives. Please complete the mapping for inclusion in the FEIS.

66 43) RE: Wetlands Composition (p 3-32) -- Wetland vegetation composition and production characteristics are highly variable and site specific. The SCS generic description is of no value. Specific characteristics of wetlands potentially affected should be summarized based upon field visits.

67 44) RE: Jurisdictional Wetlands (p 3-32) -- Nationwide 26 applies to isolated wetlands less than 1 acre in size. When impacts to small wetlands caused by a single project collectively exceed 1 acre, they no longer qualify as isolated wetlands under this provision. Please ensure small (<1 ac wetlands) are inventoried and tracked to determine collective disturbance.

68 45) RE: Big Game Population Estimates (pp 3-34, 3-36, 3-40, 3-42, 3-44, and Table 3.10) -- The DEIS should note that big game population objectives apply to post-season populations, not end-of-biological year estimates as described in the DEIS. The population estimates are post-season, not end-of-year as labeled. Also, WGFD (1994a) notes that several established objectives for pronghorn herds are being revised.

69 46) RE: Small Mammal Surveys (p 3-46) -- Kenetech states that several species of ...bats... are also likely to occur on the KPPA. However, no formal surveys of bats were conducted, despite the probable occurrence of a U.S. Fish and Wildlife Candidate 2 species (long-legged myotis) and a Wyoming state sensitive species (hoary bat) (page 3-70). A discussion of potential impacts of windplant development on small mammals concluded that loss of habitat due to construction and human activity would be the greatest threat to these species (page 4-43). However, the potential of significant bat mortality via collision with turbines or transmission lines was not discussed. Please consider bats in the impact discussion and, if current information on range and population status is insufficient, please conduct bat surveys.

70 47) RE: Raptor Laws (pp 3-46 & 4-44) -- In addition to W.S. 23-1-101 and 23-3-101, applicable state laws include W.S. 23-3-108 which prohibits the destruction of non-predacious

70 cont. bird nests or eggs and Chapter LII, Section 4 of the Game and Fish Regulations which prohibits the take of any nongame wildlife including raptors, except under a falconry and propagation permit.

71 48) RE: Avian Night Migration (p 3-46) -- The DEIS notes that peaks in raptor observations occurred during migratory periods. These reflect only diurnal use. Many bird species migrate at night and at heights above the ground that differ from typical habitat use by those species. How is avian nocturnal use monitored? Other wind power projects have been conducting radar studies to evaluate this avian use. The National Renewable Energy Lab (NREL) in Golden, Colorado provides funding for such studies. Kenetech has received funding from NREL for other projects. This information should be obtained to fully understand avian use of the proposed project area.

72 49) RE: RRTAC Review (pp 3-47 through 3-56) -- The Raptor Research and Technical Assistance Center, NBS, Boise, ID encourages technical review of BLM raptor projects. The BLM should request the RRTAC to review these pages and our questions and comments concerning this section.

73 50) RE: Biases in Pooled Data (p 3-47 and Maps 3.14 - 3.16) -- Pooling observations of different species may seriously bias results, unless there are no significant differences in habitat use. Combining different seasons may also bias results. We recommend development of separate maps for each species during nesting and non-nesting seasons. These should be included in the FEIS.

74 51) RE: Reliability of Raptor Seasonal Use Data (p 3-48, Fig 3.2) -- This figure should include confidence intervals about the mean number observed per monthly survey.

75 52) RE: Siting Considerations to Minimize Impacts to Raptors (pp 3-49 to 3-51, Maps 3.14-3.16). WTG strings and associated roads shown on Map 2.1 should be superimposed on raptor distribution figures to demonstrate how the windplant has been sited to avoid impacts to raptors.

76 53) RE: Biases in Pooled Data (p 3-52 and Table 3.12) -- Pooling observations of different species to report flight heights renders this data useless. We recommend analyzing flight height data separately for each species and season.

76 cont. Standard deviations or confidence limits would be helpful in Table 3.12.

77 54) RE: Raptor Survey Coverage (p 3-52) -- A more thorough discussion of raptor nest survey coverage is needed. The FEIS should include location of surveys, specific dates, and a map of the area receiving intensive coverage. How effective was the survey? Did the survey locate 10%, 50% or 100% of the breeding pairs? Please estimate.

78 55) RE: Raptor Breeding Territories (p 3-52) -- Why does the discussion focus on total numbers of raptor nests, including large numbers of inactive nests? Was there any attempt to identify breeding territories or areas with complexes of alternate nests? The DEIS fails to incorporate the most important parameters for establishing baseline information on nesting raptor populations. Those parameters include: number of pairs that occupy a breeding territory; percent of historical territories that are occupied; and density presented as pairs/km^2 and territories/km^2. There is substantial historical data on raptor nesting within the KPPA. These data should be presented and compared with 1994 results.

79 We believe (and are confident the RRTAC will agree) that this section provides almost no data that can be used for future evaluations of raptor population trends. We are deeply concerned that presentation of irrelevant survey data may also suggest a flawed approach to field techniques. The project (or at least components following phase 1) must have statistically sound data for measuring future impacts on raptor populations.

80 56) RE: Raptor Data Reporting (Table 3.13) -- This table should be redone using standard technical protocol for collecting, analyzing and reporting raptor nesting data. Based on historic data and the presentation of 1994 findings, results may indicate several different situations: (1) the golden eagle and prairie falcon populations have seriously declined; (2) significant failure occurred early in the nesting season or adults did not breed; or (3) surveys were not effective. These results and potential causes should be discussed in this chapter.

81 57) RE: Raptor Data Analysis (Tables 3.14 and 3.16) -- These tables and associated discussions have little utility since data were not collected and analyzed according to standard protocol. Studies to document baseline productivity typically present production as number of young fledged per nesting attempt documented at or before incubation.

82 58) RE: Effectiveness of 1994 Raptor Nest Searches (p 3-52) -- Raptor nest searches were initiated late in 1994 and likely missed a number of breeding attempts. Leaf-out and harsh winds apparently also hindered raptor nest surveys. The DEIS should disclose the limitations of this raptor data.

83 59) RE: Raptor Nest Data (pp 3-53, 3-54. and Table 3.13) -- Are there no accipiter nests within the survey buffers? What percentage of nests were missed? Table 3.13 suggests that composition of raptor nests between the two areas differ. How would species composition relate to mortality risk?

84 60) RE: Passerine Night Migration (pp 3-60 to 3-62 and 4-60 to 4-62) -- Please comment on the potential significance of night migration through the KPPA. Based on experience with other projects, to what extent are collision problems (particularly for sensitive species) likely? What monitoring and mitigation contingencies will be implemented to address any problems that arise?

85 61) RE: Reliability of Passerine Use Data (p 3-61, Fig 3.3) -- Confidence intervals should be provided with the means on these figures.

86 62) RE: Endangered species (p 3-65) -- A USFWS Biological Assessment is essential to support a reasoned choice among alternatives, to assure compliance with the ESA, and to support development of suitable mitigation. Please include the assessment and any necessary monitoring or mitigation adjustments. This is also a public disclosure issue.

87 63) RE: Swift Fox (p 3-70) -- The swift fox may be a resident of the KPPA. Are survey crews trained to identify swift fox sign? Were any attempts made to locate swift fox dens?

88 64) RE: Analysis of use by Endangered Species (p 3-70) -- We are discouraged by the casual treatment and reporting of a bald eagle nest and 30 peregrine falcon observations. The WGFD would have appreciated receiving reports of these

88 cont. observations in a timely manner. These unexpected results indicate the need for more intensive monitoring; some of which could have been completed in 1994 to strengthen the analysis in the DEIS. WGFD could have assisted with some of the additional monitoring. The need for more intensive

89 surveys should be addressed in Appendix B in the FEIS. Resident bald eagles should be monitored to establish activity patterns and key use areas, including the extent the KPPA is used. We would appreciate receiving a complete

90 file on all peregrine observations. If sightings suggest a nesting pair, surveys to locate the pair should be initiated in April 1995. It is not surprising 1994 surveys failed to locate nesting peregrines because the methodologies and design afforded a low probability of detecting nesting peregrines. The 30 sightings should be analyzed in greater detail and discussed in this chapter. Please thoroughly assess the probability that Foote Creek Rim is a highly significant vortex for peregrines migrating to and from recovering populations in northern Wyoming and Montana. Are the sightings repeat observations of resident individuals? Could some of the observations be a result of misidentification? These questions need to be considered and addressed through modification of the monitoring plans, commencing in 1995.

91 65) RE: Mountain Plovers (p 3-73, Map 3.17) -- WTG strings and roads depicted on Map 2.1 should be overlain on the mountain plover sightings to demonstrate how facilities have been located to avoid impacts to this species.

92 66) RE: Merlins (p 3-76) -- Merlins sometimes nest in cottonwoods, but isolated stands of ponderosa pine are a more likely habitat for nesting in the KPPA. Monitoring should be designed to follow up merlin sightings during the nesting season to determine if nests are present. We would appreciate a complete data set of merlin sightings.

93 67) RE: Visual Resource Impacts to Wildlife Recreational Users (p 3-115, Map 3.23) -- Visual resource classes south of I-80 should be included since the project will impact visual resources for recreational users on USFS and WGFD lands. The text should also be revised to include these in the analysis.

94 68) RE: Impacts Analysis (Chapter 4.0) -- Discussions of cumulative impacts were limited to the local area of southeast Wyoming and other types of projects. This DEIS does not address the potential for this project to stimulate additional windpower projects. Some have been proposed near the KPPA and others are proposed in Montana. What are the potential cumulative impacts of the windpower industry on migratory birds?

95 Another general concern is the vast amount of published information on avian migration and flyways which apparently was not reviewed or synthesized for this DEIS. How important is this project area in comparison to other migration corridors in the west? Are there any comparative counts? Could migrating birds funnel through this area for the same reasons that it is an important wind area? Could there be a venture effect with migrating birds? The extremely important subject of collision potential during night migration was not evaluated.

96 69) RE: Executable Mitigation (p 4-1) -- Please include specific projects to mitigate defined impacts (e.g. disturbances in crucial winter range), and develop specific mitigation contingencies for reasonably foreseeable impacts which cannot be quantitatively defined at this time. Without compulsory direction for the POD process, satisfactory mitigation is unlikely and there is no defensible basis to conclude that the preferred alternative complies with mitigation requirements under NEPA. Our experience has been that BLM-required mitigation measures are most reliable when included in the EIS. Including contingency mitigation in the EIS allows full public review and lets project operators know what to expect up front. The EIS should include mitigation for the range of impacts that may occur (40 CFR 1502.14(f), 1502.16(h)).

97 70) RE: Significance Thresholds (p 4-1) -- BLM states, "Significant impacts (as defined in CEQ guidelines 40 CFR 1500-1508) are effects that are most substantial, and therefore, should receive the greatest attention in decision-making." While the significance of effects determines the need for an EIS and intuitively, the most significant effects warrant the greatest attention, such delineations tend to avoid mitigation by subdividing

97 cont. significance into small increments. All impacts to crucial winter range and other important resources should be mitigated.

98 71) RE: Achievable Mitigation (p 4-1) -- The DEIS should examine how BLM's policy of not requiring off-site mitigation, or mitigation of impacts on private lands, will affect the impact analysis. Do these policies constitute all reasonable measures to mitigate adverse impacts?

99 72) RE: Noise Impacts Analysis (p 4-24) -- Preparers suggest the most conservative analysis of noise impacts is conducted at low atmospheric temperature. This is precisely opposite what logic dictates. Since atmosphere absorbs noise at lower temperatures, the potential impacts of a given noise level may not be detectable and would lead to a false conclusion. Conducting the analysis at higher temperatures is more likely to detect a problem if one exists. This is the conservative approach. If there is no problem at a high temperature, then we may conclude there will be no problem throughout the entire range of temperatures typical of the site. Using 0 degrees C is inappropriate for the analysis. Please reevaluate noise transmission at normal daytime summer temperatures.

100 73) RE: Revegetation Species (pp vii, 2-30, 4-31)--Revegetation with crested wheatgrass and other aggressive, non-native species is unacceptable, regardless whether initial attempts at revegetation fail. These "bunch" species have questionable value for soil stabilization and spread rapidly into native communities. Please develop alternative methods to deal with problem sites.

101 74) RE: Wetland Delineations (p 4-32) -- Formal wetland inventories are essential to support a reasoned choice among alternatives and to develop effective mitigation alternatives. All wetlands potentially impacted by development should be quantitatively evaluated for inclusion in this DEIS, not a future POD. The inventory should be completed and included in the DEIS as part of the analysis, public disclosure, and documentation of mitigation effectiveness.

102 75) RE: Big Game Significance Criteria (p 4-33) -- There is no defensible rationale for defining a significant impact to big game as a project-related loss that exceeds 1 percent

102 cont. of the crucial winter range within a herd unit. This arbitrary decision criterion contradicts the mitigation requirements of NEPA and is damaging to the resource. Please remove it from this NEPA document. "Significance" exists if it is reasonable to anticipate a cumulatively significant impact on the environment [40 CFR 1508.27(7)]. BLM has acknowledged a cumulative significant impact to crucial winter range already exists (Table 4.11, DEIS). Therefore, project-related impacts must be treated as significant. WGFD mitigation policy places crucial winter range in the "vital" category. The Department is directed by the Commission to recommend no loss of habitat function. Full project development will permanently impact 38 acres of pronghorn crucial winter range in the Simpson Ridge area. Habitat effectiveness of crucial range could be reduced over a much broader area due to displacement and disruption of movement patterns. The extent of this effect will be determined through monitoring. The DEIS should include an explicit plan to mitigate the 38 acres permanently affected, and an executable contingency plan that compensates any loss of habitat effectiveness documented through monitoring (ie, displacement). We are less concerned about the temporary impact to 42 acres of mule deer crucial winter range and 102 acres of antelope crucial winter range required to construct powerlines, provided construction does not take place between 15 November and 30 April.

103

104 76) RE: Impacts to Winter/Yearlong Ranges (pp 4-34 to 4-41 and Table 4.10) -- The project may permanently impact 531 acres of elk winter/yearlong range, 509 acres of pronghorn winter/yearlong range, and 613 acres of mule deer winter/yearlong range. Habitat effectiveness will be reduced over a much broader area due to displacement and disruption of movement patterns. The extent of this effect will be determined through monitoring. WGFD mitigation Policy places winter/yearlong habitat in the "high" category. The Department is directed by the Commission to recommend no net loss of habitat function within the biological community which encompasses the project site. The DEIS should analyze the importance of winter/yearlong habitats within the project area in terms of movement patterns, quality and availability, juxtaposition of other winter/yearlong ranges, and access across them to adjacent crucial ranges. A mitigation contingency plan should be developed to address any net loss of biological function

104 cont. predicted as a result of this analysis. The analysis would depend largely on results of the displacement analysis planned for monitoring. If no displacement is detected, we would have no further concerns about the impact to winter/yearlong range.

105 77) RE: Cumulative Impacts to Big Game (p 4-41 and Table 4.11) -- Under the cumulative impacts discussion, BLM acknowledges existing and foreseeable disturbance already exceeds 1 % of the crucial ranges within affected herd units. Yet, BLM still does not acknowledge the additional increment of crucial range affected by this project is any particular concern. If there is a threshold, anything that exceeds the threshold adds to the problem. We would submit there is not a herd unit in Wyoming where existing disturbances and land use practices currently impact less than 1 % of the crucial winter range. All additive incremental effects are a concern. 40 CFR 1508.27(b)(7) stipulates "Significance cannot be avoided by ... by breaking [an action] down into small component parts."

106 78) RE: Prediction of Impacts to Pronghorn (p 4-34) -- Impacts to pronghorn on winter/yearlong ranges, including displacement, could be more significant than the DEIS acknowledges. The assumption that impacts would be negligible is purely speculative. "Moderate" impacts to non-crucial winter ranges could cumulatively be significant (40 CFR 1508.27(b)(7)).

107 79) RE: Studies of Medicine Bow Wind Towers (pp 4-34 and 4-55) -- The DEIS mischaracterizes Yeo et al. (1984). These authors made no statement about how "quickly" pronghorn adapted to increased traffic. The DEIS failed to mention that Yeo et al. (1984:58) stated, "This does not presume, however, that development of larger windfields would evidence a similar lack of displacement." Preparers also failed to point out that Yeo et al. (1984) found doe-fawn groups "remained sensitive to traffic even though other group types appear habituated" (Yeo et al. 1984:7). Doe-fawn groups comprise a substantial portion of pronghorn populations. The physical properties of the Medicine Bow wind towers are vastly different from what is proposed at Foote Creek Rim and Simpson Ridge. These differences were pointed out regarding applicability of study results to raptors (p 4-46). The same cautions apply regarding impacts to pronghorn and sage grouse and should be pointed

107 cont. out. WTGs have been located within pronghorn range in Montana. Have agency personnel and operators been contacted about their observations on pronghorn responses to windplants?

108

109 80) RE: Interpretation of Displacement Conclusions from Other Studies (p 4-37) -- The DEIS attempts to minimize adverse conclusions in Segerstrom (1982). Segerstrom found pronghorn remained significantly farther from disturbances at mine sites than expected at random (Segerstrom 1982:198). The fact that some animals remain in disturbed areas (e.g., Easterly et al., n.d., Segerstrom 1982) does not negate the fact that other animals were adversely impacted by these projects and were displaced from impacted areas.

110 81) RE: Prediction of Impacts to Mule Deer (pp 4-37 and 4-38) -- The assumption that impacts to mule deer would remain negligible is purely speculative.

111 82) RE: Impacts to Migratory Mule Deer (p 4-38) -- Mule deer studied by Easterly et al. (n.d.) were predominantly non-migratory. Migratory mule deer may be displaced to a greater extent by alien features than non-migratory segments.

112 83) RE: Big Game Movement through Strings (p 4-40) -- Pronghorn avoid crossing under overhead structures. Is there evidence that pronghorn will move through WTG strings? Is there evidence that elk or mule deer will ignore these structures? The statement, "Since the individual WTG's and WTG strings would not be fenced, it is anticipated that big game movement through the Windplant would not be curtailed or hindered" is purely speculative. On page 2-22, the DEIS states, "If fencing is used, only the base of each turbine would be fenced." Please clarify whether fencing will or won't be used.

113

114 84) RE: Avian Mortality Legislation (p 4-44) -- The DEIS lacks discussion regarding specific measures Kenetech and other operators have employed to reduce bird mortalities at existing projects. The DEIS should also disclose whether permits have been issued to authorize takes and whether Kenetech intends to implement measures recommended by their avian task force or other actions to reduce mortalities.

115 85) RE: Application of Research from Avian Task Force (p 4-45) -- We find no citations referring to results of studies conducted by the avian task force. Recommendations from the task force (aside from using tubular towers) such as siting away from sensitive areas have not been applied to Phase I at Foote Creek Rim.

116 86) RE: Raptor Mitigation (p 4-46) -- The DEIS has not identified how impacts to raptors can be identified and mitigated. The DEIS criticizes the lack of marked birds to determine population impacts in the Orloff and Flannery (1992) report. Yet, marking birds is not planned for this project. The second part of the significance criteria for this DEIS (declining raptor populations) may be impossible to detect without that type of study. We understand NREL

117 is helping fund Kenetech's telemetry study of golden eagles in California to determine if windplants are jeopardizing population viability for that species. We understand the first phase of that study has been completed. Can

118 information from that study be applied to this project? Has Kenetech been able to significantly reduce raptor mortalities at other project sites? Please elaborate how results of other windplant studies have been incorporated into the project design and this DEIS.

119 87) RE: Raptor Mitigation -- The Orloff and Flannery (1992) report also advocates siting windplants to avoid avian concentration areas. The DEIS should include reference to:

Estep, J.A. 1989. Avian mortality at large wind energy facilities in California: identification of a problem. California Energy Commission.

120 88) RE: Comparison Raptor Distribution to California (p 4-52, Table 4.15) The table should include other species documented in the KPPA (e.g., peregrine falcon, turkey vulture, etc.)

121 89) RE: Plan to Minimize Raptor Impacts -- The statement, "facilities within the KPPA would be constructed to minimize impacts to raptors" is inconsistent with the failure to consider baseline information in designing Phase 1 (see Comment 52).

122 90) RE: Raptor Mortality Predictions (pp 4-46 to 4-55) -- Mortality rates are predicted based on collision estimates from California. California rates (other than kestrels) have not been corrected for scavenging or detection biases. Please adjust the rates to account for these biases before applying them to the Wyoming turbines. We also suggest multiplying the resulting predictions by an adjustment to account for different population densities. If sufficient data are not available to correct these biases, they should be more clearly stated and evaluated in the discussion.

123 91) RE: Criteria for Raptor Population Studies (p 4-54) -- The DEIS states, "If monitoring of raptor mortality on the KPPA suggests potential negative impacts to populations, detailed studies of raptor population dynamics may be initiated to determine the significance of the impacts (Appendix B)." Please define specific criteria that would trigger the need for more detailed population studies (detectable population decline that deviates from control area? high collision rate (specify #) for particular species?).

124 92) RE: Take Permits (pp 4-44, 4-45, and 4-61) -- Please contact the USFWS to determine whether take permits will be required (and are available) to operate the turbines. Results of that consultation should be included in the FEIS to support the analysis and decision, and to document mitigation requirements. WGFD will base compliance with state regulations & statutes protecting raptors upon USFWS decisions under the MBTA, BEPA, and ESA.

125 93) RE: Sage Grouse Response to Medicine Bow Turbines (p 4-55) -- The DEIS statement, "Yeo et al. (1984) determined that there was no decrease in sage grouse lek attendance ..." mischaracterizes the authors. Yeo et al. (1984:12) stated "Since attendance and location of the Site A lek have been erratic, the effects of wind energy development on sage grouse populations can not be deduced." Please correct.

126 94) RE: Mountain Plover Distribution (p 4-57) -- Please describe how mountain plover abundance on Foote Creek Rim compares with surrounding areas.

127 95) RE: Passerine Impact Criteria (p 4-60) -- What analytical approach will be used to document whether passerine populations are declining? What magnitude of change (or

127 cont. deviation from control populations) will be considered a decline under these impact criteria? Please elaborate.

128 96) RE: Passerine Mitigation Criteria (p 4-61) -- Please consult the USFWS to define an allowable take rate that triggers compulsory mitigation such as retrofitting, relocation, decommissioning, or other measures. Appropriate mitigation contingencies and implementation processes should be explicitly defined in the DEIS.

129 97) RE: Amphibian and Reptile Impact Criteria (p 4-62) -- What analytical approach will be used to document whether reptile and amphibian populations are declining, particularly since no monitoring is planned? What magnitude of change (or deviation from control populations) will be considered a decline under these impact criteria? Please elaborate.

130 98) RE: Peregrine Falcons (p 4-66) -- Again we are disturbed with the casual treatment of peregrine falcons. Based on our experience, 30 observations in one year is significant unless misidentification was involved. The project's potential impact to peregrines is a substantial concern and demands further data collection and analysis. Surveys should be completed to confirm whether peregrines are nesting in the vicinity of the project, and to establish whether the area is within a migration corridor.

131 99) RE: Prediction of Impacts to Mountain Plovers (p 4-67) -- The analysis should include a comparison of Map 3.17 with Map 2.1 showing the relation of mountain plover observations to WTG strings on Foote Creek Rim.

132 100) RE: Prediction of Impacts to Mountain Plovers (p 4-68) -- We suggest adding a statement acknowledging snow drifts could change vegetative patterns (see page 4-31) from suitable nesting habitat to denser vegetation that is avoided by plovers.

133 101) RE: Mountain Plover Mitigation Criteria (p 4-68) -- What analytical approach will be used to document whether mountain plover habitat effectiveness is decreasing? Please define criteria to establish how reduction in mountain plover habitat effectiveness or what frequency of collisions will trigger the need for mitigation. Please develop mitigation contingencies for inclusion in the DIES.

134 102) RE: State Sensitive Species (p 4-70) -- The DEIS states "Habitats frequented by American white pelicans and great blue herons (i.e., wetland areas) and merlins (i.e., riparian zones) would NOT be avoided during Windplant development where feasible." We assume this a clerical error. Please correct.

135 103) RE: Impacts to Land Use (pp 4-87 and 4-89) -- Impact criteria should consider whether the windplant changes utility of the land for public recreation. If wildlife-based recreation declines over the long term on WGFD conservation easements and other public lands in the area, then mitigation should be required. Mitigation described on page 4-89 is inadequate to address negative user response to development of project facilities. The statement, "Numerous dispersed recreational activities are available throughout the year; however the number of individuals and amount of recreation time spent in the KPPA are not known" is a substantial baseline deficiency. This information needs to be collected and included in the analysis to determine whether the project adversely affects recreational use. Recreation should be monitored. An increase in curiosity-type recreation does not compensate loss of wildlife recreation. Appropriate, in-kind mitigation should be assured.

136 104) RE: Executable Mitigation (Chapter 5) -- Very little real mitigation is proposed in this DEIS, despite its ambitious presumption mitigation will be adequate and effective. Many of the operational modifications called mitigation are qualified and will be implemented "where feasible." Please disclose criterie that will determine feasibility. Mitigation contingency plans and compulsory criteria for implementation should be developed to address all reasonably foreseeable impacts which have been deferred to future monitoring. We reiterate our concern that mitigation contingencies must be placed in the EIS rather than decided in the POD.

137 105) RE: Executable Mitigation (p 5-1) -- The DEIS should set forth a range of mitigation measures for the project, including objective criteria to trigger their adoption in PODs. We believe this guidance is essential to assure the

137 cont. AO complies with the letter and intent of the FEIS analysis, and to assure performance following the FEIS does not countermand the basis of its findings.

138 106) RE: Revegetation Procedures (pp 5-7 and 2-30) -- Please develop specific seed mixes and revegetation procedures for evaluation in the FEIS. Where reestablishment of native shrubs, particularly sagebrush, is a priority, spring seeding and broadcast methods only should be specified. Shrub rates of 2-3 lbs pls should be applied, no cool season grasses should be included, and warm season grasses should be reduced to half the normal rate. Seeding should take place only when, and if, there is adequate soil moisture to support germination. This method has proven reliably effective on coal mines in Wyoming. Please eliminate aggressive, introduced species (crested wheatgrass) from the list of species suitable for reclamation.

139 107) RE: Construction in Crucial Winter Range (p 5-8) -- Any direct loss of habitat or reduced habitat effectiveness in crucial range should be mitigated. See comments 75 and 77.

140 108) RE: Big Game Collisions (p 5-9) -- "Appropriate" speed limits should be specified in the FEIS. We recommend 45 mph for access and maintenance roads in good condition, 30 mph where visibility is limited.

141 109) RE: Poaching (p 5-9) -- Animal conditioning to human and vehicular activity will be strongly impacted by negative experiences such as poaching or harassment, particularly on winter range. We suggest the DEIS include a provision for dealing with any employee caught poaching within the project area.

142 110) RE: Raptor Mitigation (p 5-9) -- Mitigation alternatives should include retrofitting and relocation where impact criteria are exceeded.

143 111) RE: Lead Time for Raptor Monitoring (p 5-9) -- The DEIS indicates raptor monitoring could be delayed until the construction of each phase. Text should clarify raptor monitoring will commence at least 3 years prior to construction, pursuant to the agreement made with Kenetech's consultant (see comment 118).

144 112) RE: Turbine Placement (p 5-9) -- The FEIS should include programmatic stipulations identifying the most sensitive locations and where turbine placement will be avoided, based upon the best interpretation of existing data. For example, is there any plan to avoid high use areas on the central western slope and ridge jutting from the northwest portion of Foote Creek Rim (p 3-37)? Is there any plan to avoid placing end turbines on windward edges of bluffs or benches (problem areas identified during scoping)? Deferring such decisions to the POD without well developed direction eliminates NEPA accountability. It is unclear what consultation/analysis procedures are involved in a POD, and whether they will undergo the same degree of public and agency scrutiny as the NEPA document.

145 113) RE: Construction in Sage Grouse Nest Habitat (p 5-10) -- Please describe the circumstances under which exceptions to construct would be deemed appropriate by the AO and the criteria that would be observed in granting these exceptions.

146 114) RE: Reptiles and Amphibians (p 5-10) -- The relation between project odors and mitigation for these species evades us.

147 115) RE: Impacts to Mountain Plovers (p 5-10) -- The importance of Foote Creek Rim to mountain plovers has been documented elsewhere in the DEIS. Avoiding individual nests (if they can be located) will not adequately mitigate project impacts. Diminished effectiveness of nesting habitat is the most probable and consequential impact. Mitigation contingencies should be designed to address this effect.

148 116) RE: Mitigation for Impacts to Recreation (p 5-12) -- This section provides no mitigation or contingencies to compensate diminished utility of the area to support public recreation (e.g., the Wick Brothers Unit). (see comment 116).

149 117) RE: Appendix A. Avian Studies Protocols. In several places, Appendix A discusses monitoring activities that conflict with (we assume) the official monitoring program in Appendix B (e.g. p A-16 states, "Detailed surveys will be conducted in the turbine string areas 1-2 years prior to development"). Please clarify Appendix A is included only to describe 1994 and earlier data collection efforts and

149 cont. does not apply to any sampling or monitoring plans for 1995 or later.

150 118) RE: Appendix B. Monitoring Lead Time (p B-6). Discussions here do not reflect the agreement reached during negotiations with WEST (see comment 2). Please change "However, if KENETECH decides not to proceed with further development at Foote Creek Rim, due to wildlife or other concerns ..." to "However, if wildlife or other concerns prevent KENETECH from completing development at Foote Creek Rim, then KENETECH may apply for a BLM Notice to Proceed for the Simpson Ridge area. The application shall thoroughly document the reasons development must be curtailed on Foote Creek Rim to establish a standard of need." Clarify "... as other areas come on line for development, additional stations will be established and sampled" means sampled at least 3 years prior to construction.

151 119) RE: Weight of Evidence (p B-9) -- Please disclose who determines when the "weight of evidence" is sufficient to make a change (page B-9)? Referring to the "significance criteria" discussed throughout Chapter 4, please prepare a table explaining which of the criteria may, and which may not be reliably evaluated using these survey protocols. Specifically describe what project-related effects, if documented through these protocols, would require mitigation or corrective action. What criteria will be used to trigger these decisions?

152 120) RE: Pronghorn Survey Protocol (p B-31) -- What is the "WGFD Pronghorn Survey Protocol" mentioned on B-31? Is that our obsolete trend count technique? The protocol for using clear window templates is extremely sensitive to measurement error. Has this method been used frequently by project personnel? How accurate is this method? Where was it tested? How high will the plane be flown? How detectable are mule deer during these surveys?

153 121) RE: Pellet Counts (p B-33) -- How sensitive are pellet counts for detecting distribution changes? Can consistent use by a few individuals be distinguished from occasional use by larger numbers? Discuss the potential for this to confound analyses of the displacement effect. How well

153 cont. have pellet counts worked elsewhere? Are assumptions of the method reasonably met? Will these be evaluated as part of this project?

154 122) RE: Carcass Searches (p B-41) -- "Searches of the selected turbine strings and electrical distribution lines will be conducted once a week ... once all turbine strings are operational, a systematic sample of the strings will be selected for searching on a given search day." This statement contradicts the agreement reached during negotiations.

The 11/5/94 draft monitoring protocol specified searches would commence as strings are constructed and all turbines would be surveyed once a week (p 12). The plan to sample strings for raptor searches is a very substantial departure from the original agreement and should be corrected in the DEIS.

155 123) RE: Scavenger Trials (p B-43) -- Please specify types of carcasses to be used in scavenger and efficiency surveys. The 11/5/94 draft monitoring protocol indicated hens of various pheasant and quail species would be used to better simulate cryptic color patterns and various sizes of raptors. We believe close approximation of the raptor (and passerine) species in the area is essential to accurately determine these sources of bias. We also question whether a single trial each season involving 20 carcasses is sufficient to reliably estimate bias, particularly in the beginning. We recommend replications to estimate error. Accurate bias adjustments are critical to interpretation of monitoring results and determining need for mitigation.

124) RE: Raptor Monitoring (Sec 4.1.1, Appendix B) -- The raptor monitoring plan presented in Appendix B may not accurately determine the actual effects of wind turbines on raptor utilization for the following reasons:

156 a) Time permitted for raptor observations at stations is 40 minutes, twice daily (page B-16). A 40-minute observation period is insufficient to document raptor utilization of a specific area. During certain times of the year (early spring, late summer), observation periods greater than 2 hours per station were often required to document any utilization of the station area by raptors. Raptor use frequently occurred in

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156 cont. brief flurries of activity lasting 10 minutes or less. Observations lasting only 40 minutes may seriously underestimate raptor utilization of an area by missing these short but intense fluxes of raptor activity. It will also be difficult to compare these sampling periods with pre-development sampling by Mariah whose observation periods lasted 3 hours per station. Please provide a justification for the significant reduction of observation periods, and explain how the data will be compared to pre-development observations. Also, please clarify how the modified program will adequately characterize raptor utilization in the windplant area.

157 b) The proposed reference area is sufficiently dissimilar from the project area that we question its suitability. Based on the map presented in Appendix B, neither topography or wind patterns closely resemble conditions on Foote Creek Rim. In addition, the close proximity of a large water body (Seminoe Reservoir), and large surface mine (Medicine Bow) may affect raptor utilization, distribution, and density, and compromises the comparability of any raptor data collected there. Please justify the selection of this reference area, including an explanation of its suitability for comparison with wind plant sites. Lacking satisfactory justification, we request selection of a more suitable reference area.

158 125) RE: Non-Breeding Passerine Surveys (Sec 4.2.1, Appendix B) -- Three point count surveys for non-raptor avian species have been proposed for the breeding season only. Several non-raptor species were observed on Foote Creek Rim during other periods, presumably migrating or exploiting temporal resources available there. Surveys restricted to the breeding season will not accurately characterize utilization of the windplant area by all avian species and may omit critical data. Please clarify how these species will be accounted for.

159 126) RE: Passerine Surveys, Data Comparability (Sec 4.2, Appendix B) -- Given the difference in sampling techniques and locations, please explain how data collected during monitoring will be compared with Mariah Associate's baseline data.

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160 127) RE: Mountain Plover Surveys (Sec 4.2.2, Appendix B) -- Please indicate how mountain plover data will be used to assess impacts to habitat effectiveness. What are the criteria that would indicate an impact has occurred? Is there a control population? Do mountain plover populations exist on the proposed control area?

161 128) RE: Prey Availability Study, Lagomorphs (Appendix B) -- It is unclear whether individual transects to sample lagomorphs will be driven more than once in the sampling period. This may result in an inaccurate population indicator since variability within one site is not estimated. This concern is particularly critical on the reference area where only one transect is proposed. Please address this concern, and add a replication of sampling if appropriate.

162 129) RE: Data Analysis, Sample Size (p B-47) -- Will sampling intensity be increased if statistical tests indicate power is low?

Aquatic Considerations:

Impacts to fisheries and wetlands will be negligible if the project-wide mitigation measures listed on pages vi-vii of the DEIS are implemented from the outset.

There are two aquatic-related corrections that should be made to the report:

163 Page 3-64. Brook Trout are found in Rock Creek near Arlington, along with Rainbow and Brown Trout.

164 Page 3-65. Wagonhound Creek north of Interstate 80 contains mostly Brown Trout and non-game fish.

Thank you for the opportunity to comment.

Sincerely,

JOE WHITE
DEPUTY DIRECTOR

JW:as
cc: Wildlife, Fish, HATS, IES Divisions

Comment AE1: See Sections 8.2.3, 8.2.4, 8.2.8, and 8.2.12 in the FEIS.

Comment AE2: See Section 8.2.7 in the FEIS.

Comment AE3: See Section 8.2.4 in the FEIS.

Comment AE4: See Section 8.2.5 in the FEIS.

Comment AE5: See Section 8.2.1 in the FEIS.

Comment AE6: See Section 8.2.4 in the FEIS.

Comment AE7: See Section 8.2.8 in the FEIS.

Comment AE8: See Section 8.2.2 in the FEIS.

Comment AE9: See Section 8.2.5 in the FEIS.

Comment AE10: See Section 8.2.3 in the FEIS.

Comment AE11: See Sections 8.2.3 and 8.2.5 and response to Comment AE151 in the FEIS.

Comment AE12: See Section 8.2.1.1 in the FEIS.

Comment AE13: See Section 8.2.4 in the FEIS.

Comment AE14: Text on page B-6 of Appendix B in the DEIS has been modified accordingly. See also Section 8.2.3.4 in the FEIS.

Comment AE15: See Sections 8.2.1 and 8.2.5 in the FEIS.

Comment AE16: See Section 8.2.6 in the FEIS.

Comment AE17: See Section 8.2.5 in the FEIS.

Comment AE18: See Section 8.2.5 in the FEIS.

Comment AE19: See Section 8.2.5 in the FEIS.

Comment AE20: See Section 8.2.8 in the FEIS.

Comment AE21: See Section 8.2.5 in the FEIS.

Comment AE22: See Section 8.2.6 in the FEIS.

Comment AE23: Text on page vii (Executive Summary) has been modified accordingly. This issue was also addressed numerous times in Section 4.2.3.1 of the DEIS (i.e., pages 4-34 and 4-40 for big game in general, page 4-37 for pronghorn, page 4-38 for mule deer, pages 4-38 and 4-39 for white-tailed deer, and page 4-39 for elk).

Comment AE24: See Section 8.2.7 in the FEIS.

Comment AE25: See Section 8.2.1 in the FEIS.

Comment AE26: As stated in the DEIS (page 1-8, column 1, paragraph 1, line 7), under the BLM's Lands Program (BLM 1987:42-45), public lands in the GDRA are available for use by utility and transportation systems, with stipulations to protect certain

important resources when siting generation or transportation systems. While this policy does not specifically reference windpower development, it pertains to utility generation and transportation systems, which include windpower facilities and transmission lines. Because BLM has already made major land use management decisions for the GDRA in the context of the RMP/EIS, the proposed project is being treated as a ROW grant tiered off the RMP/EIS. Although the GDRA RMP/EIS does not specifically address commercial windpower, each alternative considered (in the RMP/EIS) indicates that the entire planning area will be available for utility systems. Therefore, the proposed project is within the scope of actions contemplated by the RMP/EIS and is thus properly tiered to it (40 C.F.R. 1502.20).

Comment AE27: The regulations cited in this comment are CEQ regulations that are covered under the authority of NEPA, which is already cited in Table 1.3.

Comment AE28: As of the preparation of the FEIS, the updated version of Olendorff et al. (1981) has not been released. However, on page 2-19 in the DEIS, it is indicated that ..."the transmission line would be constructed and maintained...in conformance with...Olendorff et al. (1981), *or any future updated versions*". See Section 2.1.4.5 in the DEIS.

Comment AE29: Table captions for Tables 2.1(a) and 2.1(c) have been changed to indicate *surface* disturbance.

Comment AE30: Text in Appendix B in the DEIS states that BLM would require at least three years of baseline monitoring prior to construction in the Simpson Ridge area, unless situations occur for which exceptions may be granted. See also Sections 8.2.3, 8.2.4, and 8.2.8 in the FEIS. On page B-1 in the DEIS, text has been changed to state that at least three years of data would be collected prior to issuing an NTP for future phases in the Simpson Ridge area.

Comment AE31: All of the impacts of Phase I relevant to the approval of that phase only are addressed in the DEIS. Pursuant to NEPA, because Phase I is an integral part of the Proposed Action, it need not be considered as an independent alternative (*Environmental Defense Fund Inc. v. Costle*, D.C. Cir. 1981, 657, F.2d, 275). See also Section 8.2.6 in the FEIS.

Comment AE32: Text in Appendix B in the DEIS has been modified to state that BLM would require at least three years of baseline monitoring prior to issuing an NTP for future phases in the Simpson Ridge area, unless situations occur for which exceptions may be granted. See also Section 8.2.4 in the FEIS.

Comment AE33: The Avian Task Force was not specifically consulted during development of the monitoring plan. However, monitoring was discussed with task force members at a meeting in Denver on July 20, 1994. The monitoring program and future research needs were discussed with the task force during a meeting on May 25, 1995.

Comment AE34: Because each turbine is remotely monitored and controlled, it would be possible to minimize human disturbance, especially in sensitive areas during critical periods (e.g., near active raptor nests during the nesting season). Windsmiths would be on-site eight hours per day, five days per week, but no unnecessary maintenance or travel within the Windplant would occur. Windsmiths would be instructed to avoid unnecessary stopping and getting out of vehicles and to minimize other types of disturbances to wildlife (e.g., blowing horns).

Comment AE35: As stated in the DEIS, sensitive areas such as wetlands and riparian areas would be avoided, where feasible, during transmission line construction per BLM standard stipulations. Site-specific details concerning disturbance of these areas are available in the POD for transmission line construction.

Comment AE36: The text has been modified to reflect the correct citation. See Section 8.2.5 in the FEIS.

Comment AE37: See Sections 8.2.5 and 8.2.6 in the FEIS.

Comment AE38: See Section 8.2.4 in the FEIS.

Comment AE39: Avian task force recommendations have been incorporated into project designs. See Sections 8.2.4, 8.2.5, and Chapter 5.0 in the FEIS.

Comment AE40: See Section 8.2.12 in the FEIS. Taking into consideration wind turbine placement requirements (i.e., topography; wind speed, strength, direction, and persistence at microsites on Foote Creek Rim; turbine set back and side-by-side distances), avoidance of cultural resource sites, and avian use areas, turbines have been located to minimize, as much as practical, potential conflicts. Not all potential conflicts can be completely avoided.

Comment AE41: See Section 8.2.5 in the FEIS.

Comment AE42: See Section 8.2.2 in the FEIS.

Comment AE43: See Section 8.2.5 in the FEIS.

Comment AE44: The Avian Task Force work suggests that the combination of tubular towers, upwind machines, lower blade speeds, and blade markings or painting would result in reduced levels of collision-related mortality. Data in the bottom two rows of Table 4.13 (page 4-49 in the DEIS) show that there have been no mortalities at KENETECH's newest Windplants, each of which uses the KVS-33. Paint patterns would be tested for the first time during Phase I of the Wyoming development.

Comment AE45: Text on page 2-29 has been modified as requested.

Comment AE46: Thank you for your suggestions. The cost of burying distribution lines from the ends of turbine strings to the Windplant substation is substantially more than the cost of constructing overhead lines. As stipulated for the 230-kV transmission line, if it is determined that there is substantial collision-related mortality due to overhead lines, conductors would be marked. If mortalities continued, the technical committee would be consulted to determine an appropriate course of action.

Comment AE47: See responses to Comments D2 and D3 in the FEIS.

Comment AE48: See response to Comment AE35 in the FEIS.

Comment AE49: The stipulation is consistent with the GDRA RMP which states: "To protect important raptor and/or sage and sharp-tailed grouse nesting habitat, activities or surface use will not be allowed from February 1 to July 31 *within certain areas* encompassed by the authorization." (Emphasis added.) For this project, construction would not be allowed within 0.75 mi of active raptor nests from February 1 to July 31, unless otherwise approved by the AO.

Comment AE50: See Section 8.2.4 in the FEIS. Raptor nesting survey areas have been intensively searched for two years, 1994 and 1995. The 1994 data are included in the DEIS. The 1995 survey data will be included in the annual monitoring report for 1995.

Comment AE51: See response to Comment AE49.

Comment AE52: Text has been modified to state that activities would be restricted around known lek sites.

Comment AE53: See Section 8.2.5 in the FEIS. Seasonal restrictions defined in Chapter 2.0 would apply to federal, state, and private lands.

Comment AE54: Text has been added to Table 2.11 as requested.

Comment AE55: BLM stipulations restricting construction in certain wildlife habitats during certain periods are implemented to protect species during critical periods within their life cycle. For the proposed project, stipulations would apply to big game crucial winter range during winter periods when this habitat is critical to the animals, active sage grouse leks during the breeding season, and active raptor nests during the nesting season. However, due to biological and climatic variability, there are years when crucial periods do not occur. For example, during mild winters, big game may not depend on crucial winter range; or a sage grouse lek or raptor nest that was previously occupied may be abandoned. If the species being protected by the stipulations are not utilizing the restricted area, or if the critical conditions do not exist, then BLM, in consultation with WGFD, would consider allowing construction within the restricted areas during otherwise restricted periods.

For the proposed project, the stipulations protecting active raptor nests and sage grouse leks would be applied during construction only, unless monitoring results suggest that restrictions during O&M are needed to reduce or mitigate impacts. Pursuant to the RMP/EIS ROD (BLM 1990a:48), "Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects."

Comment AE56: See Section 8.2.1.6 in the FEIS.

Comment AE57: Environmental costs were not included when comparing costs of alternative sites. Environmental costs are weighed, along with other costs and benefits, by the AO during the decision-making process. See Section 8.2.12 of the FEIS.

Comment AE58: See Section 8.2.1 in the FEIS.

Comment AE59: See Section 8.2.1.2 in the FEIS.

Comment AE60: Text concerning swift fox has been added to Table 2.11 as requested. Table 2.11 of the DEIS includes mountain plover.

Comment AE61: Text in Table 2.11 has been modified for clarification. See Section 8.2.2 in the FEIS.

Comment AE62: See Section 8.2.10 in the FEIS.

Comment AE63: See Section 8.2.4 in the FEIS.

Comment AE64: The Biological Assessment is available from the BLM.

Comment AE65: As stated on page 1-4 of the DEIS, the DEIS addresses the entire proposed project development (500 MW) and includes comprehensive environmental information for the first phase, including specific mitigation measures for Phase I. The DEIS also considers generalized information and projected environmental effects of subsequent phases. Vegetation in and adjacent to the Phase I area was mapped (Map 3.7, page 3-27 in the DEIS). As development is proposed for the Simpson Ridge area and subsequent NEPA documents are prepared, vegetation in proposed development areas would be mapped. It is not reasonable to complete vegetation mapping areas outside the Phase I development area for the FEIS because no other resources were analyzed at this level of detail.

Comment AE66: Formal wetland delineations would be completed prior to construction of each phase to obtain the necessary permits from the U.S. Army Corps of Engineers (COE). Wetland delineations include characterization of vegetation, soils, and hydrology; therefore, site-specific information would be available prior to construction of each phase. As part of the permitting process, the total number of wetland acres to be disturbed would be measured; the COE would authorize the project under an appropriate permit.

Comment AE67: See response to Comment AE66.

Comment AE68: Text has been changed accordingly. Also, WGFD (1994a) notes that several established objectives for pronghorn herds are being revised.

Comment AE69: Little is known regarding the potential for collision-related mortality of bats. A few bats have been killed at a Windplant in Minnesota. WGFD has agreed that the level of detail in the DEIS is adequate unless substantial mortality occurs (personal communication, March 1995, with Steve Tessman, WGFD), at which time the technical committee would be consulted to determine an appropriate course of action. See also Section 8.2.4.

Comment AE70: Text has been modified accordingly.

Comment AE71: WGFD agreed that the level of detail in the DEIS concerning migrating birds is adequate unless a substantial number of nighttime collision-related mortalities occur (personal communication, March 1995, with Steve Tessman, WGFD). The technical committee would be responsible for evaluating the need for nighttime monitoring. See also Section 8.2.4.

Comment AE72: Dr. Mark Fuller, Director of the Raptor Research and Technical Assistance Center, is a member of KENETECH's Avian Research Task Force. Dr. Fuller's position at the center and on the task force ensures this project will receive a comprehensive review.

Comment AE73: Maps have been generated by species and season (i.e., breeding vs. nonbreeding) as requested. See Maps 3.14 A-D, 3.15 A-F, 3.16 A-G, and 3.17 in Section 3.2 of the FEIS.

Comment AE74: Standard errors have been calculated and error bars have been added to the appropriate figures. Figures 3.2A and 3.2B in the DEIS were based on the total number of raptor species observed per month divided by the number of survey days for that month. These numbers have been recalculated by averaging the total number of species per survey by month to give a more representative overview of the data. This eliminates the tendency to underrepresent species which were commonly observed (i.e., golden eagle). See Figures 3.2 (A-D) and 3.3 (A-B) in Section 3.2 of the FEIS.

Comment AE75: An overlay of the proposed turbine string locations and associated roads (Appendix H) has been provided for use with Maps 3.14 A-D, 3.15 A-F, 3.16 A-G, and 3.17 in Section 3.2 of the FEIS.

Comment AE76: Raptor flight heights have been analyzed and presented by species in Table 3.12 and in Section 3.2 of the FEIS. Because of the large number of passerine species (94) observed during baseline studies and the apparent similarities in flight heights among most of the passerine species, passerine flight heights were not presented by species. Horned larks were presented separately from other passerine species due to their prevalence in the total sample (62% of the passerine flight height observations) and their tendency fly primarily within the 0-26 ft (0-8 m) flight height class. This tendency probably reflects their ground-nesting and foraging habits. Brewer's blackbird, cliff swallow, and mountain bluebird were also presented individually by species because of their prevalence in the overall sample. The remainder of passerine species observed were presented as "other passerines" (see Table 3.17 in the FEIS). Since flight height tables reflect actual numbers and percents of birds observed at each flight height rather than means, standard deviations and/or confidence intervals are not appropriate.

Comment AE77: The raptor nest survey area is described on page A-14 in the DEIS. Map 3.16½ in the FEIS presents the Foote Creek Rim and Simpson Ridge areas and the three alternate transmission line routes with the associated area surveyed for raptor nests in 1994. Helicopter flight paths (recorded using a GPS) were provided to WGFD and are available to the public. Aerial survey dates and species-specific dates for ground nest surveys are provided in Section 3.2.2.3 of the FEIS. BLM concurs that some nests were likely missed; as with any biological survey, it is difficult to obtain a 100% census during any one survey year. Over time, however, more nests would be located and monitored. Because there are no extant data on the number of territories in the area, it is impossible to estimate the number of nests missed during the 1994 survey (see Section 3.2.2.3).

Comment AE78: As stated on page 4-53 of the DEIS, history of territory occupancy is unknown in and adjacent to the KPPA; hence average annual number of occupied territories in the area is also unknown. Precise calculation of territory occupancy requires regularly collected nest occupancy data to determine territory location and occupancy history. Although some historical data are available, there have been no complete annual surveys of all raptor nests in and adjacent to the KPPA until 1994, making territory history impossible to accurately calculate. After a few years of monitoring, sufficient data should be available to identify territories. See also Section 8.2.3.1.

Comment AE79: The DEIS acknowledges that lack of raptor population structure and territory history data makes evaluation of impacts to raptors uncertain (pages 4-48 and 4-54). Because raptors are naturally rare, it is not useful to use one year of data to conduct statistical tests and evaluate development impacts to raptor populations; no attempt is made to do this using information contained in Tables 3.13, 3.15, and 3.16. Implementation of the monitoring protocol (page B-22, Appendix B in the DEIS) will enable impacts to raptors to be more accurately determined; the protocol recognizes that statistical comparisons of nest and territory parameters will become more valuable as territories become better defined. Methodology for determining nest occupancy during monitoring (page B-23, Appendix B in the DEIS) has been approved by WGFD and is identical to methods used to collect data for the DEIS. After several years of survey, data would be sufficient to adequately determine territory occupancy and nesting success. See also Section 8.2.4 in the FEIS.

Comment AE80: Table 3.13 has been modified as suggested. 1994 was the first year that a complete raptor nesting survey was conducted and reproductive success of active nests was monitored within and adjacent to the KPPA. Historic data are incomplete, hence territory locations are unknown. The DEIS can only accurately report nesting activity monitored in 1994; historic data are not sufficient to speculate about declines or increases in golden eagle or prairie falcon populations within and adjacent to the KPPA. This information will become available after the monitoring protocol has been implemented for several years. See also Table 3.15 in the FEIS.

Comment AE81: Tables 3.15 and 3.16 have been combined and modified (Table 3.15 in the FEIS) to present the requested information. Data were collected using a standard protocol which has been approved by WGFD for monitoring.

Comment AE82: Responses to comments AE77-AE80 describe limitations of raptor nest survey data. High winds curtailed helicopter surveys on certain days, but all potential raptor nesting areas were eventually surveyed. Areas with dense tree cover were surveyed from the ground.

Comment AE83: As shown in Table 3.13 in the DEIS, there are no known accipiter nests in the 1994 nest survey area. However, accipiter nesting habitat (i.e, forested areas south of Interstate 80) was not surveyed because these species were not frequently observed on Foote Creek rim or in the Simpson Ridge area and are not thought to be at risk. If, during monitoring, collision-related mortality of these species occurs, the technical committee may recommend completing nesting surveys for these species. See

response to Comment AE77. As discussed in Section 4.2.3.4 in the DEIS, some species (i.e., red tailed hawks and golden eagles) in California were killed in higher proportions than would be expected from their relative abundances. However, it is likely that the risk associated with a particular area is somewhat related to species composition/relative abundance. One of the objectives of the monitoring program is to evaluate these parameters.

Comment AE84: See response to Comment AE71.

Comment AE85: Standard errors have been calculated and error bars have been added to Figure 3.3 in the DEIS. Figure 3.3A in the DEIS (Section 3.2.2) was based on the total number of passerine species observed per month divided by the number of survey days for that month. These numbers have been recalculated by averaging the total number of species per survey by month to give a more representative overview of the data. This eliminates the tendency to underrepresent species which were commonly observed (i.e., horned lark). See Figure 3.3 (A-B) in Section 3.2 of the FEIS.

Comment AE86: The biological assessment for the project is available from the BLM.

Comment AE87: Surveys for swift fox were not completed as part of baseline data collection because overall habitat loss should not adversely affect this uncommon resident in the area (see Section 4.2.4.2 in the DEIS).

Comment AE88: See Section 8.2.4 in the FEIS. Observation data for bald eagle, peregrine falcon, and a number of additional candidate or state sensitive species have been provided to WGFD as requested.

Comment AE89: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment AE90: Potential peregrine falcon nesting habitat was surveyed via helicopter in 1994 by qualified biologists. However, because there were several comments on this subject, WGFD was consulted prior to the 1995 nest surveys, and areas WGFD identified as potential habitat were surveyed from the air and on foot. No peregrine falcon nests were found. The idea that the wind corridor is also a migration corridor for many species of birds, including peregrine falcons, was raised during DEIS preparation; however, migration data from this area and surrounding areas are insufficient to determine the extent of migratory use within the wind corridor. Baseline data strongly suggest that many species migrate through the KPPA; many species were observed for which there is no preferred nesting or foraging habitat in the KPPA. It is possible that peregrine falcons are migrating through the area, but impossible at this time to determine if the area is a vortex for migration. Peregrine falcons may be attracted to the Foote Creek Rim area by the abundant waterfowl which use the two large lakes east of the rim. Without marking birds, it is not possible to know if the observations are repeat observations of resident birds. As to the accuracy of peregrine falcon identification, observers recorded peregrine falcons only if they made a positive identification. In many cases, more than one observer saw the same bird (observers were in radio contact and could alert one another to individual birds flying along the rim) and confirmed the identification. If there was any uncertainty, the observation was recorded as an unknown large falcon.

Comment AE91: An overlay of turbine string locations is provided in Appendix H. Turbine strings located on the east side of Foote Creek Rim overlap substantially with areas used by mountain plovers for breeding, nesting, and foraging. However, it is unknown whether Windplant development would have a significant adverse impact on this species. Mountain plovers are tolerant of disturbance (see Section 4.2.4.3 in the DEIS). Conversely, the Windplant may completely displace mountain plovers from the rim. Because the BLM treats Category 1 species with the same concern as a threatened or endangered species, these various scenarios will be weighed during decision-making. See Section 8.2.12 in the FEIS.

Comment AE92: WGFD has agreed that the primary species of interest are golden eagle, ferruginous hawk, peregrine falcon, and bald eagle; therefore, intensive monitoring of merlin reproductive success is not proposed. If substantial collision-related mortality of merlins occurs, the technical committee may recommend more intensive merlin surveys. As requested, observation data for merlin were provided to the WGFD in May 1995.

Comment AE93: The visual impact analysis conducted for this project resulted in a conclusion of significant impact. Since the key observation points, particularly along Interstate 80 (I-80), are well-traveled and in closer proximity (i.e., a greater proportion of foreground is affected) to the KPPA than areas south of I-80 analysis of visual impacts from south of I-80 would not change the conclusion of significant impact.

Comment AE94: NEPA does not require examination of the environmental impacts of an entire industry on a continental or worldwide basis. The lead agency has discretion to define the appropriate region for cumulative impacts analysis (*Kleppe v. Sierra Club* 1976 427 U.S. 390), which, for the purposes of the DEIS, included southcentral and southwestern Wyoming. Applying the "rule of reason", the appropriate level of consideration in the EIS has been given to cumulative impacts for continental ranging species. We expect the technical committee to consider population status reports for effected species. Noting other locality threats to migratory birds (i.e., loss of wintering areas in the Central Valley of California for mountain plovers) can have little benefit to the project-specific impact analysis unless the project-specific losses also threaten the population. The analysis to date does not demonstrate this level of impact. See also Sections 8.2.7 and 8.2.8 in the FEIS.

Comment AE95: An exhaustive literature search was completed to determine the level of risk that would be imposed by Windplant development to certain species or groups of species. No attempt was made to determine if the wind corridor is also a migration corridor because it was not deemed necessary for the analysis in the DEIS for the following reasons:

- the purpose of the project is to develop wind power in Wyoming; and
- no other sites within Wyoming are suitable for the proposed development (see Section 8.2.1.3).

Baseline data present strong evidence that birds migrate through the KPPA: many species of birds have been observed within the KPPA for which there is no preferred habitat. Furthermore, the number of

observations of many species peaked in the fall of 1994 and spring of 1995, which is attributed to probable migratory movement. Therefore, during decision-making, BLM will assume that substantial migration occurs through the area.

Comment AE96: See Sections 8.2.5 and 8.2.6 in the FEIS.

Comment AE97: See Sections 8.2.5 and 8.2.8 in the FEIS.

Comment AE98: Section 8.2.5 in the FEIS acknowledges that the lack of off-site mitigation may result in some impacts not being mitigated.

Comment AE99: Several factors influence the transmission of sound, including the source of noise, the frequency content of the noise source, molecular absorption, anomalous excess attenuation, wind, temperature gradients, precipitation, and terrain and vegetation effects. Each of these factors was considered during the noise analysis prepared for the DEIS. This comment appears to address the issue of molecular absorption.

The amount of sound energy absorbed by air is dependent on the temperature and humidity of the air and the frequency content of the sound. The relationship between atmospheric absorption and temperature, relative humidity, and frequency is complex and non-linear. At the 63 Hertz band, the molecular absorption of sound is a constant 0.1 dB per 1,000 ft, regardless of temperature and relative humidity (Society of Automotive Engineers 1975). As frequency increases, it is more strongly affected by molecular absorption. At the 250, 500, and 1,000 Hertz frequency bands, molecular absorption of sound generally increases with increasing temperatures; however, when relative humidity is very low (<10%), molecular absorption decreases with increasing temperature.

At the frequencies of concern for this project (i.e., 63-4,000 Hertz), summer values for molecular absorption would be approximately 1.9 dB lower than during winter months. However, molecular absorption is only one factor affecting sound transmission. When all site factors potentially affecting sound transmission are considered, variation in molecular absorption between summer and winter months would probably not noticeably affect noise levels at the nearest noise-sensitive receptors. Therefore, the conclusions reached in Section 4.1.8 are supported by the analysis completed.

Comment AE100: BLM recognizes the problems associated with using aggressive non-native grasses for revegetation and would attempt to achieve reclamation success using only native species, even if it requires repeating revegetation attempts using more costly revegetation techniques. The POD for each phase would address specific problem areas and design site-specific stabilization and revegetation procedures tailored to the site-specific problems. For example, the POD for Phase I identified Arlington Peak as a specific problem area due to shallow soils, steep slopes, and droughty conditions; erosion control and revegetation measures developed for Arlington Peak were designed to achieve revegetation success under these adverse conditions. However, if revegetation fails repeatedly and soil erosion is problematic, BLM may choose to use non-native species to stabilize soils. Once stabilization is achieved, attempts would be made to reestablish native species.

Comment AE101: Because there are so few wetlands within the KPPA and because facilities could be placed to avoid wetlands in most circumstances, formal wetland delineations are not deemed necessary to make a reasoned choice among alternatives. In projects where wetlands are a key issue, BLM could require formal delineations during the NEPA process; however, delineations may be performed anytime prior to construction.

Comment AE102: See Section 8.2.8 in the FEIS.

Comment AE103: See Sections 8.2.5 and 8.2.12 in the FEIS.

Comment AE104: See Sections 8.2.5 and 8.2.12 in the FEIS.

Comment AE105: See Section 8.2.8 in the FEIS.

Comment AE106: The analysis that was completed to determine impacts to pronghorn antelope and mule deer suggested that impacts due to the project *per se*, would be negligible. Since impacts of Windplant development on wildlife are largely unknown, effects on wildlife resources would be monitored. As suggested, it is possible that BLM underestimated the impact of development on pronghorn and mule deer winter/yearlong habitat effectiveness; if so, the technical committee would be consulted to determine an appropriate course of action. For the purposes of decision-making, however, BLM believes that the analysis presented in the DEIS is adequate. See also Sections 8.2.4 and 8.2.5 in the FEIS.

Comment AE107: Text has been modified accordingly.

Comment AE108: Montana Fish, Wildlife, and Parks Department was contacted in May 1995. No research is being conducted to determine impacts of windfarm development on big game. The operator of five 100-kW wind turbines near Livingston, Montana, has observed pronghorn antelope avoiding the machines, but no scientific studies have been initiated.

Comment AE109: Text has been modified as suggested.

Comment AE110: See response to Comment AE106.

Comment AE111: It is possible that BLM underestimated the potential displacement effects of the Windplant on mule deer; therefore mule deer displacement from the Windplant would be monitored. See response to Comment AE106.

Comment AE112: See response to Comments AE106 and AE108.

Comment AE113: Only the Windplant substation would be fenced.

Comment AE114: See Section 8.2.2 and response to Comment AE44 in the FEIS.

Comment AE115: Research conducted or supported by the Avian Research Task Force suggests that tubular towers may substantially reduce avian mortality compared with lattice towers; therefore, KENETECH changed the proposed action from lattice to tubular towers. This work is ongoing. The Avian Research Program Update, released by KENETECH in November 1994, provides background information about the task force, its research strategies, and updates research presently being conducted. The task force also

recommended painting rotors with a black and white striped pattern which would be adopted for selected turbines in Phase I. See response to Comment AE44.

Comment AE116: As the DEIS states, marking raptors enables direct quantification of effects of collision-related mortality on raptor populations. However, WGFD repeatedly recommended against marking raptors and has agreed that baseline studies that provide general indices to population density are adequate. If monitoring data suggest that collision-related mortality may be impacting raptor populations, more detailed population studies would be initiated (see Sections 8.2.3.1 and 8.2.5 in the FEIS).

Comment AE117: The golden eagle population study in Altamont Pass, which is funded by KENETECH and the National Renewable Energy Laboratory (NREL), is ongoing; only one year of population monitoring has been completed. Details of the first year of population monitoring are provided in the Avian Research Program Update released in November, 1994 by KENETECH. Due to the preliminary nature of the data, it is not yet possible to evaluate potential impacts of collision-related mortality on the Altamont Pass golden eagle population (personal communication, May 1995, with Holly Davis, Staff Systems Analyst, NREL).

Comment AE118: See response to Comment AE44 and Section 8.2.5 in the FEIS.

Comment AE119: Page 5-9 of the DEIS states that mitigation measures for raptors would include placing WTGs away from raptor high-use areas. See Section 8.2.12 in the FEIS. The Estep (1989) citation has been added in the FEIS.

Comment AE120: Broad-winged hawk, northern goshawk, turkey vulture, peregrine falcon, great horned owl, northern saw-whet owl, short-eared owl, osprey, and sharp-shinned hawk have been added to Table 4.15.

Comment AE121: See Section 8.2.12 in the FEIS.

Comment AE122: The estimated raptor mortality rates are subject to many assumptions and possible large errors. To avoid further mortality estimation bias, population density, scavenging, and observer correction factors were not incorporated into the mortality estimate. As discussed on page 4-48 of the DEIS, results of scavenging and observer error trials conducted at California Windplants suggest that American kestrel is likely the only raptor species to have an underestimated mortality rate as a result of scavenging and observer error. Therefore, scavenging and observer correction factors may not be applicable to most species discussed in the DEIS.

Comment AE123: See Section 8.2.3.2 in the FEIS.

Comment AE124: See Section 8.2.2 in the FEIS.

Comment AE125: Text has been modified as suggested.

Comment AE126: See Sections 8.2.1.3 and 8.2.4 and response to Comment AE160 in the FEIS.

Comment AE127: See Section 8.2.3 in the FEIS.

Comment AE128: See Sections 8.2.2, 8.2.3, and 8.2.5 in the FEIS.

Comment AE129: See response to Comment W5 in the FEIS. WGFD has agreed that monitoring of impacts to reptiles and amphibians would not be necessary.

Comment AE130: See response to Comment AE90 and Section 8.2.4 in the FEIS.

Comment AE131: See response to Comment AE91.

Comment AE132: Text has been added as requested.

Comment AE133: See Sections 8.2.3.1, 8.2.4, and 8.2.5 in the FEIS.

Comment AE134: The text has been corrected accordingly.

Comment AE135: See Sections 8.2.4 and 8.2.10 in the FEIS.

Comment AE136: See Section 8.2.5 in the FEIS.

Comment AE137: See Section 8.2.5 in the FEIS.

Comment AE138: The seed mixtures proposed for Phase I will b included in the POD.

Comment AE139: See Section 8.2.5 in the FEIS.

Comment AE140: Text has been added accordingly.

Comment AE141: Text has been added accordingly.

Comment AE142: See Sections 2.1.11 and 8.2.5 in the FEIS.

Comment AE143: Text in Appendix B of the DEIS has bee modified to state that BLM would require at least three years of baseline monitoring prior to issuing an NTP for future phases in th Simpson Ridge area, unless situations occur for which exception may be granted.

Comment AE144: See Section 8.2.6 in the FEIS.

Comment AE145: See response to Comment AE55 in the FEIS.

Comment AE146: The text has been corrected.

Comment AE147: See Section 8.2.5 in the FEIS. BLM is waitin for recommendations from the USFWS regarding mitigations fc TEC&S species.

Comment AE148: See Section 8.2.10 in the FEIS.

Comment AE149: Text has been revised accordingly.

Comment AE150: Text (page B-6) has been revised as requested

Comment AE151: See Section 8.2.3.3 in the FEIS. Table 8.^ presents an evaluation of which significance criteria (relating t wildlife) can be reliably detected under the current protocols.

Table 8.3 Evaluation of Which Significance Criteria Relating to Wildlife can be Reliably Detected with Monitoring Program Current Protocols.

Resource	Significance Criteria	Reliability of Detecting Significant Impact using Proposed Monitoring Program
Big game	Project-related activities resulting in the loss of greater than 1% of big game crucial winter range for a given herd unit	Based on disturbance area only, this impact is fully detectable; potential impacts are disclosed in the DEIS. Loss of habitat function within crucial winter range may be detected after several years of big game surveys if big game utilization of crucial winter range in the KPPA changes due to Windplant development.
Other mammals	Declining populations	Lagomorphs, prairie dogs, and ground squirrels are being monitored as part of the raptor monitoring program; therefore, dramatic increases or decreases in these populations would be detectable. Impacts to other mammals are not proposed for monitoring.
Raptors	Fatalities of individuals of species protected under the MBTA, the BEPA, and/or the ESA	Mortality would be detectable if carcasses are not scavenged or missed by observers. Scavenging and observer bias studies would be conducted and results used to correct mortality data for these biases.
	Declining raptor populations	This impact is not detectable, *per se*, under proposed protocols. Weight of evidence from the variables being monitored would indicate problems (e.g., declining reproductive success) which would trigger population studies. Population studies would detect declining raptor populations.
Upland game birds	Declining populations	This impact is not detectable, *per se*, under proposed protocols. The monitoring program would detect changes in sage grouse lek occupancy, an indicator of population trends. Population studies could be implemented if deemed necessary by the technical committee.
		No measures are proposed to assess impacts to other species of upland game birds.
Waterfowl, shorebirds, and waders	Fatalities of individuals of species protected under the MBTA, the BEPA, and/or the ESA	This impact is detectable if carcasses are not scavenged or missed by observers. Scavenging and observer bias studies would be conducted and results used to correct mortality data for these biases.
	Declining populations	This impact is not detectable, *per se*, under the proposed protocols. Protocols would detect mortality, and population studies could be implemented if deemed necessary by the technical committee.
Passerines	Fatalities of individuals of species protected under the MBTA, the BEPA, and/or the ESA	This impact is detectable if carcasses are not scavenged or missed by observers. Scavenging and observer bias studies would be conducted and results used to correct mortality data for these biases.

Table 8.3 (Continued)

Resource	Significance Criteria	Reliability of Detecting Significant Impact using Proposed Monitoring Program
	Declining populations	This impact is not detectable, *per se*, under the proposed protocols. Protocols would detect mortality and dramatic changes in relative abundance. Population studies could be implemented if deemed necessary by the technical committee.
TE&C species	Fatalities of individuals of species protected under the ESA; take of any individual	This impact is detectable if carcasses are not scavenged or missed by observers. Scavenging and observer bias studies would be conducted and results used to correct mortality data for these biases.
	Disturbance or destruction of critical habitat such that the likelihood of survival or recovery of a species would be appreciably reduced	This impact is detectable. Critical habitat (e.g., nest sites, breeding areas, etc.) would be identified prior to development of each phase. Consultation with the USFWS would determine whether disturbance would affect the likelihood of species survival or recovery.
Amphibians and reptiles	Declining populations	This impact would not be detectable, but there are no taxa of special concern within the KPPA.
Fisheries	Degradation of surface water quality such that the WGFD Stream Classification would be permanently reduced	This impact would not be detectable, but is not of concern due to mitigation of potential erosion.

Comment AE152: Pronghorn surveys are being conducted following the protocol currently used by WGFD. Text (page B-31) has been changed accordingly.

Comment AE153: Pellet group counts normally do not provide reasonable estimates of population size and density. Pellet group densities have been used successfully to monitor change in use within an area or between areas with similar habitats. However, if turbines repel most pronghorns but attract a few that consistently remain near turbines, the analysis of displacement impacts will be confounded. However, observations of individual pronghorns by monitoring crews should detect such an anomaly.

The principal biologists conducting the pellet and pronghorn counts should remain the same throughout the project. However, technicians assisting with the counts may change. A consistent training and quality assurance program is in place to assure that the resulting data are comparable from year to year.

Pellet group counts are being used to detect major shifts in pronghorn use in response to the construction of the Windplant. The assumptions associated with the technique (Collins and Urness 1981; Leopold, et al. 1984; Neff 1968; Rowland et al. 1984; and White 1992) were evaluated prior to the selection of this technique.

Comment AE154: The protocol, as modified, should still be adequate to detect significant mortality. The level of effort contained in the protocol is a preliminary estimate of the effort considered adequate to detect significant mortality. However, the actual level of effort will be determined in consultation with the technical committee.

Comment AE155: Within-season variability would be incorporated into the scavenger trials by conducting the trials over several different days within each season. However, because scavenger trials may actually attract scavengers to the site, within-season replication would not be conducted unless results of initial monitoring suggest that it is necessary.

Comment AE156: The protocol for measuring raptor use is a sample survey of Foote Creek Rim, Simpson Ridge, and the reference area across time and space. The resulting estimates will allow comparisons among locations within each area as well as between impact and reference areas across seasons. The monitoring protocol devotes less time for point counts on Foote Creek Rim (8 hours) than baseline monitoring (18 hours). However, the addition of use surveys on Simpson Ridge results in more time spent in measuring raptor use and making incidental and in-transit observations under the current protocol. Four person-days per week are spent making observations during the migratory/breeding season within the KPPA under the current protocol versus 3 person-days per week during baseline studies.

This sampling effort should be adequate to detect major migration events and should provide an adequate comparison of the average use of observation points and study areas by common species within seasons. With the additional time spent in the KPPA, the monitoring surveys are more likely to detect regional shifts in use or unusual migratory pulses than baseline studies. However, extremely rare events occurring for brief periods of minutes or a few hours would likely require full-time monitoring of study areas and may be missed by current monitoring sampling intensity. Baseline studies also may have missed such rare events.

Comparisons to the baseline data and other raptor use data can be made by standardizing data. Estimates of mean minutes of bird use per unit of time can be directly compared, even though the duration of observations may differ among areas or studies.

Comment AE157: The appropriateness of the reference area was evaluated during the first breeding season and it was replaced with a reference area in the Laramie Range. Several possible reference areas were considered prior to selecting the Shirley Mountain area. These included Fort Steele Breaks, Saint Mary's Ridge (near Walcott), Brown's Canyon Rim (near Rawlins), the Metfuel project area (in the Hanna Basin), the Red Rim RCA, Sheep Rock (near Saratoga), and numerous ridges within the Shirley Basin. Criteria used to select the area were:

- presence of ridges or topographic high points,
- proximity to a broad riparian area similar to Rock Creek, and
- existence of a large nesting population of raptors.

Fort Steele Breaks and Sheep Rock were rejected because there are not sufficient nesting raptors in these areas. Red Rim has seen a marked decline in nesting raptors in recent years, and is substantially more arid than the project area. Saint Mary's Ridge, Brown's Canyon Rim, and the Shirley Basin do not have sufficient riparian habitat. The Metfuel project area is too close to Simpson Ridge to enable a nesting survey area with a 10-mile buffer without overlapping the Simpson Ridge nesting survey buffer. The area east of the Snowy Range in the Centennial Valley area was also examined, but no suitable ridges could be found. WGFD was consulted to help select a reference area; however, no alternative reference areas were recommended.

Comment AE158: The site receives little use by passerines during winter and mortality during this period is expected to be unmeasurable. Passerine mortality during the migratory period may be higher than during the breeding season, but the impact to local breeding populations is expected to be minor. The levels of passerine mortality during the nonbreeding season (i.e., winter and migratory periods) would be estimated by the carcass surveys. It was agreed by the WGFD that passerine mortality was of greatest concern during the breeding season. Therefore, the monitoring protocol was designed to focus attention on passerines during this period. If substantial mortality is documented, more intensive studies may be required.

Comment AE159: During development of the monitoring protocol for passerines, it was agreed that modification of the baseline studies was appropriate (personal communication, March 29, 1995, with Steve Tessman, WGFD). The baseline data allow inference concerning passerine use on the edges of the rim. The monitoring protocol is intended to enable inference about use of the entire rim. Comparison can be made provided that the different areas of inference are considered.

Comment AE160: Mountain plovers have not yet been located in the Simpson Ridge area, but have been observed in the new (Laramie Range) reference area. Using the current protocols, it would be difficult to detect subtle changes in habitat effectiveness due to

Windplant development. However, because mountain plover surveys would be conducted annually, substantial impacts such as displacement or decline in reproductive success would be detected, and it may be possible to infer the causes of the impacts (i.e., if impacts were due to Windplant development or to natural causes). Because mountain plovers occur in the Laramie Range reference area, it may be possible to make comparisons of parameters such as fledgling success, nest occupancy rate, hatching success, and use patterns.

Comment AE161: The lagomorph survey of the reference area would be replicated for a minimum of three survey dates. Text (page B-39) has been modified.

Comment AE162: See Section 8.2.3.2 in the FEIS.

Comment AE163: The text has been modified accordingly.

Comment AE164: The text has been modified accordingly.

AG. Wyoming Department of Environmental Quality

THE STATE OF WYOMING

JIM GERINGER
GOVERNOR

Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

ADMINISTRATION	ABANDONED MINES	AIR QUALITY	INDUSTRIAL SITING	LAND QUALITY	SOLID & HAZARDOUS WASTE	WATER QUALITY
(307) 777-7758	(307) 777-6145	(307) 777-7391	(307) 777-7368	(307) 777-7756	(307) 777-7752	(307) 777-7781
FAX 777-7682	FAX 634-0799	FAX 777-7682	FAX 777-6537	FAX 634-0799	FAX 777-5973	FAX 777-5973

RECEIVED MAR 27 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

Memorandum

To: Julie Hamilton, Wyoming State Clearinghouse

From: Gary G. Beach, Division Administrator

Date: March 3, 1995

Subject: Kenetech project, Clearinghouse #94-010

This project will be permitted through the Industrial Siting Council per application files 2-23-95 with this office. Any issues that the Division feels may need addressing will be handled by the permit.

AF. Wyoming State Land and Farm Loan Office

WYOMING STATE LAND OFFICE

Wyoming State Land and Farm Loan Office

122 WEST 25TH STREET, HERSCHLER BUILDING
CHEYENNE, WYOMING 82002-0600
PHONE 307/777-7331
FAX 307/777-5400

JAMES H. MAGAGNA, DIRECTOR, 777-6479
PAUL R. CLEARY, DEPUTY DIRECTOR, 777-6429
MICHAEL H. GAGEN, STATE FORESTER, 777-7586
SHARON S. GARLAND, ASSISTANT DIRECTOR, 777-6664
ACCOUNTING & ADMINISTRATION
DAVE W. FORCE, ASSISTANT DIRECTOR, 777-6636
FARM LOANS & SURFACE LEASING
DON L. COLLAMORE, ASSISTANT DIRECTOR, 777-7369
GOVERNMENT GRANTS & LOANS
HAROLD D. KEMP, ASSISTANT DIRECTOR, 777-6643
MINERAL LEASING & ROYALTY COMPLIANCE
JIM WHALEN, ASSISTANT DIRECTOR, 777-6521
REAL ESTATE DIVISION

March 9, 1995

Wyoming State Clearinghouse
Attn: Julie Hamilton
Office of the Governor
State Capitol
Cheyenne, WY 82002

RECEIVED MAR 27 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

Re: State ID # 94-010
Kenetech/PacifiCorp Windpower Project EIS

Dear Ms. Hamilton:

On December 1, 1994, the Board of Land Commissioners approved an easement application from Kenetech Windpower, Inc. for a wind powered electricity generating facility to be located on approximately 6,080 acres of state trust land in Carbon County. The easement document was signed by Governor Geringer with an effective date of January 5, 1995.

Sincerely,

Paul R. Cleary
Deputy Director

AH. KENETECH Windpower, Inc.

KENETECH WINDPOWER

KENETECH WINDPOWER, INC.
500 Sansome Street
San Francisco, CA 94111
TEL: 415 399 3825
FAX: 415 981 8102

March 27, 1995

RECEIVED MAR 28 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

U.S. Bureau of Land Management
Rawlins District
Mr. Walt George
P.O. Box 670
Rawlins, WY 82301

Re: Draft EIS, Wyoming Windplant No. 1

Dear Mr. George:

KENETECH Windpower, Inc. wishes to make the following comments regarding the above Draft EIS:

1 1. Section 2.1.11 Project-wide Mitigation Measures: Page 2.29, 4th paragraph, right column: We request that the second sentence be amended to read:

"Modification of prior phases would not include replacement of capital items (e.g., rotors, towers, or nacelles) but would be limited to relocation with the Project site of turbines associated with disproportionately high levels of avian mortality, painting of turbine rotors or other measures not requiring capital expenditure."

2 2. We request that an additional sentence be added to the end of the final paragraph in Section 4.2.3.3 Legislation Relating to Avian Mortality:

"This EIS evaluates the full range of estimated avian mortalities and impacts (other than those related to other protected wildlife species) which might be covered by such permits or stipulations, if any, for the first phase of the project."

3 3. Section 4.3 Cultural and Historic Resources: A listing of the BLM contacts and consultations with Native American tribes would provide useful documentation to establish the extent of consultations with the tribes.

4 4. Section 5.1.3.12 Birds The last sentence in the first paragraph of this section should be amended to clarify that ordinary operation of already-constructed Windplant

4 cont. facilities will not be required to be curtailed or modified in the event an eagle or falcon builds and uses an active nest within 1.0 mile of project facilities. A similar clarification should be made in all similar avian mitigation statements.

5 5. Please clarify that Table 2.11 and Chapter 5 correlate with one another and that they each contain all of the project mitigations discussed in the EIS.

As the project applicant, KENETECH wishes to commend the Bureau of Land Management and its consultant, Mariah Associates, for the preparation of a thorough and highly-detailed Draft EIS. We appreciate this opportunity to comment on it.

Sincerely,

Steven P. Steinhour
Director, Lands and Permits

AI. Frank C. and Lois L. Layton

March 25, 1995

Mr. Walt George
Bureau of Land Management District Office
Post Office Box 670
Rawlins, Wyoming 82301

Dear Mr. George:

We are writing this letter to express some of our strong concerns with the Draft Environmental Impact Statement on the Kenetech/PacifiCorp Windpower Project in Carbon County, Wyoming.

The Foot Creek Rim forms a HIGH rim with great wind currents and it overlooks the stream far below with its excellent reparian habitat. This stream area with its thick vegetative growth and water is sort of an oasis in an otherwise arid region and affords an ideal place to concentrate many prey species. In turn this concentrates a large number of raptors on Foot Creek Rim. The excellent and constant wind currents makes this such an unusually good place to soar and circle with a minimum of energy expended (a vitally important condition for the survival of these great birds.)

Also, we would like to call to your attention that the construction on Foot Creek Rim would undoubtedly eliminate the mountain plover that nest there and this rare species is expected to be placed on the Endangered Species List by the end of this year.

1 As we consider the very critical and irreversible damage that will result from the proposed construction on Foot Creek Rim at this time, we strongly urge you to issue a permit for a less critical wildlife area (such as Simpson Ridge) and REQUIRE that a well developed, intense research plan be incorporated into this development. Then, after the studies are made and results evaluated, we can determine what steps must be taken to make Foot Creek Rim much less destructive or if using a different sight is the only solution.

Thank you for this opportunity to include our comments and concerns in this Environmental Impact Statement.

Sincerely,

Frank C. Layton
and
Lois L. Layton
Post Office Box 2851
Casper, Wyoming 82602

RECEIVED
MAR 28 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Comment AH1: See Section 2.1.11 in the FEIS.

Comment AH2: Text has been modified as requested.

Comment AH3: Table 6.1 (Pages 6-2 and 6-3) have been modified as suggested.

Comment AH4: Text has been modified as requested.

Comment AH5: Table 2.11 and Chapter 5.0 have been modified so that they correlate with one another and each contains all mitigation measures discussed in the DEIS and FEIS.

Comment AI1: See Sections 8.2.1 and 8.2.3 in the FEIS.

AJ. Wyoming Outdoor Council

FROM : PHONE NO. : P01

WYOMING OUTDOOR COUNCIL 25 1967-1992

March 28, 1995

RECEIVED MAR 28 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

Post-it® Fax Note 7671	Date
To BLM-Rawlins Dist	From Tom Throop
Co.	Co. Wy Outdoor Council
Phone #	Phone # 307-332-7031
Fax # 307-328-1471	Fax # 307-332-7031

Walter E. George, Project Leader
Kenetech Wind Energy Project DEIS
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, Wyoming 82301

Re: Kenetech Windpower Inc. Wind Energy Project DEIS

Dear Mr. George,

The following is submitted in response to your invitation to participate in the environmental review process mandated by NEPA for the Kenetech Windpower Inc. Wind Energy Project.

The Wyoming Outdoor Council supports the project as revised. We believe Kenetech has worked hard to explain its proposed project to the public, to seek substantive comment on its plans and to change the project to address concerns raised.

While all types of energy production have environmental impacts, we prefer the kind of renewable energy production represented by the Kenetech proposal over non-renewable fossil fuel energy production typically seen in Wyoming.

We believe that appropriate and reasonable mitigation measures exist in the final project design. It is our view that the project represents an acceptable level of risk to Wyoming's environment. We commend Kenetech for truly listening to public concerns and making changes in their project design to address what they heard from the public and during the NEPA process.

The Wyoming Outdoor Council sincerely hopes that renewable energy projects like Kenetech's proposed project represent the future of Wyoming's energy development response to the growing needs of this region and the nation.

Respectfully submitted,
Tom Throop
Executive Director

25 years of Wyoming Conservation Action

201 Main Lander, Wyoming 82520 (307) 332-7031

Comment AK1: See Sections 8.2.3.3 and 8.2.5 in the FEIS.

Comment AK2: The visual impacts analysis in the DEIS shows that visual impacts of Windplant development on Foote Creek Rim would be a significant adverse impact (pursuant to the GDRA RMP). The utility contracts currently in place for Phase I require wind speeds comparable to those on Foote Creek Rim, which are not known to exist elsewhere in southern Wyoming (see Section 8.2.1.1 in the FEIS). However, the significant visual impacts will be given considerable weight during BLM's decision-making process.

AK. Barbara Parsons

Subject: Kenetech Wind Power-Preliminare EIS
General Comments by: Barbara Parsons

Wind power is a desirable source of electricity. It is vastly preferable to hydro power and coal fired generating plants. Even so, like all of man's activities, it has an impact on other resources.

1 As this project goes forth, there should be on going mitigation studies and plans regarding the impacts on wildlife, especially raptors. Kenetec should work closely with agency biologists to lessen those impacts.

2 Members of the public have expressed conflicting feelings regarding the visual aesthetics of the wind turbines. Some think they will be beautiful and some think they will be an eyesore on an otherwise wild landscape. (Perhaps Kenetech should reconsider placing the turbines planned for the ridge above Arlington, since they will be extremely visible.)

RECEIVED MAR 28 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

AL. Friends of the Bow, Biodiversity Associates

RECEIVED MAR 29 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

March 28, 1995

Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301

Attn: Walter E. George, Project Leader

Re: Comments on the DEIS for the Kenetech Windpower Project and Freedom of Information Act request

The following comments are submitted on behalf of Friends of the Bow, Biodiversity Associates and the signatories in regards to the BLM's draft Environmental Impact Statement ("DEIS") on the proposed Kenetech/PacifiCorp (the "applicant" or "permittee") Windpower Project ("the project").

OVERVIEW

Although we want to support well thought-out alternative energy sources, this project—with so little on-the-ground information—calls out for a go-slow approach. And while new wind energy technology does appear to offer an exciting opportunity, because this is the first of possibly many such windplants in Wyoming and the region, and because the project would be so expansive, there is a responsibility to do it right and with a view to the long-term.

As Wyoming residents we realize that what happens in Carbon County could set a state or national precedent. Problems like the loss of salmon runs and the expensive efforts currently underway to attempt to restore them in the Pacific Northwest and Idaho must be avoided. Recall it was originally thought that hydropower would supply energy without any negative effects. We now know this was wrong and we may now lose the salmon as a result. We'd like to avoid the same problems with windpower regarding raptors.

As proposed, this project amounts to a huge experiment with the nation's precious natural heritage, one with no obvious end, even if the "experiment" fails in regard to raptor mortality. Monitoring is not synonymous with protection and it
1 will not eliminate negative effects if they occur. Merely noting problems is not the same as fixing them or preventing them, yet this appears to be the approach adopted by BLM. This is both imprudent and a breach of the public trust.

2 Similarly, the DEIS appears to assume that any adverse affect can be mitigated. Yet this is demonstrated nowhere in the document, nor are any supporting references offered.

3 The BLM should not be experimenting with wildlife on such a massive level. If the proposed project is intended to be an experiment (as readers of the DEIS are led to believe), then it should be designed as such. A variety of turbine designs, turbine towers, locations, etc. should be investigated, and the size of the

3 cont. project (i.e., number of turbines) should be the smallest possible to get a statistically valid sample[1]. In subsequent environmental documents, we ask the
4 BLM to (1) explicitly deal with the potential of violating the federal Eagle Protection Act, Migratory Bird Treaty Act, and Endangered Species Act (Merely concluding that these laws will be violated is not sufficient. How can a project be
5-6 approved which will knowingly break the law?); (2) seriously evaluate alternative sites and turbine designs (in a supplemental DEIS); (3) scale down the first phase
7 of the project and (4) add very clear criteria for shutting it down if raptor concerns are born out—regardless of location. Below we provide more detailed comments.

SPECIFIC CONCERNS

1. The proposed project would kill eagles, and therefore cannot be implemented without violating the Bald and Golden Eagle Protection Act.

The DEIS acknowledges that, despite all possible mitigation measures, the proposed windfarm would kill an estimated 2.7 to 9.0 Golden Eagles each year. DEIS at 4-48. This may be a significant underestimate in light of the high density of Golden Eagle nests in the project area and the use of the area for foraging. Id. In addition, Bald Eagles migrate through the project area each year and may also be subject to injury and mortality. These threats to eagles also threaten violation of Federal law.

Specifically, the Bald and Golden Eagle Protection Act states:

8 "Whoever, within the United States or any place subject to the jurisdiction thereof, without being permitted so to do ..., shall knowingly ... take ... at any time or in any manner, any bald eagle ... or any golden eagle ... shall be fined not more than $5,000 or imprisoned not more than one year or both...."

16 USC § 668 (emphasis added). The Act also provides that "each taking ... shall constitute a separate violation..." and that each subsequent violation shall be subject to fines of up to $10,000 or imprisonment for up to two years, or both. Id.

The Act defines "take" in the broadest of terms: to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." 16 USC § 668c (emphasis added). Thus, in light of the DEIS's acknowledgements that 3-9 eagles, perhaps more, will be killed each year, the proposed windfarm would cause "takes" within the meaning of the Act. Furthermore, each "take" caused by the proposed windfarm would constitute a separate violation of the Act. Note also that "[T]here are no regulatory provisions for incidental takings [in the BEPA] as there are under the ESA or MBTA." DEIS at 4-45.

The BLM cannot authorize a project that would clearly violate Federal law,

[1] Mike Morrison at the University of Arizona would be helpful in determining the appropriate number of turbines to be statistically valid. As of the date of these comments, Mr. Morrison could not, in the short time provided, give a definitive answer. Personal Conversation with Mike Morrison, March 28, 1995.

The estimated takes in one year alone could subject the permittee (and, we believe, the BLM decisionmaker) to nearly $100,000 in fines each year and up to 18 years in prison. Takes in subsequent years would bring still higher penalties.

The impacts to eagles and other raptors is our greatest concern about the proposal. There are several reasons for our elevated concerns about the impacts to these species.

First, eagles and other raptors are endemically rare, slowly reproducing, and are already subject to many sources of natural and unnatural mortality (e.g., powerlines, poaching, illegal poisoning, bio-accumulation of toxic chemicals, etc.) which already seriously limit their populations. Further mortality, even of a limited nature, can have serious consequences for the larger populations, especially where local populations are sustained without significant interaction with the larger meta-population.

Second, eagles and other raptors are at the top of the food chain, so small changes in their populations may have disproportionately greater changes on the underlying food chain (e.g., rodents). This is particularly true here in the west where most other large predatory animals have been removed (or widely suppressed) from the ecosystem.

8 cont. And third, these birds are viewed by the public as being among the most noble, majestic, and free of all animals in nature. Perhaps this is why an eagle was chosen to be the symbol of our country. The killing of these beautiful and vulnerable animals must then be viewed as something to be avoided at all costs -- if for no other reason than to satisfy the public's desire that they be protected as a representative of something grander. This, after all, was partly why the Eagle Protection Act was originally created. "Whereas...the bald eagle is no longer a mere bird of biological interest but a symbol of the American ideals of freedom." 16 USC § 668(note).

The DEIS recognizes the vulnerability of eagles and their importance: "Mortality of even one bald eagle would be a significant adverse impact... Cumulative impacts to the regional bald eagle population may be potentially significant." DEIS at 4-66. Yet nowhere in the DEIS does is it stated how this will be prevented, only that it will be monitored.

For these reasons, we will not accept any BLM decision that will violate the Bald and Golden Eagle Protection Act, and we will take whatever action is necessary to fully enforce this law.

2. The proposed project may result in violations of the Endangered Species Act or in increased mortality and population declines of C2 candidate species.

9 Bald Eagles, Peregrine Falcons (Endangered), Mountain Plovers, and Ferruginous Hawks (C2) are known to be in the project area and cannot be killed without a permit from the US Fish and Wildlife Service. A permit for incidental taking of T&E species must meet strict criteria. There must be a valid justification for the permit, the action must not threaten the population under consideration, and the taking must not appreciably reduce the likelihood of the survival and recovery of the species in the wild. Furthermore, the applicant [Kenetech] must

create and implement a conservation plan that specifies the impact to species and what steps will be taken to monitor, minimize, and mitigate such impacts, ensures that adequate funding exists for the conservation plan, and specifies what procedures will be used to deal with unforeseen circumstances. 50 CFR 13.21(b) and 50 CFR 17.22(b)(1).

9 cont. These are tough measures implemented to protect the nation's natural heritage. We do not believe that the project, as proposed, can meet the high standard set by these regulations. Impacts to eagles were discussed above, and the DEIS makes conclusions for Peregrine Falcons which are similar: "The proposed Windplant may be the largest source of direct mortality to peregrine falcons in the area; any mortality to this species would be considered a significant impact." DEIS at 4-67.

The DEIS estimates impacts to Candidate Species Mountain Plover and Ferruginous hawks, and they appear significant, especially for the Plover. The Foote Creek Rim portion of the proposed project would appear to be disastrous for Plovers during both Phase I and full development: "potential nesting habitat lost during Phase I would be approximately 1032 ac (21% [of the Foote Creek Rim area]) for the LOP; full development of the rim would impact approximately... 3,022 ac (60%) for the LOP. This loss of habitat may be even greater if snowdrifts caused by Windplant facilities persist throughout the spring..." Shockingly, the DEIS does not even attempt to deal with this loss of habitat to a species for which "any mortality of this rare species would be considered significant" and "[l]oss of
10 habitat in the breeding range is suspected as one of the primary caused for long-term population declines." DEIS at 4-67 and 4-68, respectively. The so-called mitigation presented on page 2-43 of the DEIS is unsubstantial and totally avoids the issue of habitat loss even though the birds "nest on top of Foote Creek Rim where turbines would be placed." DEIS at 4-57. This is a fatal deficiency in the current DEIS.

In the interest of brevity, we will not restate the information in the DEIS regarding Ferruginous Hawks except to point out that subsequent documents must explicitly deal with the fact that "cumulative impacts to the regional ferruginous hawk population would be potentially significant due to direct mortality associated with the proposed WTGs." DEIS at 4-69.

3. The BLM must address the uncertainties regarding impacts to raptors.

The Council on Environmental Quality (CEQ) regulations at 40 CFR Parts 1500-1508 state:

11 "(a) If ... incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the [EIS]."

"(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are

exorbitant or the means to obtain it are not known, the agency shall include within the [EIS]: (1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts...; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts...; and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community."

40 CFR § 1502.22 (emphasis added). These requirements also applied to the DEIS. See, e.g., 40 CFR § 1502.9(a) (draft EIS's must fulfill and satisfy to the fullest extent possible the requirements established for final EIS's).

Clearly, a firm understanding of raptor impacts (immediate and long-term) is essential to the BLM's ultimate decision on this proposal. Perhaps this is why the most detailed section of the DEIS deals with raptors. Furthermore, the DEIS acknowledges there are uncertainties about impacts to raptors -- the primary and most troubling "irreversible and irretrievable commitment of resources" associated with the proposal: "The proposed Windplant would be the first industrial scale windpower facility in Wyoming, and potential raptor mortality is unknown." DEIS at 4-97, 4-46, respectively. Furthermore, "many
11 years of additional research will be required before the relationship of WTG
cont. characteristics and raptor mortality can be conclusively determined," and "the level at which mortalities are considered significant is subjective." the proposed action would approve the construction of 201 turbines. DEIS at 5-9 and B-10, respectively. See also the attached Casper Star Tribute article (reporting that it is unknown how many raptors observed at proposed site were permanent residents; unknown whether new birds would migrate into the area to replace losses; unknown whether first-year impacts would be representative of long-term impacts, etc.).

Unfortunately, the DEIS fails to address incomplete and unavailable information about raptor impacts in accordance with 40 CFR § 1502.22 (apart from merely mentioning there are unanswered questions). This is unacceptable and must be corrected through circulation of a revised draft EIS.

If the BLM thinks it will be too costly to obtain any of the information needed to address these questions about raptor impacts (or other impacts), then the agency must disclose the estimated cost of obtaining that information and explain why that cost is "exorbitant" in comparison with other expenditures. "Exorbitant" must also be evaluated with respect to the applicant's ability to cover the cost (or any portion of the total cost). If the agency can show that cost is truly exorbitant or that there is no known way of obtaining the information, then the supplemental DEIS must present the discussions, summaries, and analyses required by 40 CFR § 1502.22(b) (e.g., an evaluation of the impacts based upon theoretical approaches or research methods generally accepted in the scientific community). Otherwise, the BLM must obtain the missing information and disclose it in the supplemental DEIS.

4. The DEIS is contradictory and erroneous.

The most glaring example of this follows from the discussions on raptors referred to above. There are numerous statements in the DEIS demonstrating how little information exists regarding effects on raptor populations and habitat. Yet the DEIS then leaps to the conclusion that "[s]ignificant unavoidable impacts associated with the project would include incidental taking of migratory and/or T&E birds..." DEIS pg 4-97, emphasis added. If the impacts are unknown (see citations in Section 3 above), how can the DEIS conclude that they are incidental? Obviously, the use of "incidental" is incorrect and leads the decision-maker and the public to the wrong conclusion. 12

The DEIS is also contradictory in its treatment of compliance with wildlife protections laws. The DEIS states that "there are no regulatory provisions for incidental taking" under the BEPA, and that "taking of migratory and/or T&E birds without procurement of permits to allow such takings," yet it goes on to conclude that "project activities would be implemented to assure compliance with federal, state, and local laws..." DEIS at 4-45, 4-97 (emphasis added), and 5-1. Again, both cannot be true.

5. The BLM has failed to independently evaluate the applicant's information.

The CEQ regulations also state:

> "If an agency requires an applicant to submit environmental information for possible use by the agency in preparing an environmental impact statement, then the agency should assist the applicant by outlining the types of information required. The agency shall independently evaluate the information submitted and shall be responsible for its accuracy. If the agency chooses to use the information submitted by the applicant in the environmental impact statement, either directly or by reference, then the names of the persons responsible for the independent evaluation shall be included in the list of preparer." 13

40 CFR § 1506.5(a) (emphasis added). The DEIS states that "[E]ven a few mills of higher cost could render the project uneconomical for utility companies... Kenetech analyzed and rejected various alternative sites in Wyoming based on the wind-resource/cost relationships described above." DEIS at 2-33 to 2-35. It appears that the BLM simply took the applicant's word that these areas were the only areas suitable for a viable windpower farm. This is not a rigorous analysis of alternatives, and there is evidence that it is incorrect or at least open for debate.

For example, it appears that other interests believe suitable sites exist elsewhere: "The only reasonably foreseeable [future] project in the area is the possible development of a windfarm near Medicine Bow," and "the proposed Medicine Bow windfarm would constitute another potential source for direct mortality, as well as displacement." DEIS at 4-3, 4-55.

To determine the extent to which the BLM complied with 40 CFR § 1506.5(a),

also *Sierra Club v. Costle*, 657 F.2d 298, 334 (D.C. Cir. 1981) ("The safety valves in the use of ... sophisticated methodology[ies] are the requirement of public exposure of the assumptions and data incorporated into the analysis and the acceptance and consideration of public comment, the admission of uncertainties..., and the insistence that ultimate responsibility for the policy decision remains with the agency rather than the computer.")

14 cont. The BLM has exposed little or none of the underlying data, assumptions, methodologies, or uncertainties about the evaluation of potential windfarm sites. The public has been wrongly precluded from commenting on the key part of the analysis,[4] and the agency is expecting the public to simply accept, without benefit of supporting data, the assertion that the proposed site is the only viable site. This is a fatal defect in the NEPA process. A supplemental draft EIS must be prepared and circulated to provide the public and other interested agencies with a meaningful opportunity to comment on the evaluation of windpower site potential and the tradeoffs available between wildlife protection and power generation, etc.

7. The DEIS fails to give rigorous and objective treatment to all practicable alternatives.

A. Other sites.

As discussed above, the DEIS did presented virtually no data or studies to show whether any other site was economically viable or more environmentally preferred (and another entity appears to believe a windplant could be viable near Medicine Bow). The agency simply took the applicant's word for it. This is a fatal defect in the analysis. For example, the proposed location in Wyoming, and Wyoming overall, is not the only place in the region with wind; and there are power-grid connections throughout all of these states that could accommodate a windpower plant. 15

After the BLM obtains the applicant's information on site-potential, independently evaluates that information and ensures it accuracy, discloses that information (along with the data and methodologies used to obtain it) to the public

[4] The evaluation of site potential is the key issue here because the primary decision criterion is: which site will provide the most windpower with the lowest impact to the environment (e.g., raptor mortality)? Economic viability and environmental impact both depend intimately and (almost) exclusively on site. The present site has high windpower potential, but also has high potential for raptor disruption and mortality. Other sites, with possibly different windpower potential, might also have fewer raptors/nests and would therefore have less environmental impact, cause fewer deaths of threatened species, and result in fewer violations of the Eagle Protection Act and Migratory Bird Treaty Act. The public has no way of knowing from the current DEIS.

we are hereby requesting the following documents pursuant to the Freedom of Information Act, 5 USC § 552, and NEPA, 40 CFR § 1506.6(f):

> any and all information submitted by the applicant regarding the evaluation of various potential sites throughout the region for their economic viability for a windfarm, and
>
> any and all documents containing or describing the BLM's "independent evaluation" of this information submitted by the applicant.[2] 13 cont.

If the BLM has not requested this information from the applicant and/or independently evaluated that information for its accuracy, we are asking the a supplemental DEIS be prepared and circulated to disclose: (i) the applicant's information (or a summary of it), and (ii) the BLM's evaluation of that information (or a discussion of that evaluation together with a summary of findings).

6. The BLM has failed to disclose key parts of the analysis for public review and comment.

We assume that some regional wind condition data, electricity market data, and computer models (e.g., econometric) or methodologies were used to evaluate the economic viability of potential windfarm sites throughout the region. If so, the BLM has a legal obligation to expose the methodology, assumptions, input and output data, and uncertainties to the public.[3] See, e.g.,*NRDC v. Herrington*, 768 F.2d 1355, 1385 (D.C. Cir 1985) ("An agency may utilize predictive model so long as it explains the assumptions and methodology it used in preparing the model. If the model is challenged, the agency must provide a full analytic defense"); see 14

[2] We believe we are entitled to a fee waiver under the criteria set forth by FOIA (information will contribute to the public understanding, and the requestors have no commercial interest in the materials). We also believe that the requested documents may involve less than 100 pages and would take less than 2 hours to assemble and reproduce. In such cases, the FOIA provides that the documents must be provided without charge regardless of the requestor's qualifications for a fee waiver. 5 USC § 552(a)(4)(A)(iv)(II). Finally, the requested documents underlie a NEPA document; 40 CFR § 1506.6(f) provides that these materials "shall be provided to the public without charge to the extent practicable...." If the BLM does not believe we are entitled to a fee waiver for this request, please contact us and explain (i) why you believe we are not entitled to a waiver, (ii) what information you require to show that we are entitled to a waiver, and (iii) the estimated cost -- limited to "reasonable standard charges" (5 USC § 552(a)(4)(A)(ii)) -- of assembling and reproducing the documents we have requested.

[3] If, on the other hand, no such data or computations were used to evaluate site potential, then the BLM has absolutely no basis for dismissing other sites as unviable.

for review and comment, and provides a "complete analytic defense"[5] to any objections -- only then will it be possible to say whether or not other potentially viable windfarm sites exist. If other potential sites are found -- either in the applicant's original information, in the BLM's re-evaluation of that information, or in information submitted by commentors -- they must be rigorously explored and objectively considered. A supplemental DEIS would have to be prepared and circulated (one has to be anyway) to present these alternatives to the public. 15 cont.

If alternative sites are rejected for any reason,the BLM must fully disclose and clearly explain all factors which were used as reject/accept criteria.

Even if it turns out that no other site could allow for a cost-effective windfarm based on today's energy market (highly unlikely), coal and gas are both depletable resources. Therefore, the price of coal- and gas-fired electricity will inevitably increase in the future. These increases would make windpower production economically viable (i.e., superior) in the future at other sites besides those now proposed. Therefore, the BLM must rigorously explore alternative sites with lower windpower potential if those sites would become economically viable at some point in the future.

There presently appears to be no excessive demand for electricity: "additional base load capacity will be needed by the middle of the next decade." DEIS at 105. This delayed implementation option therefore seems reasonable. Likewise, we see absolutely no reason -- apart from maximizing corporate profit -- why a windpower plant must be built in Wyoming now rather than sometime later when a better site (i.e., one that poses less impacts to raptors) could be utilized or when effects to raptors are better quantified. Public lands, the natural landscape, and the lives of wild animals should not be sacrificed simply to accommodate some private corporation's wishes to maximize its present-day profit. 16

B. Vertical Axis and other Wind Turbine (VAWT) Designs.

VAWTs designs may offer viable alternatives to the horizontal axis machines in the proposed project. At least one US company, FloWind of San Rafael, CA, is developing a Darrieus rotor-type machine which has an approximately equivalent power generation capacity per unit of swept area. The area is rectangular, and fairly narrow with an aspect ratio of about 3.1. Perhaps because the blades are confined to a narrower column, which could appear solid to avifauna, the columnar design may pose less of a threat to raptors. Depending on a number of factors, the height of the vertical axis machines could also be different, resulting in different impacts to birds. In our scoping comments, we 17

[5] See *Sierra Club v. Costle, supra*, at 332 ("the agency must provide a 'complete analytic defense of its model [and] respond to each objection with a reasoned presentation.' The technical complexity of the analysis does not relieve the agency of the burden to consider all relevant factors and to identify stepping stones to its final decision.") citing *American Public Gas Ass'n v. FPC*, 567 F.2d 1016 (D.C. Cir. 1977); see also, *NRDC v. Herrington, supra*, at 1385 ("If the model is challenged, the agency must provide a complete analytic defense.")

asked that such designs be considered as an alternative. This was not done.

It may also be possible to place more vertical axis machines per unit area in design of the windplant.

17 cont. The use of cages or other structures to prevent bird-turbine collisions must also be evaluated.

The supplemental DEIS must consider these kinds of alternatives, even if the applicant is unwilling to use alternative designs. (The applicant apparently manufactures its own windmill designs – all of which are radial; however, there is no reason why the BLM could not make it a condition of the permit that the applicant use columnar designs manufactured by another company.)

C. Smaller/Redesigned Initial Phase

18 As mentioned in the Overview section of these comments, the proposed project is being portrayed in the DEIS as an experiment to "test the ability of wind energy to provide a reliable, economical, and environmentally acceptable energy resource in the region." DEIS at iv. The experiment should have clearly defined goals, protocols, methods for evaluating results, etc (for all aspects including various turbine designs, not just for monitoring birds). The smallest possible number of turbines, and the largest number of turbine types, configurations, and placements should be investigated. A randomized, block design or similar technique should be used to maximize the utility of the results.

Furthermore, the experiment should be designed to fit into the existing national efforts to evaluate wind power. As the national agency leading windpower research, the National Renewable Energy Lab (NREL) should be consulted for concurrence, as should the National Wind Coordinating Council (NWCC), particularly the Avian subgroup of NWCC. We specifically request that the initial phase be redesigned to ensure it fits with the current efforts to coordinate and standardize research and results.

8. The BLM has not proposed criteria for halting the windpower plant if impacts become excessive or are contrary to law.

19 The DEIS states that "the level at which mortalities are considered significant is subjective." DEIS at B-10. How will the public be assured that wildlife will be protected? What good is monitoring without some defined threshold? Many of the mitigation measures described in the DEIS are of dubious utility because they contain the caveat "when feasible." Coupled with so little on the ground knowledge, this cries out for specific, enforceable numeric criteria. And the laws, especially the ESA regulations, require it.

It is imperative that these criteria be specified prior to any approval for development of the proposed project. The political inertia to keep a project going, once it has been started, is very real and not easily overcome.

We ask that the applicant not be assigned the responsibilities for monitoring because the applicant has a financial conflict of interest in keeping reported impacts low (particularly if the applicant would be subject to repeated

21 cont. search for improved energy production. Unfortunately, it appears that this opportunity has been squandered.

10. Other problems with DEIS.

There are a few other additional concerns and questions we have. Time constraints prevent us from providing a narrative, so we simply list them below. Please respond to all of the following in subsequent documents.

22 - One year of baseline data on raptors and other birds may not be sufficient.
23 - Were nocturnal surveys taken. Do the various birds of concern fly at night?
24 - Were personnel conducting other activities on-site during data gathering? Wouldn't this compromise the results?
25 - Some birds travel 20 miles from their nests. Why was a 10 mile buffer used?
26 - Is nest occupancy the best indicator of effects to birds? What is better?
27 - We have been told that "hunters can't push [game animals] under the towers in Montana." What about at the proposed site?
28 - The ROW should be contingent upon success of the first phase. DEIS at iii.
29 - A narrative regarding the flow chart on page 2-8, including criteria for terminating the project, should be provided.
30 - Why won't mitigation be performed on private land? DEIS at 2-29.
31 - Should nests be avoided regardless of the season/date? DEIS at 2-31.
32 - Although it is good that avian data is continuing to be gathered, the public will not be able to comment on the results in the FEIS. Data should come before the decision... DEIS at 3-32.
33 - More information on the "other" windfarm and possible cumulative impacts should be provided. DEIS at 4-3, 4-55.
34 - More than one "control" or "reference" are should be used to determine the impacts of any part of the project which may be approved. A single area would be susceptible to natural catastrophe, other developments, etc.

35 We again request that a supplemental DEIS be prepared and circulated so that important information regarding evaluation of alternate sites and alternative turbine design can be subjected to public scrutiny.[7] We also hereby incorporate all of our prior comments (e.g., scoping, meetings) on this proposal herein. We ask that those comments and these be responded to in accordance with 40 CFR § 1503.4.

[7] Apart from the few other problems noted in these comments, we found the rest of the DEIS to be acceptable. Therefore, we are not asking that the entire DEIS be rewritten and recirculated.

penalties under the Eagle Protection Act).

The supplemental DEIS must describe the impact threshold above which BLM would find the project too harmful to continue operation (e.g., the number of eagle mortalities per year) and any levels whereby the agency would penalize the applicant (e.g., by monetary fine or partial permit cancellation) to encourage modifications that would reduce impacts found to be unacceptable.

19 These are particularly crucial matters for a proposal such as this one with a phased implementation.

19 cont. Whatever project modification/termination provisions are to be established (based on avifauna mortality, etc.), they must be included as part of the eventual record of decision so that these provisions are enforceable by private parties. See, e.g., *Forty Most Asked Questions Concerning CEQ's NEPA Regulations*, answer to question 34c ("The Record of Decision should delineate the mitigation and monitoring measures in sufficient detail to constitute an enforceable commitment") and answer to question 34d ("the terms of a Record of Decision are enforceable by agencies and private parties. A Record of Decision can be used to compel compliance with or execution of mitigation measures identified therein").[6]

9. The BLM failed to respond to public comment and failed to give real consideration of the no-action alternative.

20 In our previous communications with BLM on this project, we specifically asked "what contingency plan the BLM has in place to shut down the project in the event of excessive raptor mortality," "what the cutoff point will be," and that the "number should be determined ahead of time." We also asked "If your analysis determines the project will cause mortality and you know you can't knowingly kill eagles, how will the project get permission to build and operate the windmills?" Additionally we requested consideration of "alternative windmill designs" and other specifics. Native Ecosystems Council (the name we were operating under at that time) and Friends of the Bow Comments, March 15, 1994. None of these issues were addressed in the DEIS.

21 A recent article in the Casper Star-Tribune reports that the BLM has already decided to approve the proposed action. "BLM to approve multi-phase plans for wind farm." Casper Star-Tribune, date unknown. This is contrary to the principal purpose of the NEPA public process: to help agencies make better decisions which fully take into account environmental problems and the concerns of the public. Companies and agencies must do more than give lip service to the public's concerns and important environmental and public participation laws. Why should the public submit comments, at great expenditure of personal time, money, effort, etc., if the BLM has already decided to proceed with the proposal? And how did the agency give fair consideration to the no-action alternative? These are violations of NEPA and cast a dark shadow on the entire project. This project presented a good opportunity to carefully and wisely move forward the national

[6] 46 Fed. Reg. 18026 (Mar. 23, 1981).

In closing, we reiterate that because so much remains unknown about windfarms and their effects on wildlife, especially in the proposed location, and because of the great potential for windpower as an important, long-term source of energy, there is a responsibility to go slow and gain as much information as possible prior to large commitments or projects. It would be much better to perform a few years additional research before proceeding with an actual production facility. There is no imperative to rush forward at this time. And if the proposed project is an experiment (we believe it is), it should be treated it as such and designed to produce meaningful, valid results.

Sincerely,

JK for LS	JK for DD	Jeff Kessler
Leila R. Stanfield	Donald J. Duerr	

Biodiversity Associates/Friends of the Bow
P.O. Box 6032
Laramie, WY 82070

Comment AL1: See Section 8.2.5 in the FEIS.

Comment AL2: See Section 8.2.5 in the FEIS.

Comment AL3: BLM's purpose for the project is to develop windpower; therefore, the proposed development is not intended to be an experiment. Page 1-5 of the DEIS (as modified for the FEIS) states that the "purpose of the proposed action is to provide wind-generated electricity from a site in Wyoming and to develop a further market for Wyoming-sourced wind-generated electricity." In addition, the DEIS clearly states that this would be an industrial-scale electricity-generating facility. BPA's purpose is more experimental (i.e., "to test the ability of wind energy to provide a reliable, economical, and environmentally acceptable energy resource in the region."), but BPA's role in the project is currently limited to the purchase of 25 MW of power from Phase I. The overall goal, however, is to develop and operate a commercial Windplant in Wyoming. The proposed turbine and tower design were selected because they would help achieve the purpose of the project, but additionally the proposed design is thought to reduce avian mortality in windfarms (see Section 8.2.5 in the FEIS). Reducing the size of the first phase would only aggravate the problem of not being able to collect sufficient data to obtain statistical power to make comparisons among the development area with the reference areas.

Comment AL4: See Section 8.2.2 in the FEIS.

Comment AL5: See Sections 8.2.1 and 8.2.11 and the response to Comment AL3 in the FEIS.

Comment AL6: See response to Comment AL3 in the FEIS.

Comment AL7: See Section 8.2.3.4 in the FEIS.

Comment AL8: See Sections 8.2.2 and 8.2.12 in the FEIS.

Comment AL9: See Sections 8.2.2 and 8.2.5 in the FEIS.

Comment AL10: See Section 8.2.12 in the FEIS.

Comment AL11: See Section 8.2.4 in the FEIS.

Comment AL12: The term "incidental take", as used in this section, is a legal term defined in the ESA as "any taking otherwise prohibited by section 1538(a)(1)(B) of this title if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." The proposed project, therefore, could result in the incidental taking of birds. As discussed in Section 8.2.2 in the FEIS, case law on what actually constitutes a violation of the MBTA, the ESA, or the BEPA is inconclusive (i.e., incidental takes may not be judged violations of the law). However, text has been modified to state that compliance issues concerning the ESA, the MBTA, and the BEPA would be handled by the USFWS.

Comment AL13: In response to the request for an independent evaluation of KENETECH's assertion that the project would not be economically feasible at this time at any other site, BLM enlisted the services of Dr. John Marwitz, Professor of Atmospheric Sciences, University of Wyoming, to perform an independent evaluation. Results of this analysis are presented in Appendix I of the FEIS. Information requested under the Freedom of Information Act was provided to Friends of the Bow on April 26, 1995. See also Sections 8.2.1 and 8.2.11.

Comment AL14: Pursuant to CEQ regulations, agencies must identify any methodologies used and must make explicit reference to the scientific or other sources relied upon for conclusions (40 C.F.R. 1502.24). The DEIS, at pages 2-33 to 2-35, describes methods used to analyze and reject alternative sites. See also Sections 8.2.1.1 and 8.2.11 in the FEIS.

Comment AL15: See Section 8.2.1.1 in the FEIS.

Comment AL16: To delay the project would be impractical because some utilities have an immediate need for the energy which would be provided by the project. As described in Chapter 1.0 in the DEIS, many utilities are predicting power deficits over the next several decades, and utility planners view windpower as a viable way to help meet future demands, as well as to reduce pollutant emissions. Four utilities have identified an immediate need to incorporate wind-generated electricity into their resource mix and have contracted with KENETECH to provide the power. BPA needs to determine the cost and availability of wind energy to achieve an objective of the Northwest Power Planning Council. There is no statutory or regulatory provision that requires agencies to analyze an alternative to delay a project [*National Indian Youth Council v. Andrus* (D. N.M. 1980) 501 F. Supp. 649, 670-71. *aff'd sub mon.*; *National Indian Youth Council v. Watt* (10th Cir. 1981) 664 F.2d 220]. Although delay may be considered under some circumstances, the rule of reason dictates that a delayed action alternative need not be evaluated where delay would be impractical.

Comment AL17: Orloff and Flannery (1992) assessed collision-related mortality for various turbine types in Altamont pass and came to no conclusion concerning differences between vertical axis and horizontal axis turbines on tubular towers. The vertical axis blades may be less visible to birds than horizontal axis blades because less of the blade's surface area is visible from any one vantage point. Vertical axis turbines also require guy wires which may pose a collision hazard to birds. Furthermore, there is no evidence that the vertical axis design is cost-effective. Recently, FloWind (who has used vertical axis machines extensively) has chosen to use horizontal axis turbines for its BPA windpower project in Washington. Because there is no evidence that the vertical axis design is a viable or environmentally preferable alternative, the vertical axis design was not considered in detail. As stated on page 2-36 in the DEIS "Other possible alternatives, including turbine design changes or alternate placement of turbines within the project area, have been incorporated into the Proposed Action and Alternative A." For example, the change from lattice to tubular towers and painting of selected blades were made part of the proposal. By implementing a monitoring program which includes provisions for changing Windplant design features, issues raised during scoping have been built into the authorizing process for this project.

With respect to the suggestion that cages or other structures be used to prevent avian collisions, there is no evidence that these measures would reduce avian impacts. Furthermore, they may not be economically viable. See also Section 8.2.11 in the FEIS.

Comment AL18: See response to Comment AL3.

Comment AL19: See Sections 8.2.1.1, 8.2.3.4, 8.2.5, and 8.2.11 in the FEIS. The monitoring program was developed and would be implemented by an independent consultant under contract to KENETECH. The program was developed in full consultation with the USFWS and the WGFD, and monitoring results would be peer reviewed by professionals on the technical committee; results also would also be made available to the public.

Comment AL20: In response to this comment, we have included your scoping letter as comment letter AM in the FEIS and discuss each issue raised in the scoping letter. See also Section 8.2.3.4.

Comment AL21: The article in the Casper Star Tribune was in error. Final authorization to proceed with development would occur in the ROD for the project; construction of Phase I is contingent upon satisfactory completion of the environmental analysis, preparation of a POD, and issuance of a NTP. Pursuant to NEPA, BLM has identified the Proposed Action as the preferred alternative; however, BLM could take the No Action Alternative.

Comment AL22: See Section 8.2.4 in the FEIS.

Comment AL23: Nocturnal surveys were not conducted. The bird species of most concern (common raptors and mountain plover) are diurnal species (i.e., they do not tend to fly at night). See also the response to Comment AE71.

Comment AL24: Field surveys were conducted 1-3 days per week over a 13-month period. Observers' sole task was avifauna data collection. On rare occasions, archaeological surveys, Native American consultations, or other project- or ranch-related (i.e., fence mending, cattle roundup) activities occurred concurrently with periods of data collection. Care was taken to minimize wildlife disturbance during surveys by coordinating schedules and maximizing the distance between data collection areas and areas of other activity. Type, duration, location, and extent of other activities were noted on avian data forms. Because of the infrequency and limited extent of concurrent activity, no effect on the results is anticipated.

Comment AL25: Rationale for using a 10-mi buffer for raptor nest surveys is described on page A-14 in the DEIS.

Comment AL26: Nest occupancy is only one indicator of possible effects of development on birds. As described in the monitoring program (Appendix B in the DEIS), several parameters pertaining to bird populations would be monitored and the weight of evidence obtained would be used to infer effects. A better measure of effects would be to conduct population studies in which birds are marked with radio-collars or tags and tracked for long periods of time. WGFD has recommended against this type of study, unless the weight of evidence indicates that Windplant development was possibly affecting certain populations. If deemed necessary, these types of studies may be recommended by the technical committee.

Comment AL27: The operator of five wind turbines near Livingston, Montana, has observed that pronghorn antelope avoid the turbines (see response to Comment AE108). The literature search completed for this project was inconclusive as to whether pronghorn antelope would avoid the proposed Windplant (i.e., potential impacts are unknown). Pronghorn use of habitat within the project area would be monitored (see Appendix B in the DEIS) to determine if the Windplant displaces big game. The technical committee would be responsible for evaluating impacts and recommending more intensive studies as well as mitigation (see Sections 8.2.3.1 and 8.2.3.3 in the FEIS).

Comment AL28: The ROW grant would be issued for the entire Windplant to establish this project's priority over other proposals for use of this public land within the KPPA and to avoid nuisance mining claims. See Section 8.2.9 for a discussion of wind energy development conflicts with coal resources. However, granting the ROW would not give KENETECH authorization to proceed beyond the first phase. Environmental consequences of each subsequent phase would be evaluated via subsequent NEPA documents and PODs and authorized by NTPs (see Section 8.2.6).

Comment AL29: The process BLM would use to permit future phases is described in Section 8.2.6. Criteria for cessation of Windplant operations is discussed in Section 8.2.3.4. Procedures for evaluating monitoring protocols are discussed in Section 8.2.3.

Comment AL30: See Section 8.2.5 in the FEIS.

Comment AL31: A critical period for birds of prey is during the breeding and nesting season, and construction is sufficiently disruptive that birds could be displaced. O&M activities associated with oil, gas, and coal extraction are not known to displace birds. For example, raptors are known to nest on coal mine highwalls and oil and gas wellpad facilities. Because birds appear to be tolerant of O&M activities, it is not deemed necessary to preclude development near nests. As stipulated in the DEIS (page 2-31), construction would be prohibited during the period from February 1 through July 31.

Comment AL32: Results of over 13 months of data collection are included in the FEIS including data from the winter of 1994/1995 which were not available when the DEIS was prepared. There is very little avian activity within the project area during winter months, and thus the overall analysis presented in the DEIS has not been altered by the additional data. See also Sections 8.2.4 and 8.2.6 in the FEIS.

Comment AL33: See Section 8.2.8 in the FEIS.

Comment AL34: Two reference areas would be monitored initially: the Simpson Ridge area plus the remote reference area (see Appendix B in the DEIS). When development is proposed for the Simpson Ridge area, another remote reference area would be selected and monitored.

Comment AL35: See Section 8.2.11 in the FEIS. In addition, we have included the scoping letter from the Native Ecosystems Council as comment letter AM.

AM. Native Ecosystems Council and Friends of the Bow

MAR-23-94 WED 10:54 BLM RAWLINS FAX NO. 328 174 P.02

Native Ecosystems Council
and Friends of the Bow
82070

P.O Box 6032, Laramie, WY

March 15, 1994

Walt George
Rawlins District
BLM
POB 670
Rawlins, WY 82301

MAR 17 1994

Dear Walt:

Thank you for the informational meeting held in Laramie February 23rd. We believe you already have our issues and concerns, but at your request, we are summarizing them here again in this letter. We are writing on behalf of our regional group, Native Ecosystems Council, and our local group, Friends of the Bow.

(A) COMPARING IMPACTS of ENERGY PRODUCTION
First let us say, we are generally very supportive of the wind energy project. We think this kind of renewable, non-depleting, non-polluting way to produce energy is one of the paths to a sustainable future. As we mentioned at the meeting, we think the BLM's EIS should take advantage of this project to educate the public about the benefits of
1 alternative energy sources like wind power. We are asking that your analysis include a comparative discussion showing how wind power stacks up alongside nuclear, coal, oil, and hydro-electric. The options might be put into perspective in a table showing relative costs, waste by-products, impacts to wildlife species, economics, sustainability, etc.

(B) CUMULATIVE IMPACTS TO WILDLIFE
As you are aware, our primary concerns about the project center on wildlife issues. We would be looking for the analysis to: (i) address impacts to critical winter range for antelope, deer, and elk, (ii) identify sensitive plants and plant communities and impacts to these, (iii) outline any plans to institute control measures on raptor prey species (including impacts to both predator & prey populations), and (iv) analyze impacts to all
2 potentially vulnerable resident and migratory bird species.

We are assuming the EIS will consider cumulative impacts to all raptors including: Ferruginous Hawks and Harriers, as well as impacts to Mountain Plover, Swift Fox (if applicable), Sharp-tailed Grouse, and to Sage Grouse. No doubt the EIS will consider impacts to the Black Footed Ferret if it can occur in the area; we are asking that the BLM also use the highest level of analysis in investigating impacts to all Special Status Species with possible habitat in both development areas. Given that there will be some mortality to raptors, the EIS should outline what contingency plan the BLM has in place to shut
3 down the project in the event of excessive raptor mortality. The analysis should lay out what the cutoff point will be, and that number should be determined ahead of time.

MAR-23-94 WED 10:55 BLM RAWLINS FAX NO. 328 174 P.03

Native Ecosystems Council and Friends of the Bow, page 2

We are particularly concerned about golden eagles flying close to the ground looking for food. We are asking that the analysis deal with the reality that these birds would find it
4 almost impossible to fly around behind a standing windmill to find a safe perch, and thus would be particularly vulnerable to injury or death. We are concerned about raptor mortalities from both the windmills and the powerlines.

(C) MITIGATION
Everyone wants to assure that eagle mortalities will be avoided. We learned at the February meeting that both BLM and Kenetech Windpower, INC. are already aware of the need to make the project conform with the Migratory Bird Treaty Act and the Eagle Protection Act. Obviously there are and will be ongoing discussions with the US Fish and Wildlife Service about the "taking" of eagles. Our question to BLM is, "If your analysis determines the project will cause mortality and you know you can't knowingly kill eagles, how will the project get permission to build and operate the windmills?" In the event this question is not summarily answered by USFWS and construction is
5 permitted, the EIS should explain what procedure will be followed if the mortalities cannot be mitigated (i.e., avoided or prevented or if the number is excessive). The EIS should discuss what authority the BLM will have, as part of the agreement with the company, to terminate the project or shut down those portions of the project that are causing mortalities.

(D) LAND USE IMPACTS
6 Concerns we have relate to impacts from proposed developments, including buildings, towers, roads, and powerlines. While we are not overly concerned about the visual impacts, we do think the analysis should consider the visual impacts of powerlines as well as windmills.

7 We are asking that the EIS analyze the indirect effects of increased road access like poaching, littering and vandalism. We have concerns about the microwave tower
8 transmitters, and we think it is important that the EIS analyze whether or not the transmitters have enough power to harm birds which fly near them or perch on them.

On the topic of hazardous materials, we think the EIS should examine the possible impacts from hydraulic fluid spills and how these will be mitigated. We learned at the meeting that the company has taken some of these issues into account in the design of the windmills. While caps on the motor sections can act as protection measures, we also
9 think catastrophic failure is still a possibility and should be considered (we have learned this recently with the Medicine Bow windmill -- although it is of a different design, it has come apart a number of times). Thus, even though the mills will have caps, we think the EIS should discuss what will happen if the whole mill or more than one mill blows up or blows over and all the oil spills out. Also regarding hydraulic oil, the EIS should
10 discuss how often oil will have to be changed and what provisions the company plans to make for recycling it. In a related matter, we think the EIS should discuss PCB's, if used

MAR-23-94 WED 10:56 BLM RAWLINS FAX NO. 328 174 P.01

Native Ecosystems Council and Friends of the Bow, page 3

10 cont. by the transformers, and what contingency will be used to deal with possible leakage as well as the impacts of producing the PCB's and the impacts of disposing of these chemicals when they outlive their lifetime.

(E) ARCHEOLOGICAL SURVEY
We were glad to learn that BLM is calling for a full archeological survey. Because of its location, the Foote Creek Rim site in particular should be investigated for evidence of prehistoric cultural artifacts. We are starting from the assumption that ancient peoples
11 may very well have migrated to and from the Medicine Bow National Forest via the Rock Creek drainage. There is a possibility that people who used this route could be related to populations of a stone-age culture now known to have existed at Sand Lake approximately 5,000 years ago. The EIS should explain what operational standards will be required of construction teams and mill crews and how they will be prepared to handle discoveries in the event artifacts are uncovered during the life of the project.

(F) ALTERNATIVES
Alternatives we see needing to be considered in the EIS include consideration of alternative designs and arrangements as ways to mitigate impacts to raptors:

12
- different spacing arrangements of windmills with a discussion of effects on raptor mortality
- alternative windmill designs such as vertical or columnar instead of bladed windmills
- installing whistles and lights on blades to frighten birds away
- using smaller diameter blades and more numerous blades (i.e., 10 blades instead of 2) so that blades appear like a solid disk in an effort to make them more visible to birds
- using transformers that don't use PCB's or other toxic materials

Thank you for this opportunity to comment. We appreciate the efforts of BLM and Kenetech Windpower, INC. to make this project as environmentally safe and as economically feasible as possible so that society can begin to benefit from renewable sources of energy.

Sincerely,

Leila Stanfield

Donald Duerr

Comment AM1: BLM fully agrees that we have an opportunity to educate the public concerning the costs and benefits of using renewable energy resources compared with fossil fuels. Many utility resource planners such as BPA complete detailed analyses of the costs and benefits of various electric-power generating resources. The concept that is widely used to evaluate energy costs is that all energy sources have environmental externalities (i.e., environmental costs associated with power generation that are borne by society without compensation). These externalities have also been called environmental costs or environmental damages. Environmental externalities include, for example, the costs of health effects caused by air pollution, habitat mitigation due to damage by acid rain, controlling emissions, or protecting Pacific Northwest salmon.

Some utilities are incorporating costs for externalities into their resource programs and are using a variety of approaches for assessing these often intangible costs (Baechler and Lee 1991; Putt 1990; Buchanan 1990; Ottinger et al. 1990; WESTERN 1994) Table 2.10 in the DEIS presents estimated costs for externalities for selected electric power-generating resources and shows that known externalities associated with windpower are lower than all other major resources. As the environmental consequences of windpower are further studied, costs for externalities likely will change.

Table 8.4 in the FEIS presents a comparison of costs, emissions, waste water quality, land use requirements, and employment opportunities for various resources. This table was reproduced from WESTERN's Energy Planning and Management Program Draft Environmental Impact Statement (WESTERN 1994). The information is generic (i.e., it does not apply to a particular plant

Table 8.4 Comparison of Planning Information, Environmental Impact Factors, Land Use, and Employment for Various Power-generating Resources (acronyms are defined at the end of this table and in Section 7.2).

Planning Information	Pulverized Coal	Fluidized Bed Coal	IGCC Coal	Simple Cycle CT	Gas-fired Combin. Cycle CT	Diesel	Wood Waste Bio-mass	Hydro-electric	Nuclear Reactor	Flashed Steam Geothermal Plant	Municipal Solid Waste	Solar	Wind	Cogeneration[a]
Expected 1995 capacity, MW	78,674			6,911	2,078	536		21,005	9,818	1,869		380	1,600	
Capital cost, $/kW[b]	1,613.45	1,844.6	1,452.45	445.05	595.7				1,987.2	2,089.55		3,245	1,217	595.7
Operations and maintenance cost, mills/kWh[b]	7.809	8.893	7.98	8.947	4.741				10.809	13.019		22	19	4.741
Capacity factor	75%	95%	80%	65%	65%		80%	50%	70%	80%	80%	25%	20%	80%
Heat rate, Btu/kWh	9,393	10,150	8,969	12,072	<8,546	13,600	14,800		10,377	20,080				11,020
Thermal discharge, million Btu	4.79	4.79	4.79	3.29	3.29				5.0	148.4		2.6		3.29

Environmental Impact Factors	Pulverized Coal	Fluidized Bed Coal	IGCC Coal	Simple Cycle CT	Gas-fired Combin. Cycle CT	Diesel	Wood Waste Biomass	Hydro-electric	Nuclear Reactor	Flashed Steam Geothermal Plant	Municipal Solid Waste	Solar	Wind	Cogeneration[a]
Air pollutants, lb/MWh														
CO_2	1,970	2,150	1,810	1,390[g]	1,300	1,620	3,400			160	3,747	1,310		1483
SO_x as SO_2	1.6[e]	1.5[e]	0.66[e]	0.009	0.006	0.557	0.258							
NO_x as NO_2	3.2[d]	1.5	0.61[f]	1.064[d]	0.519	5.025	4.832				5.815	0.34		1.973
VOC	0.036	0.058	0.048[f]	0.016	0.27	2.293	2.94			0.001	0.172	0.014		0.139
CO	0.217	0.351	0.13	0.387	0.19	7.28	6.9				3.553	0.42		0.928
TSP	0.3	0.11	0.04	0.06	0.031	2.393	10.35				0.614	0.032		0.116
PM_{10}	1.260													
N_2O	0.34	0.325	0.302	0.24	0.063		0.55				0.55	0.31		
H_{2S}										0.0664				
Total trace elements	0.054	5.146	0.00002							0.449	0.017			
Trace radioactive, curies/MWh									0.0055					

Environmental Impact Factors	Pulverized Coal	Fluidized Bed Coal	IGCC Coal	Simple Cycle CT	Gas-fired Combin. Cycle CT	Diesel	Wood Waste Biomass	Hydro-electric	Nuclear Reactor	Flashed Steam Geothermal Plant	Municipal Solid Waste	Solar	Wind	Cogeneration[f]
Airborne water from cooling tower evaporation losses, gal/MWh									1800					
Water pollutants, lb/MWh	[c]	[h]	[i]		[j]									[k]
Wastewater	520	1200	270	45	510		1400							1120
TDS	2.6	5.8	2.7	0.227	2.55		7.2		0.0056					5.58
TSS	0.0078	0.017	0.00011	.00068	0.0077		0.022							0.017
TOC		0.045		0.0018	0.02									0.044
BOD		0.012		0.0004	50.0051									0.011
Total hardness	0.33	0.73		0.029	0.32		0.91							0.71
Total trace pollutant	1.88	0.000004	1.91307	0.1608	1.819		5.155		0.05002	0	0			0
Consumption, acre-ft/MWh	0.0012	0.0019	0.0018	0.00005	0.00038			0.0	0.0018	0.005		0.00003	0.0	0.0005
Radioactive effluent, curies/MWh									0.05					
Solid waste, lb/MWh	[c]	[c]	[e]								[l]			[k]
Ash	30	45	87								1054			
Sulfur		1.6												
Total metals	0.029	0.015	0.625								1017.11			
Nuclear solid waste									0.028					
Land use														
Construction (acres per MW capacity)	1	1.5	0.6		0.1		2.1		1.74	0.2	1.6	3	5.9	1.7

Environmental Impact Factors	Pulverized Coal	Fluidized Bed Coal	IGCC Coal	Simple Cycle CT	Gas-fired Combin. Cycle CT	Diesel	Wood Waste Biomass	Hydro-electric	Nuclear Reactor	Flashed Steam Geothermal Plant	Municipal Solid Waste	Solar	Wind	Cogeneration[f]
Employment														
Construction (employee years per MW capacity)	4.7	5.1	5.7		1.4		9.6	9.3	1.8	4.1	24.1	19.6	1.9	15.1[m]
Operations (employees per MWh generation)	.000076	.000084	.00013		.000017		.00064	.000068	.00015	.000043	.00064	.00018	.00023	.00064

Blank signifies no reported quantity.
The resources which were included in the model are simple-cycle combustion turbine, nuclear, hydroelectric, and renewables.
The coal resources were modeled as a combination of the three technologies presented in this table.
BOD = Biological Oxygen Demand
CT = Combustion Turbine
IGCC = Integrated Gassification Combined-cycle
PM_{10} = Particulate matter with a diameter of 10 microns or less
TDS = Total Dissolved Solids
TOC = Total Organic Chemicals
TSS = Total Suspended Solids
VOC = Volatile organic compounds

[a] Costs same as natural gas-fired combined-cycle combustion turbine
[b] Coal, natural gas, nuclear, geothermal, and cogeneration sources use 1988 Electric Power Research Institute (EPRI) data (EPRI 1989) inflated to 1992 dollars using 1.15 as inflator.
[c] 90% sulfur removal by flue gas desulfurization
[d] Use of low NO_x burner
[e] 95% sulfur removal
[f] Fuel gas moisturization process
[g] Water injection process
[h] 70% sulfur removal
[i] 95% sulfur removal with waste water treatment
[j] Steam injection
[k] Standard low NO_x combustor, no steam exported
[l] Dry scrubber and fabric filter
[m] Average of wood-fired and municipal solid waste combustion

Source: Western 1994.

but represents a range of plants or calculated values). Wind's shortcomings are in the estimated capacity factor (20% compared with 75% for pulverized coal) and land use (wind uses an estimated 5.9 ac per kWh produced, compared with 1 ac for pulverized coal). However, wind does not produce air or water pollutants, solid waste, or nuclear waste.

Air quality is an obvious point of comparison for renewable resources compared with fossil fuels. Section 4.1 in the DEIS presents a detailed discussion of the possible air quality benefits to be derived from the Proposed Action compared with generating the same amount of electricity with coal-, oil-, or gas-fired plants. Results of the analysis show that construction of a 500-MW Windplant could result in a 0.004-0.08% reduction in U.S. annual SO_2 emissions, a 0.018-0.037% reduction in U.S. annual CO_2 emissions, and a 0.003-0.047% reduction in U.S. annual NO_x emissions (see Table 4.2 in the DEIS). Costs to society associated with these emissions were also analyzed: the 500-MW Windplant could result in an annual savings of $36,289,900 compared with an oil-fired plant, $25,979,920 compared with a gas-fired plant, and $331,125,000 compared with a coal-fired plant (see Table 4.3 in the DEIS). Variables such as human health effects, costs for developing pollution prevention devices, and waste by-products are included in these cost estimates.

The economics of windpower compared with other sources of electricity are compared in Table 1.2 in the DEIS. The low cost of windpower from the proposed site is due to many factors, but principally due to advances in turbine technology (see Section 2.1.3 in the DEIS) and the quality of the wind resource within the KPPA (see Sections 1.1.2 in the DEIS and 8.2.1 in the FEIS).

BLM agrees that it would be useful to compare impacts of various power-generating resources on wildlife species. Unfortunately, this type of analysis has not, to our knowledge, been completed for any project or regional planning document. Even defining the scope of the analysis would be a difficult task. For example, the primary objective could be to examine habitat loss and population impacts of individual projects. Alternatively, more indirect questions such as effects of CO_2 emissions on habitat within, say, the eastern red spruce forests could be evaluated. To compare impacts of various resources on wildlife, could require extensive data gathering that is not specifically relevant to this project; therefore, it was not evaluated in the DEIS.

Comment AM2: See Sections 4.2.1, 4.2.3, and 4.2.4 and Appendix B in the DEIS. In addition to the prey base monitoring described in Appendix B in the DEIS, there are no plans to institute control measures on raptor prey species.

Comment AM3: See Section 4.2.4 in the DEIS and Section 8.2.3.4 in the FEIS.

Comment AM4: See Section 4.2.3.4 in the DEIS. Section 2.1.4.5 in the DEIS describes how the 230-kV transmission line would be constructed to prevent raptor electrocution. On page 4-53 in the DEIS, provisions for marking overhead wires to improve visibility to birds and use of antiperching devices are discussed. In Section 5.1.3.11, provisions for raptor protection for all power lines within the Windplant are described.

Comment AM5: See Sections 8.2.2 and 8.2.3.4 in the FEIS.

Comment AM6: See Section 4.6 in the DEIS.

Comment AM7: See Section 4.2.3.1 (particularly column 2, paragraph 2 on page 4-40), Section 4.5.2.1 (page 4-87), and Section 4.5.2.5 (page 4-89) in the DEIS.

Comment AM8: The proposed project would not use microwave tower transmitters.

Comment AM9: See Sections 4.7 and 5.2.11 in the DEIS. In addition, see the Hazardous Materials Summary (HMS), included as Appendix J in the FEIS. The Spill Prevention Control and Countermeasure Plan (SPCCP), which will describe procedures for handling spills, will be available from the BLM prior to initiation of construction.

Comment AM10: See Sections 2.1.3.2 and 2.1.9 in the DEIS. The SPCCP, which will describe procedures for handling spills, will be available from the BLM prior to initiation of construction.

Comment AM11: See Sections 3.3, 4.3, 5.1.3.13, and 5.2.9 in the DEIS.

Comment AM12: See response to Comment AL17. Work completed by the avian task force shows that birds habituate to continuous whistles so these warning devices rapidly lose their effectiveness. Discontinuous and/or random warnings may be effective but were not considered as an alternative because this type of mitigation would be incorporated into the Proposed Action or Alternative A if appropriate. Because this action would be part of an alternative considered in the EIS, it need not be considered as a separate alternative. The Avian Task Force also recommends using slower turning rotors, such as the 33-m rotor used on the KVS-33 to reduce collision-related mortality. See also Section 2.1.3.2 in the DEIS.

AN. Wyoming Heritage Society

Wyoming Heritage Society
139 West 2nd, Suite 3-E Casper Wyoming 82601 (307) 577-8000

STEERING COMMITTEE
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Bill Schilling, Executive Director

March 27, 1995

RECEIVED
MAR 30 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Bureau of Land Management
Rawlins District Office
PO Box 670
Rawlins, WY 82301
Att: Mr. Walter E. George
Via Facsimile: (307) 324-5423

re: Draft KENETECH/PacifiCorp EIS

Dear Mr. George:

Attached is a copy of our guest editorial which appeared in the Casper Star-Tribune today. Please accept this editorial as our comments to the DEIS, and about the project in general.

The Wyoming Heritage Foundation represents a broad spectrum of business interests--individuals, sole proprietors, professionals, associations, small businesses, labor, and multi-national corporations. We support responsible environmental practices and the concept of multiple use in the development and protection of natural resources and public lands. Over 11,000 individuals and businesses receive information materials from the Wyoming Heritage Foundation.

We strongly support this kind of clean, high-tech industrial development in the state. The DEIS is to be commended for the emphasizing the beneficial environmental impacts of the project with regard to air quality and socioeconomics.

As stated in the editorial, the small possibility of avian mortality is an acceptable risk in light of the potential economic development, increased tax base and job creation that will result from this project. This project is clearly in the public good.

Very sincerely,

Bill Schilling
Executive Director

Post-it® Fax Note 7671	Date 3-30-95 # of pages ▸ 3
To Mr. George	From Bill Schilling
Co./Dept.	Co.
Phone #	Phone # 307 577 8000
Fax #	Fax # 307 577 8003

Working together f.

Bureau of Land Management
March 27, 1995
Page 2

While we concur with most of the DEIS' provisions and mitigation measures, we nonetheless have four recommendations:

1. A mitigation measure presented on Page 2-29 notes that "Retrofit of prior phases would not include replacement of capital items (e.g., rotors, towers, nacelles), but could include removing the rotor from turbines associated with high mortality rates, painting turbine rotors, or other measures not requiring capital expenditure." We applaud the expressed goal of minimizing retrofit investments on the Project. However, because the number of operating turbines is a prime determinant of Project output, the Owners suggest that this phrase be reworded as follows: "Modification of prior phases would not include replacement of capital items (e.g., rotors, towers, nacelles) but would be limited to relocation within the Project site of turbines associated with disproportionately high levels of avian mortality, painting of turbine rotors, or other measures not requiring capital expenditure."

2. The Owners strongly encourage the Bureau of Land Management to establish a date by which avian monitoring will be completed. Such monitoring has been underway for more than a year at the time of this writing. The Owners propose that avian monitoring be concluded within two years of the Project's beginning of commercial operation.

3. The Owners applaud the provision communicated on Page 2-29 of the DEIS which specifies that the results of such avian monitoring will be applied solely to the Plans of Development for subsequent phases. Further, the Owners recommend that if any other desired modifications stem from research conducted independent of this Project, they be considered only for subsequent phases as well.

4. The Owners urge the BLM to carefully consider the impacts of any limitations and mitigating strategies proposed for the Project not only for their costs and impacts at the time of Project development, but also for their effects on Project operation and maintenance activities through its full 30-year life.

In addition, the Owners' review of the DEIS uncovered a number of observations of a more editorial nature, and these are included as an enclosure to this letter.

In closing, the Owners again commend the Bureau of Land Management and Mariah Associates, Inc., for their accomplishment in producing an exhaustive and highly professional

AO. PacifiCorp

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PACIFIC POWER UTAH POWER

March 27, 1995

Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301
Attn: Walter E. George, Project Leader

Subject: Comments on Draft KENETECH/PacifiCorp Windpower Project Environmental Impact Statement

Dear Mr. George:

As the potential owners of the Wyoming Wind Project (the "Project"), Eugene Water and Electric Board, Tri-State Generation & Transmission Association, Inc., Public Service Company of Colorado, and PacifiCorp (together, the "Owners") jointly submit the following comments on the Draft KENETECH/PacifiCorp Windpower Project Environmental Impact Statement ("DEIS"), published in January, 1995.

In general, the Owners believe that this document reflects a well researched inventory of environmental and economic exposures associated with the Project. In particular, we applaud the concise yet accurate description of the Project site's unique wind resource. While Wyoming has long been known as a state generously blessed with wind resources, the Project site is uniquely gifted in this regard, and is one of few locations in the state which can support cost-effective, commercial wind generation at this time. The Owners further believe that the mitigation measures identified in the DEIS are well considered and appropriate both to the Project's development, to the operation and maintenance of the Project through its 30-year life, and to the protection of the area's natural and cultural resources. We commend the Bureau of Land Management, Mariah Associates, Inc., and the many others who contributed to the DEIS for their accomplishment.

Bureau of Land Management
March 27, 1995
Page 3

DEIS. Kindly contact me ((503) 464-5097) if questions on the Owners' comments should arise.

Very truly yours,

for Fred D. Keast
Project Coordinator

FDK:kf

c: Eugene Water and Electric Board
KENETECH Windpower, Inc.
Public Service Company of Colorado
Tri-State Generation & Transmission Association, Inc.

BLM
March 27, 1995
Enclosure

Specific Comments.

5 1. Page 2-19 (Section 2.1.4.5) and Page 4-53 (Section 4.2.3.4) should cite "Mitigating Bird Collisions with Power Lines: The State of the Art 1994" (APLIC 1994) for construction of the 230 kV transmission line, instead of Olendorff et al. (1981) as the latter does not pertain to transmission line hazards to birds.

6 2. Table 3.13 (Section 3.2.2.3) indicates 4 active golden eagle nests. Table 3.15 indicates no golden eagle nest failures, but only 3 nests produced young. This apparent inconsistency should be clarified.

7 3. Page 2-31 states that areas within 2 miles of lek centers (nesting habitat) will be avoided from March 1 through June 30. Pages 3-57 and 3-58 indicate this time period to be February 1 through July 15.

AP. Richard J. Guenzel

26 March, 1995

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301

RECEIVED
MAR 31 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Dear BLM

Thank you for the opportunity to review and provide my personal comments on the Draft Environmental Impact Statement (DEIS) for the KENETECH/PacifiCorp Windpower Project. The purpose of the my comments is to help identify problems and concerns with the DEIS so that the analysis and project can be improved, leading to better decision-making. First, I want to say that I am not opposed to wind power development and other renewable energy technologies provided that these are developed in an environmentally sound manner. As requested, I've tried to make my comments specific to help the EIS Team in addressing the comments and issues raised. I feel there are several significant issues and concerns that the DEIS fails to adequately address and I feel that BLM should disclose more information regarding several topics.

1 One problem I see with the DEIS is that it does not fully acknowledge that the approval of the proposed industrial-scale windplant would be a precedent-setting decision. The KENETECH/PacifiCorp project is the first proposal for a large-scale commercial windplant in an environment like Wyoming with the climate, wildlife and vegetation of the project area. The procedures and analyses used for this project could influence similar future decisions. I feel it is imperative for this decision to be based on adequate information, that the project be appropriately sited, and that monitoring and mitigation provisions are adequate. The significance of the project's impacts and their consideration in the DEIS should be elevated because of the uncertainty about impacts and the precedent-setting nature of this decision (40 CFR 1508.27 (b)(5 and 6)). The DEIS should be revised to disclose the implications and significance of this precedent-setting project. The FEIS should also reflect this concern.

2 I also have concerns about the manner in which this project is being treated as a Right-of-Way (ROW) permit rather than evaluating this project as a major land use decision. The substantially long project life (perhaps longer than oil and gas or coal operations), the large area influenced by the project because of the WTG strings, related facilities, and transmission lines, unique characteristics about this type of operation, and the precedence of this project deserve greater scrutiny. The DEIS should include comparisons of the extent and duration of this project with oil and gas fields, coal mines, and other power-generating facilities. The GDRA RMP did not consider wind power projects of the scope as this proposal.

3 Because of the precedent-setting nature of the project, I urge BLM to assure that the project, if approved, be developed in a manner that allows impacts to be reliably and accurately evaluated. This would help identify corrective actions needed for the first phase and help subsequent phases to be designed and operated so as to minimize or mitigate impacts. In order to adequately evaluate impacts to wildlife and other resources, baseline data collection and monitoring of project areas and control sites need to be conducted under scientifically valid procedures. There

4 have been several methodological changes and delays in implementing baseline monitoring for the project to date which lead me to question the adequacy of the information analyzed in the DEIS. Detailed information on many resources have not been presented for the Simpson Ridge and transmission line routes. CEQ regulations provide for including essential information for a reasoned decision in the EIS (40 CFR 1502.22(a)). Several other documents have not yet been

5 made available for review including the biological assessment. BLM should allow public review and comments on these reports before BLM makes a decision on the project.

4 While we encourage the development of renewable energy technologies, I am concerned that the rapid pace for developing this project is precluding adequate predevelopment replication of baseline information. Another confounding influence is the timing and changes in procedures to date. There appears to be a substantial amount of information that is not being applied to reduce impacts of this project. Sound baseline data are needed to compare to monitoring and mitigation efforts. I am concerned that the statistical power of the monitoring design will not be sufficient to

3 reliably detect impacts. These data are essential for precedent-setting projects with a high degree of uncertainty.

6 I don't feel that the DEIS adequately addresses mitigation effectiveness as required (Federal Register 46(55), 18026-18036, 3/23/1981). As I indicate elsewhere, the DEIS is unclear as to what will and will not be mitigated. The discretion of the Authorizing Officer to determine what

7 mitigation is needed and the deferral of much of the mitigation decisions to the Plans of Development (PODs) suggest that the impact assessment of the DEIS is incomplete. Perhaps the

8 DEIS should assume a worse case scenario if mitigation measures and their effectiveness will not be disclosed.

9 One area where I find the DEIS to be particularly weak is in the alternatives considered. CEQ regulations require that agencies "Rigorously explore and objectively evaluate all reasonable alternatives ..." (40 CFR 1502.14(a)) including reasonable alternatives outside the jurisdiction of the lead agency (40 CFR 1502.14(c)). Additional federal guidance (Federal Register 46(55), 18026-18038, 3/23/1981) specifies that reasonable alternatives include those that are practical and feasible from a technical standpoint, not simply alternatives desired by the applicant. I am concerned that applicant preferences and schedules have unduly influenced the alternatives considered in detail by BLM in contrast to requirements in 40 CFR 1502.2 (f), 1502.5, and 1506.1(a)(2).

The Proposed Action and Alternative A do not adequately represent the full spectrum intended by NEPA for reasonable action alternatives. Alternative A, although specifying 40% fewer WTGs, would likely have impacts closer to the Proposed Action, particularly since many site-specific analyses for the Simpson Ridge area are not presented. For some resources (e.g., mountain

Comment AO1: See Section 2.1.11 in the FEIS.

Comment AO2: See Section 8.2.3.3 in the FEIS.

Comment AO3: See Section 8.2.6 in the FEIS. Text in Section 2.1.11 in has been modified to better describe the limitations on retrofit of prior phases.

Comment AO4: Mitigation measures stipulated by BLM would be subject to the rule of reason (i.e., required mitigation measures would be commensurate with the level of concern for the affected resource). BLM would consider costs of mitigation during construction and for the LOP.

Comment AO5: As of preparation of the FEIS, the new version of *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* was not available. Text on page 2-19 of the DEIS states that the 1981 version or any future updated versions would be applied to transmission line construction.

Comment AO6: Table 3.13 (Section 3.2.2.3) indicates a total of five active golden eagle nests in and adjacent to the KPPA [four in the Foote Creek Rim area plus a 10.0-mi (6.1-km) buffer and one in the Simpson Ridge area plus a 2.0-mi (1.2-km) buffer]. Table 3.15 also indicates a total of five active golden eagle nests within the KPPA; three nests produced nestlings, and the status of the other two nests was unknown as indicated.

Comment AO7: The correct dates are March 1-June 30. The text has been modified accordingly.

plovers), Phase I at Foote Creek Rim would cause the bulk of the impact. Yet it would not be included in the assumed reduction of 40% for Alternative A. Also, portions of Alternative A would probably still be located in more sensitive areas of the KPPA. The DEIS does not give serious consideration to the No Action alternative.

Analyzing alternative sites strengthens the analysis included in the DEIS by providing a better comparison of environmental impacts which should lead BLM to make better decisions. Other reasonable alternatives exist and should be analyzed. I suggest that one other reasonable alternative would be to consider Phase I at Foote Creek Rim only since this would provide power for the part of the project that has been contracted. Another appropriate and reasonable alternative would consider locating the Phase I portion of the project within less sensitive areas in
9 the Simpson Ridge area. The Simpson Ridge area has also been identified by KENETECH as a
cont. viable site for a windplant. That alternative would require less transmission line construction, and could avoid sensitive wildlife resources and concerns that have been verified at Foote Creek Rim. The Medicine Bow Project mentioned in the DEIS is also another viable and reasonable alternative that would satisfy the purpose and need stated in the DEIS. Other plausible alternatives suitable to detailed analysis exist outside the KPPA but within the wind corridor. I strongly encourage BLM to provide detailed analyses on these and/or other reasonable alternatives. The ones I have suggested should be appropriate and could apply data already compiled for the proposed project. The DEIS should be revised or supplemented as provided by 40 CFR 1502.9 by including these detailed analyses of other alternatives. The DEIS as it stands, is deficient and may not stand up to legal challenges. It seems appropriate and prudent to include more detailed analyses of alternatives for this precedent-setting project.

10 I have additional concerns about the DEIS process for this project and believe the DEIS would be strengthened by resolving these problems. I indicate these below and in my specific comments. Among my procedural concerns is that the DEIS fails to point out opposing views or selectively presents interpretations of studies in many places. Such disagreements need to be disclosed as required by 40 CFR 1502.9. For example, the DEIS failed to acknowledge that there has been substantial disagreement about the alternatives being considered in detail.

11 I believe there is considerable disagreement on the significance of impacts and the suitability of proposed mitigation measures. Scoping comments should be referenced. Virtually no mitigation is provided to compensate for loss of habitat function. It is my understanding that the policy of the Wyoming State Office of the BLM is that mitigation will not be required if it cannot be provided on-site. If that is the case, many of the project's impacts would not be mitigated and the significance of impacts for the project should be elevated. BLM should explicitly state their mitigation policy and how and where it will be applied for this project. BLM should also disclose that several project impacts would not be mitigated, or that permit conditions would not require mitigation. It appears that the DEIS does not accurately state the significance of project impacts. On one hand, the DEIS assumes mitigation will be in place. On the other, the DEIS states that BLM will not require mitigation in certain circumstances. However, these are not quantified. For example, BLM only gives much consideration to impacts to big game populations where actual physical disturbance occurs on crucial big game winter ranges (c.f., significance criteria). The project could pose a significant impact to these populations by cumulatively impacting other

11 winter ranges and causing avoidance of preferred habitats. The DEIS implies that mitigation will
cont. only be applied to those phases of the project after Phase I. Those impacts would go unmitigated. The DEIS fails to disclose this. Significance criteria identified in the DEIS do not respond to
12 many of the impacts described for the project. Many of the significance criteria are not linked to the monitoring program. More meaningful criteria should be developed.

13 The DEIS should provide specific mitigation measures for a range of possible impact contingencies rather than waiting for additional measures to be provided in PODs. The DEIS includes catch-22s by establishing significance criteria based on arrangements made at the POD stage (e.g., soils). Authorizing Officers will be more inclined to apply mitigation measures if they are prescribed in the EIS. Including contingency mitigation in the EIS also allows full public review and lets project operators know what to expect up front. At the POD stage, operators may not accept additional mitigation. BLM does not have a reputation for applying additional mitigation measures for other projects after environmental analysis.

My specific comments on the DEIS follow. I have identified these by chapter, page, paragraph and section. Some of my comments are posed as questions, although they indicate ways the DEIS should be revised. I can elaborate on my comments where BLM's EIS Team need clarification or further suggestions.

1.0 INTRODUCTION

14 Page 1-1. As I stated above, the DEIS should disclose the precedent-setting nature of this project. This would be the first industrial-scale windfarm to be sited in Wyoming and within the ecosystem present in the project area. As such, the precedence and uncertainty of this project increase the significance of the impacts (40 CFR 1508.27(b)(5 and 6).

15 Page 1-4, Top ¶. I do not feel that the mitigation and monitoring identified for the project are adequate. Mitigation contingencies should be defined in the EIS which may later be adopted in PODs. POD conditions are more enforceable when these are included in the EIS documentation. The EIS should include mitigation for the range of impacts that may occur (40 CFR 1502.14(f), 1502.16(h)). The uncertainty associated with the project raises the significance. Therefore, effective mitigation should be planned to cover worse case impacts. This strengthens the analysis and allows operators to anticipate requirements.

16 Page 1-4, ¶5. Analyzing Phase I alone as another reasonable alternative is supported by the fact that only 70.5 MW of the power capacity for the entire project (Phase I) has been contracted.

17 Page 1-4, Last ¶. I refer to my previous comments that the DEIS should be strengthened to satisfy the intent of NEPA. These concerns relate to the selection and analysis of reasonable alternatives, significance, monitoring, mitigation effectiveness, and disclosure.

18 Page 1-5, 1.1 Purpose and Need. The purpose and need stated here disagrees with the purpose and need mentioned under "Alternate Project Location" for a demonstration windplant (Sec. 2.4, Page 2-33).

19 Page 1-6, ¶3; 1.1.2 The Wyoming Wind Resource. The DEIS should include more complete information in order to compare the wind resource within the 62-mile wide wind corridor. How do winds vary within sites (e.g., Foote Creek Rim, Simpson Ridge, and other alternate sites)? Data should be provided regarding the seasonal frequencies and intensities of wind gusts by
20 compass direction. How frequently would WTGs be idle at these sites due to calm or extreme winds? How does this compare to periods of peak power demand. The description of the wind
19 resource in the DEIS should be described in greater detail and at a finer level of resolution to support or refute suitabilities of alternative project locations. This analysis should include this information (40 CFR 1502.22).

21 Page 1-8, Top ¶. The DEIS does not disclose that the GDRA RMP did not consider commercial windplants like the proposed project (see 40 CFR 1502.9). I question the appropriateness of tiering to the RMP here.

22 Page 1-10, 1.4 Issues and Concerns. BLM should disclose opposing points of view as required of NEPA. Issues and Concerns listed in this section do not appear to reflect the significant scoping comments from state and federal agencies about the need to analyze alternative project locations and other modifications to the project. This includes my above discussion about the range of alternatives analyzed in detail in the DEIS. Mitigation effectiveness, baseline data adequacy and monitoring sensitivity are other areas where there appear to be substantial disagreements ignored in the DEIS.

23 Page 1-10, Last ¶. Some of the contractors supplying portions of the DEIS appear to have interests in providing additional services if the project is approved. Were disclosure statements completed as required of contractors preparing environmental statements (see 40 CFR 1506.5(c))?

2.0 PROPOSED ACTION AND ALTERNATIVES

24 As I stated earlier, the alternatives analyzed in detail in the DEIS do not represent a reasonable range as required by 40 CFR 1502.14 and other sections. A precedent-setting project such as KENETECH's warrants detailed evaluation of a range of alternatives to better understand the impacts and consequences of the project. I refer to my above suggested alternatives.

25 Page 2-1, ¶1: This section of the DEIS fails to disclose that the proposed and alternative actions would set a precedent. The scale, scope, intensity, operation and impact of this project is significantly different from other ROW permits. The DEIS should expound on how this project is different and attempt to quantify these differences.

26 Page 2-1, ¶3. I return to my contention that Alternative A does not provide a reasonable range in consequences from the Proposed and No Action alternatives. Reducing the project by scaling the project back by 40% of the WTGs will not necessarily result in a 40% reduction in impacts from the Proposed Action. It is likely that the WTGs eliminated from this proposal would be the ones located in relatively lower wind areas. There is a high probability that the remaining WTG-strings

26 would occur in sensitive resource areas so the impacts could be nearly as great as the full project.
cont. The lack of a specific project design hinders this analysis. How about analyzing the project
27 excluding Foote Creek Rim? Would that substantially reduce impacts to wildlife resources?
28 Would that also minimize archeological conflicts? Resources in the Simpson Ridge portion of the project should be described in similar detail to the Foote Creek Rim project.

29 Page 2-1, ¶6; 2.1 Proposed Action. Will conservation easements owned by the Wyoming Game and Fish Commission within the project area be impacted?

30 Pages 2-2 - 2-4, Tables 2.1(a), (b) and (c): The amounts and types of disturbance shown in these tables do not account for wildlife displacement or loss of utility of areas surrounding disturbed sites. However, the DEIS recognizes such impacts later in the document.

31 Page 2-5, ¶3; 2.1.2 Plan of Development. I reiterate my concerns that baseline wildlife surveys and monitoring, as currently proposed, are not adequate for evaluating impact significance, identifying need for mitigation, and determining mitigation effectiveness or project compliance. Mitigation contingencies should be committed to in the EIS to gaurantee that impacts on important resources are compensated. I do not feel that sufficient modifications would be imposed in PODs by BLM. The DEIS fails to assure effective mitigation will be implemented to address significant impacts of the project. I am also concerned that unless adequate baseline data and monitoring on control sites are provided for from the start, provisions to require additional monitoring will be confounded rather than allow reliable information to be collected for this precedent-setting project.

32 Page 2-5, Last 2¶s. The DEIS does not provide substantial evidence that the baseline studies or monitoring protocols for wildlife will be reliable enough to determine cumulative impacts (see 40 CFR 1502.9). It appears that most of Phase I will rely on less than 1 year of adequate baseline information because of changes in design and late initiation of some surveys. Other project-related activities on Foote Creek Rim may be confounding baseline surveys. Has that been evaluated? Adequate baseline data should be collected for over 2 full years prior to construction. The proposed monitoring protocols will not provide this. BLM should agree to require statistically reliable baseline information to be obtained prior to issuing a notice to proceed with PODs for subsequent phases.

33 Page 2-7, Figure 2.1: Any additional mitigation measures that might be required in PODs should be included as contingencies in the EIS along with meaningful criteria for monitoring effectiveness. Such criteria have not been provided for in the DEIS.

34 Page 2-8, ¶3; 2.1.3 The Windplant: I can't see where the DEIS provides evidence that the proposed WTG strings (Map 2.1) have been sited so as to minimize impacts to wildlife and other resources (The turbine strinsg appear to coincide with areas of high raptor use as shown in Section 3).

35 Page 2-8, ¶6. The DEIS indicates that much of the information needed to evaluate environmental impacts on the Simpson Ridge portion of the project is incomplete. This information appears to be

35 cont. essential for this environmental analysis (see 40 CFR 1502.9). If that is the case, BLM should seriously consider evaluating Phase I at Foote Creek Rim as a reasonable alternative and BLM should reconsider its preferred alternative.

36 I don't feel that the AO will have sufficient expertise to determine environmental data needs. Criteria should be established within the EIS to assist the AO in making an informed decision. I

37 again question the adequacy of only one year of intensive predisturbance data, based upon recent scientific papers on adequate impact assessment study designs.

38 Page 2-11, First ¶: How often and for how long would WTGs not generate power because of winds outside of operating ranges for Foote Creek Rim, Simpson Ridge and other sites in the vicinity of the project?

39 Page 2-15, ¶3: The EIS should impose restrictions to minimize the timing and frequency of disturbance by project personnel?

40 Page 2-15, ¶6; 2.1.4.1 Road and Pad Construction: What mitigation would be provided when sensitive areas cannot be avoided?

41 Page 2-19, ¶6; 2.1.4.5 230-kV Transmission Line Construction: The DEIS provides no evidence that sensitive wildlife areas would be avoided. How will these impacts be compensated?

42 Page 2-21, ¶2: What procedures would be followed if trees cleared within the ROW are used for nesting by raptors or other sensitive migratory birds?

43 Page 2-21, Last ¶; 2.1.4.7 Final Road Grading, Erosion Control, and Site Clean-up: Disturbed sites on Foote Creek Rim would be subject to strong wind erosion. Would sediment be deposited in drainages associated with Rock Creek? How would this be prevented?

44 Page 2-22, ¶2; 2.1.5 Public Access and Safety: How is the "immediate vicinity of the wind turbines and facilities" defined? Would the project affect public access to the Wyoming Game and Fish Commission's Wick Brothers Unit and the utility of these lands?

45 Page 2-28, ¶2; 2.1.10 Reclamation and Abandonment: Does the BLM reclamation policy provide off-site mitigation if on-site mitigation is not feasible? If not, how will surface disturbances be mitigated for the LOP?

46 Page 2-28, ¶6; 2.1.11 Project-wide Mitigation Measures: I am concerned that the project would not mitigate for many of its impacts. The EIS should provide contingencies for adequate mitigation over a range of potential impacts instead of relying upon unspecified measures to be incorporated in PODs. Will these be "waived" or "excepted" since the implications are different. If measures are waived, then prescribed mitigation would be eliminated. BLM frequently excepts projects from mitigation or stipulations prescribed in the RMP. If prescribed mitigation will not be enforced, then these measures would not be effective as required by NEPA. These measures are not supported in the DEIS.

47 Page 2-28, ¶7: Adequate baseline data for impact areas and control sites are required to determine the level of impacts and monitoring sufficiency. Recent papers in the scientific journals Ecology and Ecological Applications provide requirements for impact assessment studies using the Before/After/Control/Impact approach. These papers criticize the approach by Green which is referenced in the DEIS. It is essential that adequate, replicated predisturbance data be obtained for a precedent-setting project as this.

48 Page 2-28, Last ¶-Page 2-29, first ¶: What specific recommendations has KENETECH's Avian Task Force made for this project? Have those recommendations been implemented? It does not appear that the recommendation to site windplants away from areas of high avian use has been followed for Phase I (c.f., Maps 2.1 and 3.14-3.17). The map comparisons also suggests the size

49 and spacing of the windplant has not been adjusted to reduce impacts. No off-site mitigation has yet been considered. Contingencies should be developed and incorporated into the DEIS. Will off-site mitigation be required and enforced? If not, then impact assessment should assume more significant impacts.

50 Page 2-29, ¶3: How does KENETECH propose to handle incidental take under the Migratory Bird Treaty Act and other laws? The DEIS suggests that mitigation would be required for "subsequent" phases of the project. That suggests Phase I impacts will not be mitigated?

51 Page 2-29, ¶4: Has KENETECH modified windplants at other sites to mitigate impacts? Were these measures effective? How effective were they?

52 Page 2-29, Last ¶, Item 1: Given BLM policies, will mitigation measures be effectively implemented? If landowner preferences prevent mitigation on site, will BLM require off-site mitigation? How does the DEIS handle project impacts where landowner preferences do not provide mitigation on-site?

53 Page 2-30, Item 2: As noted above, I do not see that windplant facilities have been placed to avoid sensitive wildlife habitats on Foote Creek Rim. Important wildlife habitats include winter ranges not designated as crucial. Will impacts to those areas be mitigated? How?

54 Page 2-30, Items 3-4, 9; Page 2-31, Items 10, 12: What mitigation is proposed for areas that are not "feasible" to avoid? How effective is that mitigation?

55 Page 2-30, Item 6: How would disturbance during the life of the project be mitigated?

56 Page 2-30, Item 7: If initial revegetation efforts using native plants are unsuccessful, what else would BLM require? Not all habitat values would be restored if nonnative species like crested wheatgrass are used. Perhaps transplanting shrubs or other intensive reclamation techniques should be used on appropriate sites where initial reseeding efforts failed.

57 Page 2-30, Item 9: Will wind erosion be controlled at disturbed sites on Foote Creek Rim and other exposed sites to prevent sediment deposition into wetlands and streams such as Rock Creek?

58 Page 2-31, Item 12: Is this mitigation consistent with Item 9 to avoid construction within 500 ft of surface water and wetlands? Will transmission lines avoid grouse leks, raptor nests, wetlands and other sensitive habitats?

59 Page 2-31, Item 13: Applying this restriction to "active" raptor nests conflicts with stipulations provided in the GDRA RMP. BLM's raptor surveys have usually been conductedr after a large proportion of nests fail so that many active nests are missed. The raptor inventory may not be adequate to know whether or not a raptor nest was active in the last three years. Weren't raptor

60 studies for this project on Foote Creek Rim initiated late in 1994. When were nesting studies initiated on Simpson Ridge and surrounding areas? Does the DEIS's use of "Extensive raptor nesting studies" imply that "intensive" nesting studies were not performed? Were all potential nesting areas adequately searched over the last three or more years? What proportion of active nests are missed during surveys by species?

61 Page 2-31, Item 16: What does the DEIS mean by imposing seasonal stipulations "within certain areas?" What defines "certain areas?" The DEIS should state clearly what these are and how they will be applied during the project. It appears that the DEIS will only prescribe mitigation of some

62 project impacts on crucial big game winter ranges. Will impacts to wintering big game in other (noncrucial) wintering areas be mitigated? If so, how?

63 Page 2-31, Item 17: This item also appears to contradict the wildlife stipulations identified in the GDRA RMP, specifying only "Known active sage grouse leks." Have lek inventories been adequate to verify activity at leks? How frequently have each lek in the project been searched in recent years? Is the statement that restrictions would be placed on construction activities around "known nest sites" an error? Do you really mean around "leks?" If this mitigation only applies to leks on public ground, will impacts to leks on other lands not be mitigated? How many leks would not be mitigated? The DEIS should disclose exactly what is meant here.

64 Page 2-32, Item 18: If wildlife will be excluded from substations, will those acreages be mitigated? Will raptors and other birds perch on those fences?

65 Page 2-32, Item 20: I feel that BLM should obtain from other agencies some defensible, objective criteria in advance defining under what circumstances they would allow consideration of excepting construction activities from federal and other regulations? Does the DEIS really mean crucial winter ranges here instead of "water" ranges? Will mitigation be assured? How? It appears that BLM has a tendency to except projects from seasonal restrictions. It that continues, will these mitigation measures be effective?

66 Page 2-32, 2.2 Alternative A: I refer BLM to my previous concerns about the lack of a reasonable range of alternatives being analyzed in detail. I don't believe the DEIS fulfills the intent of NEPA here. There is probably a greater chance that the impacts of Alternative A are -

66 cont. closer to those of the Proposed Action because some project facilities and operations would still occur in sensitive areas and the road and powerline infrastructure would probably be nearly as extensive. For some resources, the Foote Creek Rim project would have the greatest impact and there is little evidence in the DEIS that much if any of the 40% reduction would apply to that phase. The analysis in the DEIS is deficient by the lack of actual quantification other than assuming a net 40% reduction due to fewer towers. I question the validity of assumptions for Alternative A. This alternative does not provide much useful information for decison-making. I have noted that better alternatives exist and have suggested some above. Wouldn't the public interest be better served by analyzing a more complete and appropriate range of alternatives for a precedent-setting project like this? Again, the alternatives considered in detail raise questions about whether the desires and schedule of the applicant have unduly influenced BLM's selection of alternatives for detailed consideration (40 CFR 1502.5 and 1506.1). The consideration of a reasonable range of alternatives is an extremely important component of implementing NEPA in the decision-making process (40 CFR 1502.2 and 1502.14).

67 Page 2-33, 2.3 No Action Alternative: I don't feel that the No Action alternative receives serious consideration in the DEIS. The DEIS mentions the Medicine Bow Project elsewhere and there appear to be other proposals for windplants in the area. Wouldn't the development of one of these other projects under No Action also fulfill the purpose and need (provide a wind-generating facility in Wyoming) stated for this EIS?

68 Page 2-33, 2.4 Alternatives Considered but Rejected: I must again take issue with the DEIS for avoiding a detailed analysis of reasonable alternatives for this precedent-setting project. The EIS does not make decisions - it is a vehicle for helping to objectively evaluate environmental consequences. I think the DEIS does not satisfy the intent of NEPA. I again strongly encourage BLM to reconsider its position on alternative analysis and supplement the DEIS with a proper analysis of reasonable alternatives. I've noted other reasonable alternatives above. CEQ Regulations (40 CFR 1502.2, 1502.5 and 1506.1) and other guidance (Federal Register 46(55), 18026-18038, 3/23/1981) direct agencies to consider alternatives other than those preferred by the applicant, that applicant preferences and schedules should not limit the agencies' consideration of alternatives, and that agencies can consider alternatives beyond their jurisdiction. The acknowledgement of at least one other wind power proposal outside the KENETECH project indicates other feasible alternatives exist within the wind corridor. Also, relocating Phase I in the Simpson Ridge area is another alternate location and project that may have reduced environmental consequences while fulfilling the purpose and need of the project. Phase I could be sited in the Simpson Ridge area to avoid sensitive areas better than at Foote Creek Rim since the former is more expansive. The DEIS documents significant resources that would be impacted by Phase I at Foote Creek Rim.

69 Page 2-33, ¶6 and Page 2-34, Table 2.9: Windspeed information described here and in Table 2.9 on Page 2-34 is incomplete and is not of sufficient resolution to substantiate that no other alternative sites are viable. The DEIS should provide data on windspeed, direction, frequency and intensity at a finer scale. That information is crucial to the decision. The interpretation of this table is confounded by the comparison of areas of drastically different sizes and does not reflect the

70 variability of conditions within sites. How frequently and for how long would WTGs not generate

70 cont. 71-72 power because wind conditions exceeded operational limits? Table 2.9 should provide statistical confidence intervals for the estimated costs. It is hard to follow the cost estimates discussed in the text when compared to the table because of different units. These should be consistent.

73 Page 2-35, ¶2: The purpose of comparing alternatives is to evaluate environmental consequences to aid decision making (40 CFR 1500.2). I don't feel that the DEIS demonstrates that all other sites are unsuitable for wind power generation. Suggestions in the DEIS elsewhere indicate other sites may indeed be suitable.

74 Page 2-35, ¶3: The DEIS should cite the official 1992 comments from the Wyoming Game and Fish Department that no alternatives were suitable.

75 Page 2-35, ¶4; Expand or Reduce the Project Area Size: The DEIS shows that Phase I is located within sensitive wildlife habitats. KENETECH indicated that the Simpson Ridge area is suitable. The DEIS does not explain why Phase I could not be located within the Simpson Ridge area and avoid more sensitive wildlife habitats. Transmission line construction would be shorter if Phase I were placed in the Simpson Ridge area. This would presumably be cheaper for KENETECH and PacifiCorp. I recommend BLM reevaluate their position and refer back to my previous comments on alternative selection. Since Phase I (Foote Creek Rim) is the area of the project where most detailed analyses have been conducted, it may be appropriate to exclude other parts of the project until the necessary and adequate data for analyzing those portions of the project are completed. Studies on wind and snow, (page 3-2), ambient noise (page 3-21), and vegetation (page 3-24) have not been completed for Simpson Ridge, according to the DEIS. Most wildlife inventories for that area are less intensive than surveys being conducted at Foote Creek Rim (pages 3-36, 3-58).

76 Page 2-35, ¶5, Construct the Project in One Phase: Monitoring impacts under Phase I will be limited under the present procedures and schedules uness modifications are made. I can find very little evidence that prior knowledge from other wind power projects has been applied at Foote Creek Rim to minimize impacts to wildlife and other resources by relocating sites or altering the number of towers or placement of WTG strings.

77 Pages 2-38 - 2-45; Table 2.11: CEQ regulations require that mitigation effectiveness be described. I can't find that here or elsewhere in the DEIS. What supporting documentation can BLM provide to demonstrate the effectiveness of proposed mitigation measures. Also, how does 78 the precedent-setting nature of this project enter into that determination? The DEIS fails to 79 acknowledge that wildlife will be impacted by the project on areas outside crucial winter ranges. I 80 don't think any of the mitigation would be effective. Cumulative impacts may be more significant than BLM assumes (40 CFR 1508.7). I again question the assumption that Alternative A would 81 only result in a 40% lower impact than the proposed action. Will monitoring be sensitive enough to reliably detect impacts? At what level of effect?

82 Page 2-42 - 2.43, Table 2.11 (con't), Wildlife: Will the project impact big game on noncrucial winter ranges? What mitigation is provided and how effective is it? I can't find where loss of

82 cont. habitat quality and function will be mitigated? Impacts due to displacement and stress are not quantified.

83 I can't find where 40 CFR 1508.20 defines acquiring federal and state permits for incidental take of federally protected birds as mitigation. How will these impacts be compensated? The BLM's project leader for this EIS has stated that migratory birds will be killed at any site so there does not appear to be any effort to avoid certain areas to minimize impacts to birds. Is it reasonable to assume that impacts would be of the same magnitude for all species at all sites? This has been an issue regarding alternative selection. The DEIS indicates that Phase I has not been designed to minimize impacts to raptors or mountain plovers on Foote Creek Rim. When would such mitigation be used and how will unavoidable impacts be compensated? The table does not provide 84 mitigation for impacts to sage grouse on leks? Is any consideration given to avoiding sage grouse wintering areas?

85 Page 2-44, Table 2.11 (con't), Land Use: Will the project result in changes in the utility of lands? I do not see where losses in the utility of lands and their quality for recreation will be compensated.

3.0 AFFECTED ENVIRONMENT

86 Page 3-0, ¶5, Climate and Air Quality: Because it is germaine to the issues considered in this DEIS, characteristics of the wind resource for the KENETECH project area and surrounding areas should be described in more detail, as I suggested above. The DEIS should include descriptions of wind patterns within the wind corridor for several sites within the project area including the frequency, intensity, and duration of wind speeds on a seasonal basis. How do these vary seasonally, and across the area?

87 Page 3-0, ¶7: The ability for wind to transport snow across Foote Creek Rim suggests that wind erosion of soil and other particles from sites disturbed for project construction could deposit these downwind into drainages and wetlands. Was this considered in the DEIS?

88 Page 3-21, ¶2: The DEIS should note that wildlife may be adversely displaced by noise and other disturbances outside crucial big game ranges.

89 Page 3-24-3-77, Biological Resources: There appear to have been several delays in initiating wildlife surveys, changes in methodology, and limitations on areal coverage. These should identified and discussed in the DEIS. Has any scientifically valid review of the adequacy of baseline data and monitoring techniques been performed? What level of sensitivity (i.e., what type and magnitude of effect) do preliminary results indicate the methodology will be able to detect? That should be disclosed in the DEIS. When were big game surveys initiated? How many were conducted prior to the release of the DEIS?

90 Page 3-32, ¶4; 3.2.2 Wildlife and Fisheries: Although data collection has been ongoing for about one year, methodology and coverage have varied. Not all wildlife resources have been monitored since February 1994. The DEIS should describe the level and reliability of wildlife resource

90 cont. information collected for the project and assess its utility for determining baseline conditions and impacts.

91 Page 3-34, First ¶: Don't the Wyoming Game and Fish Department's big game population objectives relate to postseason populations and not end-of-biological year estimates as stated in the DEIS? This should be clarified.

Page 3-36, Table 3.10: The preceding comment applies to this table.

Page 3-40, ¶¶ 2-4, Page 3-42, ¶5, Page 3-44, ¶6: Again, don't population objectives for mule deer, white-tailed deer and elk, respectively, refer to postseason populations and not end-of-year estimates as implied.

92 Page 3-46, ¶4: The DEIS indicates that raptor observations peaked during migratory periods. These are based on diurnal observations. Many bird species migrate at night and at heights above the ground that differ from typical habitat use by those species. How was avian nocturnal use monitored? Radar studies have been used at other wind power projects to help evaluate this avian use. The National Renewable Energy Lab (NREL) in Golden, Colorado provides funding for such studies. It is my understanding that KENETECH has received funding from NREL for assessing wind plant impacts on birds at other projects. If nocturnal avian use was not evaluated here, why not? Isn't that information important for understanding how the project may impact birds? How does lack of these data affect BLM's interpretation of impacts and significance?

93 Page 3-48, Figure 3.2: It would be more meaningful if this figure included confidence intervals about the mean number observed per monthly survey to help assess reliability of the data.

94 Pages 3-49-3-51, Maps 3.14-3.16: WTG strings and associated roads as shown on Map 2.1 on page 2-6 should be superimposed on these figures to evaluate how the windplant has been sited to avoid impacts to raptors.

95 Page 3-52, ¶4: It is my understanding that raptor nest searches were conducted relatively late in 1994 nesting season. Leaf-out and harsh winds also apparently reduced the ability of surveyers to locate nests and determine their status. The DEIS should should describe the limitations of the baseline data raptor nesting.

96 Page 3-53, ¶2, Page 3-54, Table 3.13: I think the statement on page 3-53 that raptor nesting density is greater in the Simpson Ridge area than at Foote Creek Rim should be clarified. Map 1.2 on page 1-3 shows the Simpson Ridge area as being in excess of 5 times the acreage of the Foote Creek Rim area. If buffer areas differ between sites, how does that influence this comparison? A finer breakdown would be helpful. Do the composition of habitats included in the areas differ? Were no accipiter nests found? What percentage of nests are missed? Table 3.13 suggests that composition of raptor nests between the two areas are different. This deserves some discussion. Does raptor species composition relate to mortality risk and frequency?

97 Pages 3-59-3-62, Sections 3.2.2.5 (Waterfowl, etc.) and 3.2.2.6 (Passerines): My comments about nocturnal use by raptors also is relevant here. How was nocturnal bird use evaluated, particularly during migration periods, since this is important at other wind project sites? Was additional funding through NREL considered for evaluating these impacts? Would these be addressed in the future aspects of the project?

98 Page 3-61, Figure 3.3: Again, confidence intervals should be provided with the means on these figures to help readers assess the quality of the data presented.

99 Page 3-73, Map 3.17: It would be illustrative to overlay the WTG strings and roads on Map 2.1 on page 2-6 on this map of mountain plover sightings to demonstrate how facilities have been located to avoid impacts to this species. Would the Simpson Ridge project impact this species to the same extent?

100 Page 3-115, Map 3.23: Visual resource classes south of I-80 should be included since the project will impact visual resources for recreationists on the national forest and the Wick Brothers Habitat Unit of the Wyoming Game and Fish Department. How do BLM visual classes compare to those on nearby national forest? The text should be revised to include these in the analysis.

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

101 I again question the effectiveness of various mitigation measures prescribed in the DEIS and whether these will be enforced. Little information is provided to substantiate that mitigation measures would be effective. The DEIS leaves open just what will be mitigated and where. This is critical to the evaluation of impacts due to the project. The DEIS should state that many significant impacts will not be mitigated, nor have many impacts been adequately assessed. Again, 102 the precedent-setting nature of the project warrants greater consideration of environmental consequences. This analysis is constrained by the lack of reasonable alternatives considered in 103 detail. As discussed in 40 CFR 1508.27, significance increases with the degree of uncertainty associated with the project. The lack of adequate baseline, and limitations on the design of control 104 and monitoring protocols, will likely result in weak criteria for determining the need for and effectiveness of mitigation from this project. Very little quantitative analysis has been provided to show the accuracy and reliability of these protocols. I again feel that the EIS should incorporate 105 a range of mitigation contingencies since PODs are typically weak.

106 Significance criteria for some resources, as discussed below, are often unresponsive to issues and concerns raised about the level and nature of impacts. Many of the significance criteria are not tied directly into monitoring protocols. What scientific data support these as meaningful criteria for application to this project?

107 I again reiterate my concern that about the assumption that Alternative A represents a 40% reduction in impacts from the Proposed Action.

108 Page 4-1, ¶1: The DEIS should identify which mitigation and monitoring measures can and will be conditioned to a BLM permit. How does this relate to the statement in the last part of ¶3?.BLM

108 cont. should also specify which mitigation items are not likely to be enforced, when and where they will not be enforced, and what these mean to the assessment of impacts and consequences. Will BLM's policy on not requiring off-site mitigation influence the impacts of the project?

109 Page 4-1, ¶3: What methodology and evaluations support the DEIS interpretations that prescribed mitigation would be effective and that residual impacts are accurately determined? Will mitigation measures for nonfederal lands become a condition of the permit?

110 Page 4-1, ¶5. How do the precedent-setting nature of the project and uncertainty about the impacts affect the assessment of significance in the DEIS as prescribed in 40 CFR 1508.27? What scientific information supports the determination of significance criteria? I again am concerned

111 with the BLM's interpretation that only impacts to big game on crucial winter ranges would be adverse to those populations? What scientific data support that position?

112 Page 4-3, ¶2: There do appear to be other proponents besides the Medicine Bow windfarm project that are interested in windfarm development in the vicinity of the KPPA. These should be anticipated. BLM could contact area landowners to determine other potential projects.

113 Page 4-3, ¶3. This portion of the DEIS should disclose that the impact of the project would exceed the acreage disturbed because of changes in utility of surrounding areas and displacement of wildlife.

114 Page 4-26, Last ¶: What scientific criteria will BLM "deem appropriate" for use in determining when construction activities would not be restricted in sage grouse nesting habitat? How are "critical winter periods" defined?

115 Page 4-28, 4.1.8.5 Cumulative Impacts: Additional mitigation for noise impacts should be identified in the DEIS and implemented if needed.

116 Page 4-29, ¶5, 4.2.1 Vegetation: Significance criteria are not directly tied to monitoring provisions (see Chapter 5, page 5-14). These should be explicitly identified in the DEIS and incorporated into PODs and reclamation plans. These criteria require that site-specific vegetation inventories be conducted prior to disturbance. Have these inventories been performed?

117 Page 4-31, ¶5. If revegetation is not achieved, will impacts be mitigated off-site? How will the use of crested wheatgrass or other nonnative species with low wildlife habitat values be compensated?

118 Page 4-33, ¶6; 4.2.3.1 Big Game: Significance criteria for big game do not adequately reflect concerns and identified impacts resulting from the project. Big game populations can be significantly impacted on seasonal ranges other than crucial winter ranges. Table 2.11 recognizes that stress and displacement may impact big game populations. The proposed significance criteria do not relate to proposed monitoring protocols for big game (Appendix B). Therefore, the significance criteria described in the DEIS are not meaningful and should be replaced with criteria that reflect physical and psychological habitat loss (avoidance) resulting from the project. Resident segments may respond to impacts of the project differently from

118 cont. nonresident or migratory segments of big game populations. The uncertainty associated with the project should raise the level of significance (40 CFR 1508.27(b)(5)). This places emphasis on obtaining adequate predisturbance and control data. The sensitivity of the monitoring must be defined at the onset.

119 Page 4-34, ¶1: In order to adequately evaluate the impact of the project on big game, adequate preconstruction data are needed prior to Phase I construction.

120 Page 4-34, ¶3: Impacts to pronghorn on winter/yearlong ranges, including displacement, could be more significant than the DEIS acknowledges. The assumption that impacts would be negligible is purely speculative.

121 Page 4-34, ¶4: Moderate impacts to noncrucial winter ranges could cumulatively be significant (*sensu* 40 CFR 1508.27(b)(7)).

122 Page 4-34, Last ¶: I believe the DEIS's reference to Yeo et al. (1984) misleads the reader on the findings of this report. These authors made no statement about how "quickly" pronghorn adapted to increased traffic. The DEIS should point out the substantially different nature of the WTGs and the size of the windplant in that study compared to the proposed project. The DEIS failed to mention that Yeo et al. (1984:58) stated that "This does not presume, however, that development of larger windfields would evidence a similar lack of displacement." Authors of this chapter of the DEIS also failed to disclose that Yeo et al. (1984) found that doe-fawn groups "remained sensitive to traffic even though other group types appear habituated" (Yeo et al. 1984:7). Doe-fawn groups comprise a substantial portion of pronghorn populations. Haven't WTGs been

123 constructed within pronghorn range in Montana? Did EIS preparers contact agency personnel and operators there about any observations on pronghorn responses to windplants?

124 Page 4-37, ¶2: I feel that the DEIS attempts to minimize adverse conclusions in Segerstrom (1982). Segerstrom found pronghorn remained significantly farther from disturbances at mine sites than expected at random (Segerstrom 1982:198). The fact that some animals remain in disturbed areas (e.g., Easterly et al., n.d., Segerstrom 1982) does not negate the fact that other animals were adversely impacted by these projects and were displaced from impacted areas.

125 Page 4-37, ¶4: For adequate evaluation of impacts, intensive monitoring should commence prior to Phase I construction.

126 Page 4-37, ¶5; Page 4-38, ¶2: The assumption that impacts to mule deer would remain negligible is purely speculative.

127 Page 4-38, ¶3: Mule deer studied by Easterly et al. (n.d.) were predominantly nonmigratory. Migratory mule deer may be displaced to a greater extent than nonmigratory segments.

128 Page 4-39, ¶4: Adequate predisturbance monitoring of elk and mule deer should be conducted prior to construction of Phase I if reactions are to be determined.

129 Page 4-40, ¶3: Pronghorn avoid crossing under overhead structures. Is there evidence that pronghorn will move through WTG strings? Is there evidence that elk or mule deer will ignore these structures?

130 Page 4-41, ¶2; Alternative A: The assumption that impacts from this alternative would only be 60% of the proposed project depend highly on the location of the WTGs and other structures in relation to important big game habitats. I have already indicated that the DEIS assumptions may not be correct. It may be more likely that impacts may be closer to the proposed action since WTGs and big game habitat components are not uniformly or randomly distributed, and that both probably coincide with landscape features within the project area.

131 Page 4-41, ¶3-Page 4-43, ¶1; Cumulative Impacts: I am concerned that displacement and impacts to big game on winter ranges may be cumulatively more significant than anticipated by the DEIS. Project impacts would also occur outside of crucial winter ranges. These impacts are not considered in the DEIS. Significance criteria for big game are not responsive to the concerns and impacts of this windplant project. Will off-site mitigation be provided? There has been a substantial amount of impact to these big game herds from other developments and conditions

132 Page 4-44, ¶2; 4.2.3.3 Legislation Relative to Avian Mortality: Legislation and incidental take permits do not mitigate avian mortality due to the windplant project. The DEIS lacks discussion on what measures KENETECH (and other project operators) has (have) taken at other sites to reduce bird mortalities, whether or not they have been permitted for that take, whether or not KENETECH proposes to implement those measures or recommendations from their avian task force for this project, or other actions to reduce mortalities. Didn't NREL provided funding to KENETECH to scientifically evaluate avian mortalities at other projects?

133 Page 4-45, ¶4: It seems inappropriate for the BLM to interpret how the USFWS plans to address avian mortalities of federally protected species unless USFWS provides specific written guidance for this project. The USFWS memo quoted in the DEIS identifies modification of site placement as a means of reducing bird mortalities. The DEIS provides no evidence that WTG strings at Foote Creek Rim have been located to avoid conflicts with raptors and mountain plovers (Map 2.1 vs Maps 3.14-3.17).

134 Page 4-45, ¶5: The DEIS should cite research results from the avian task force. As I noted previously, recommendations from the task force (aside from using tubular towers) such as siting away from sensitive areas have not been applied to Phase I at Foote Creek Rim.

135 Page 4-46, ¶2. This appears to be the first acknowledgment in the DEIS of the precedent-setting nature of the proposed project and the uncertainty associated with the proposal. The DEIS has not identified how significant impacts to raptors can be mitigated. The DEIS criticizes the lack of marked birds to determine population impacts in the Orloff and Flannery (1992) report. Marking

136 birds is not planned for this project. Will the second part of the significance criteria for this DEIS (declining raptor populations) be moot without that type of study? Did NREL help fund KENETECH's telemetry study of golden eagles in California to determine if windplants are jeopardizing population viability for that species. I understand the first phase of that study has

136 cont. been completed. Can information from that study be applied to the proposed project here? Has

137 KENETECH been able to significantly reduce raptor mortalities at other project sites? How have results of other windplant studies been incorporated into the project design and this DEIS?

138 The Orloff and Flannery (1992) report also advocates siting windplants to avoid avian concentration areas. Why didn't the DEIS include reference to Estep, J.A. 1989. Avian mortality

139 at large wind energy facilities in California: identification of a problem. California Energy Commission?

140 Page 4-46, Last ¶: The statements in the DEIS contrast with Orloff and Flannery (1992:xii), that "Even low mortality rates may be significant for rare or protected bird species."

141 Page 4-51, Last ¶: The DEIS should also describe differences in species between California and Wyoming and what this may mean regarding project impacts.

142 Page 4-52, Table 4.15: The table should include other species documented in the KPPA (e.g., peregrine falcon, turkey vulture, etc.).

143 Page 4-53, ¶2: The statement that facilities "within the KPPA would be constructed to minimize impacts to raptors" does not seem to agree with the WTG layout at Foote Creek Rim in relation to raptor information.

144 Page 4-54, ¶5: The DEIS implies that raptor impacts from Phase I would not be mitigated. Is that correct? If not, how will those impacts be mitigated?

145 Page 4-55, Last ¶: It again appears that the DEIS has misquoted Yeo et al. (1984). Yeo et al. (1984:12) stated "Since attendance and location of the Site A lek have been erratic, the effects of wind energy development on sage grouse populations can not be deduced." This suggests the DEIS misleads the reader by stating these authors found no decrease in sage grouse lek attendance due to the WTG construction and operation.

146 Page 4-57, ¶4: How does mountain plover abundance on Foote Creek Rim compare to surrounding areas? Could Foote Creek Rim be a localized concentration area for this species?

147 Page 4-60, ¶5; 4.2.3.7 Passerines: How will the significance criteria related to declining passerine populations be determined?

148 Page 4-62, ¶6; 4.2.3.8 Amphibians and Reptiles: How will the significance criteria for these species be determined if there is no monitoring of these populations?

149 Page 4-66, ¶5; Peregrine Falcon: Have surveys been adequate to verify that this species is not nesting in the vicinity of the project given year-round observations?

150 Page 4-67, ¶5; Mountain Plover: Compare Map 3.17 with Map 2.1 showing the relation of mountain plover observations to WTG strings on Foote Creek Rim.

151 Page 4-87, ¶2; 4.5 Land Use: Significance criteria should also consider whether the windplant would result in changes to the utility of the land. For instance, if recreational opportunities on public access areas like the Wick Brothers Habitat Unit are substantially altered by the windplant, then impacts would be considered significant.

152 Page 4-89, 4.5.2.5 Recreation: Mitigation described in this section is inadequate to address changes that might occur in the utility of conservation easements held by the Wyoming Game and Fish Department as a result of the windplant. Appropriate, in-kind mitigation should be assured.

153 Page 4-97, 4.8 Unavoidable Adverse Impacts: This section of the DEIS is weak and ambitiously assumes mitigation will be adequate and effective for most resources. As noted above, many impacts to wildlife resources will not be compensated through this project.

5.0 MITIGATION AND MONITORING

154 I have noted several areas above where I feel the monitoring and mitigation provisions described in the DEIS are inadequate. The precedent-setting nature of this decision raises significant concerns that adequate mitigation and monitoring programs be established prior to construction. I think mitigation contingencies need to be placed in the EIS rather than be decided in the POD.

155 Page 5-1, ¶2: A range of mitigation measures for the project should be identified in advance, with objective criteria to trigger their adoption in PODs. The precedent-setting nature of the project warrants guidelines for the AO to follow in determining mitigation requirements.

156 Page 5-1, ¶1: I have concerns that the development of a POD prior to the FEIS may not allow for the formulation of the most appropriate project given concerns and analyses that may be required prior to a ROD. This raises concerns that 40 CFR 1506.1(a)(2) and (c)(3) may have been violated during this EIS process. The POD appears to have been developed prior to a fully informed and objective environmental analysis with public review.

157 Page 5-8, 5.1.3.11 Wildlife and Fisheries: It again appears that many impacts to wildlife on high value habitats are not being given adequate consideration and mitigation. This should be corrected. Objective, biological criteria for excepting seasonal stipulations should be identified and included as part of the EIS. BLM has been lax in upholding stipulations on oil and gas projects. I question whether prescribed mitigation will be effective unless safeguards are included.

158 Page 5-9, ¶3; Raptors: Again, it does not appear that current information is being applied to minimize impacts from Phase I of the project. Appropriate control and baseline information in a predisturbance environment will not be adequate to gauge impacts, as described. Very little of the recommendations from KENETECH's avian task force appear to have been applied to this project.

159 Page 5-10, ¶4; Amphibians and Reptiles: Please explain the relation of project odors to mitigation for these species.

160 Page 5-10, Last ¶: The importance of Foote Creek Rim to mountain plovers has already been documented. Avoiding individual nests would not adequately mitigate significant impacts due to the windplant.

161 Page 5-12, 5.1.3.15 Land Use: This section provides no mitigation for recreational uses such as occur on the Wick Brothers Unit. This seems to be an omission of the DEIS.

162 Page 5-13, 5.2 Monitoring: I am still concerned that the DEIS is based upon an inadequate baseline, and that control and monitoring protocols lack sensitivity for a precedent-setting project as this with a large amount of uncertainty. As scheduled, Phase I construction may confound attempts to determine impacts. More than two years of adequate baseline information are needed, yet the DEIS does not provide for this. The reliability and sensitivity of monitoring protocols have not been demonstrated.

163 Page 5-14, 5.2.7 Vegetation: Vegetation monitoring does not appear to be linked to the significance criteria identified elsewhere in the DEIS.

164 Page 5-14, 5.2.8 Wildlife and Fisheries: Adequate baseline monitoring for big game needs to commence well in advance of Phase I construction. When was it started and how frequently have surveys been conducted? Preconstruction and construction activities may confound efforts to determine impacts unless predisturbance information are properly obtained. Impacts to wildlife outside of crucial winter ranges are not being given adequate consideration. Subsequent phases of the project should not be permitted until baseline and control information is considered adequate to assess impacts.

I offer a few general comments on the monitoring protocols in Appendices A and B. I've previously indicated that I have substantial concerns about the design and sensitivity of this monitoring.

APPENDIX A

165 The Avian Studies Protocols suggest that less than two years of intensive predisturbance data
166 will be obtained. This would limit the ability to assess impacts and mitigation success. The monitoring protocols provide limited information about the ability to detect effects and the
167 success of applying such monitoring designs in other areas. Nocturnal use is still not being evaluated as is common in other windplant evaluations. The Simpson Ridge surveys (page A-16)
168 may not provide an adequate baseline. The protocols do not address elements of current impact study designs. I refer BLM to consult recent papers published in the journals, Ecology and Ecological Applications on the design of before/after/control/impact studies. The monitoring procedures should be revised.

APPENDIX B

169 The General Windpower Monitoring Protocols also are designed to obtain inadequate predisturbance data. More than two years of baseline data should be obtained (refer to journals mentioned above). The impact design of Green (1979) as referenced on page B-9 has received considerable criticism in recent years. The protocols do not provide substantiating evidence of their effectiveness and application in previous impact studies. What level of impact can be determined? How are impacts to resident vs. migrant segments of populations sorted out? When were surveys initiated?

170 The "weight of evidence" approach (page B-9) leaves much to discretion and is no substitute for valid scientific evaluations. A table explaining what can and cannot be reliably evaluated with the survey protocols should be prepared for the EIS. Methods should be refined to obtain adequate information to assess the effects of the project.

171 What is the "WGFD Pronghorn Survey Protocol" mentioned on B-31? Is that the obsolete trend count technique? The protocol for using clear window templates is extremely sensitive to measurement error. Has this method been used frequently by project personnel? How accurate is this method? Where was it tested? How high will the plane be flown? Can mule deer be reliably observed during these surveys?

172 How sensitive are the pellet counts at detecting changes (page B-33)? Can consistent use by a few individuals be distinguished from occasional use by larger numbers? How has this monitoring worked elsewhere? Are assumptions of the method reasonably met? Will these be evaluated as part of this project?

173 Will sampling intensity be increased if statistical tests indicate power is low (page B-47)?

APPENDIX F

174 The perspectives of the photographs and visual simulations in this appendix appear to be from a wide angle based upon the identified location where the images were taken. If that is so, the images would tend to minimize the appearance of the WTGs from how they actually would appear. The DEIS should identify the equipment used and whether or not the images are from a "normal" perspective.

In conclusion, I appreciate the opportunity to review the DEIS. I believe there are several areas where the DEIS requires substantial reevaluation, as I've noted (alternatives, data adequacy, etc.). I strongly encourage BLM to perform a substantial reevaluation and provide public review. The project is significant for its scope, nature and precedence setting potential. The public interest is best served by conducting a careful and thorough evaluation. Unfortunately, the DEIS does not

fulfill that purpose. Thank you.

Sincerely,

Richard J. Guenzel
4810 Sherman Hill Rd. #C
Laramie, WY 82070

Comment AP1: See Section 8.2.7 in the FEIS.

Comment AP2: Due to concerns raised about the possible major impacts associated with this project, BLM has decided to complete additional NEPA analyses for each subsequent phase of development. BLM prefers to grant a ROW for the full project development to give KENETECH prior rights on public land to prevent nuisance mineral claims.

Comment AP3: See Sections 8.2.3.1, 8.2.4, 8.2.6, and 8.2.7 in the FEIS.

Comment AP4: See Section 8.2.4 in the FEIS.

Comment AP5: The biological assessment is now available from the BLM.

Comment AP6: See Section 8.2.5 in the FEIS.

Comment AP7: See Section 8.2.6 in the FEIS.

Comment AP8: Prior to 1986, CEQ regulations required agencies to conduct a worst-case analysis when information was incomplete or unavailable. In 1986, CEQ revoked the worst-case analysis requirement. See Section 8.2.5 in the FEIS.

Comment AP9: See Sections 8.2.1 and 8.2.11 in the FEIS. You correctly identify the possibility that Alternative A would not always represent a 40% reduction in impacts. In many places in the DEIS (e.g., page 4-9, column 2, paragraph 4) the uncertainty of the 40% reduction is discussed. Depending on the resource being analyzed, factors such as facilities placement would strongly influence the level of impact associated with Alternative A, as it would under the Proposed Action. In general, however, construction of 40% fewer facilities (fewer turbines, roads, substations, etc.) would result in a proportional decrease in impacts (e.g., loss of habitat would be diminished by approximately 40%).

Comment AP10: Opposing views concerning 1) alternatives considered in detail 2) the significance of impacts, 3) the suitability of proposed mitigation measures, and 4) the adequacy of baseline data, and 5) the adequacy of the monitoring program are discussed in the FEIS. See Sections 8.2.1, 8.2.12, 8.2.5, 8.2.4, and 8.2.3, respectively. Opposing views concerning interpretation of available data are addressed as individual responses to comments.

Comment AP11: See Section 8.2.5 in the FEIS.

Comment AP12: See response to Comment AE151 in the FEIS, where Table 8.3 describes the linkage between significance criteria and monitoring.

Comment AP13: See Sections 8.2.5 and 8.2.6 in the FEIS.

Comment AP14: See Section 8.2.7 in the FEIS.

Comment AP15: See Section 8.2.5 and 8.2.6 in the FEIS.

Comment AP16: See response to Comment AE31 in the FEIS.

Comment AP17: See Sections 8.2.1, 8.2.3, and 8.2.5 in the FEIS.

Comment AP18: There is no inherent contradiction between the two sections; however, a reference to Section 1.1 has been added to page 2-33 for clarification.

Comment AP19: See Section 8.2.1.1 in the FEIS.

Comment AP20: The capacity factor of the Windplant is estimated to be approximately 35% (i.e., the Windplant would produce, on average, 35% of 500 MW, or 175 MW). Capacity factor is estimated based on data such as the estimated number of hours wind speed would be too high or too low such that turbines were idle, the maintenance schedule, etc.

Comment AP21: See response to Comment AE26. Tiering to the GDRA RMP/EIS is appropriate so that the rationale for certain stipulations (e.g., precluding construction in sensitive wildlife habitat during critical periods) does not have to be reanalyzed in the DEIS.

Comment AP22: See response to Comment AP10. See also Sections 8.2.1, 8.2.3, 8.2.4, 8.2.5, and 8.2.12 in the FEIS.

Comment AP23: Mariah provided a statement of no conflict of interest prior to being awarded the contract to prepare the EIS. Western Ecosystems Technology, Inc. (WEST) is under contract with KENETECH to design and implement the monitoring program. Appendix B, a description of the monitoring program, was provided by WEST. However, disclosure statements are required only from EIS preparers, not from other parties submitting background papers (*Sierra Club v. Lynn*, 5th Cir. 1974, 502 F.2d 43, 58-59 *reh'g denied*, 5th Cir. 1974, 504 F.2d 760, *cert denied*, 1975, 421 U.S. 994). As the EIS preparer, Mariah independently reviewed WEST's document prior to including it in the DEIS.

Three other issues concerning conflict of interest can be clarified as follows: 1) WEST's contract with KENETECH does not contain any incentive clauses or guarantees of any future work on the project therefore, no conflict of interest exists (C.E.Q. 1983 Guidance Regarding NEPA Regulations, 48 Fed. Reg. 34263, July 28, 1993 *Northern Crawfish Frog v. Federal Highway Administration*, D. Kan 1994, 858 F. Supp. 1503, 1525-29). 2) A consulting firm which has been involved in developing initial data and plans for the project need not be disqualified from EIS preparation (Forty Questions Answer 17a). 3) A firm with no interest in the project outcome may later bid for future work on the project if it is approved (Forty Questions, Answer 17b).

Comment AP24: See Section 8.2.1 in the FEIS.

Comment AP25: See Section 8.2.7 in the FEIS.

Comment AP26: See response to Comment AP9 in the FEIS.

Comment AP27: See Section 8.2.1 in the FEIS.

Comment AP28: See Section 8.2.6 in the FEIS.

Comment AP29: See response to Comment W3 and Section 8.2.10 in the FEIS.

Comment AP30: Table captions for Tables 2.1(a) and 2.1(c) have been changed to indicate *surface* disturbance.

Comment AP31: See Sections 8.2.3.1, 8.2.4, 8.2.5, and 8.2.6 in the FEIS.

Comment AP32: See Sections 8.2.3.1, 8.2.4, and 8.2.6 and response to Comment AL24 in the FEIS.

Comment AP33: See Section 8.2.5 in the FEIS.

Comment AP34: See response to Comment AE30 in the FEIS.

Comment AP35: See response to Comment AE31 in the FEIS.

Comment AP36: See Sections 8.2.3.3 and 8.2.6 in the FEIS.

Comment AP37: See Section 8.2.4 in the FEIS.

Comment AP38: See response to Comment AP20.

Comment AP39: See response to Comment AE34 in the FEIS.

Comment AP40: See Section 8.2.5 in the FEIS.

Comment AP41: See Section 8.2.5 in the FEIS.

Comment AP42: It is unlikely that any trees would have to be cleared during Windplant development. If trees used by nesting raptors or other sensitive migratory birds must be cleared, mitigation could include erecting nesting platforms outside of the development area. BLM would consult with the WGFD should this contingency arise.

Comment AP43: The POD for Phase I describes erosion control measures that would be implemented to minimize sedimentation in Rock Creek and Foote Creek. Furthermore, a Stormwater Pollution Prevention Plan will be prepared in accordance with the Clean Water Act.

Comment AP44: See response to Comment W3 and Section 8.2.10 in the FEIS.

Comment AP45: BLM does not require off-site mitigation for impacts that cannot be mitigated on-site. LOP surface disturbance would not be mitigated during the LOP; however, upon Windplant decommissioning, all disturbed areas would be reclaimed (see Section 2.1.10 in the DEIS).

Comment AP46: See Sections 8.2.5 and 8.2.6 in the FEIS.

Comment AP47: See Section 8.2.4 in the FEIS.

Comment AP48: See Section 8.2.5 and responses to Comments AE44 and AE115.

Comment AP49: See Section 8.2.5 in the FEIS.

Comment AP50: See Section 8.2.2 in the FEIS.

Comment AP51: See response to Comment AE44 in the FEIS.

Comment AP52: See Section 8.2.5 in the FEIS.

Comment AP53: See Sections 8.2.5 and 8.2.12 in the FEIS.

Comment AP54: See Section 8.2.5 and response to Comment AE55 in the FEIS.

Comment AP55: See response to Comment AP45 in the FEIS.

Comment AP56: See response to Comment AE100 in the FEIS.

Comment AP57: See response to Comment AP43 and Section 8.2.3.1 in the FEIS.

Comment AP58: Whereas Item 9 refers to general construction practices, for which surface disturbance within 500 ft (152 m) of perennial streams and wetlands would be avoided, Item 12 refers to the permanent placement of transmission line structures; therefore, these stipulations are consistent with one another. See Chapter 5.0 in the DEIS for mitigation measures (including avoidance, where feasible) for sage grouse leks, raptor nests, wetlands, and other sensitive areas.

Comment AP59: See response to Comment AE49 in the FEIS.

Comment AP60: See response to Comment AE77.

Comment AP61: See response to Comment AE55.

Comment AP62: See Section 8.2.5 in the FEIS.

Comment AP63: Lek surveys were conducted in 1994 and 1995 using standard survey methods (described in Appendices A and B in the DEIS). Therefore, lek inventories have been adequate to verify activity at leks. Restrictions would be placed on construction around known lek sites -- text has been modified accordingly. Impacts on private land would be mitigated as described in Section 8.2.5. It is not known how many leks would not be mitigated; please see response to Comment AE55 in the FEIS.

Comment AP64: Because BLM does not require off-site mitigation for impacts that cannot be mitigated on-site, substation construction would result in the loss of approximately 12 ac (for the full Windplant) of wildlife habitat which would not be mitigated. Birds may perch on fences around substations. If this were to become a problem, the technical committee may recommend installing antiperching devices on these fences.

Comment AP65: See response to Comment AE55 in the FEIS. "Water" has been changed to "winter" as requested. See Section 8.2.5 in the FEIS.

Comment AP66: See Sections 8.2.1, 8.2.11, and response to Comment AP9 in the FEIS.

Comment AP67: See response to Comment W9 in the FEIS.

Comment AP68: See Section 8.2.1 in the FEIS.

Comment AP69: See Section 8.2.1.1 in the FEIS.

Comment AP70: See response to Comment AP20.

Comment AP71: Confidence intervals range from 90-95%.

Comment AP72: Text has been revised to ensure consistency with Table 2.9.

Comment AP73: See Section 8.2.1.1 in the FEIS.

Comment AP74: See Section 8.2.1.2 in the FEIS.

Comment AP75: See Sections 8.2.1 and 8.2.12 in the FEIS.

Comment AP76: See response to Comment AE44 and Section 8.2.12 in the FEIS.

Comment AP77: See Section 8.2.5 in the FEIS.

Comment AP78: See Section 8.2.7 in the FEIS.

Comment AP79: The DEIS acknowledges impacts to wildlife on areas outside crucial winter ranges on page 4-34, column 2, paragraph 1, line 5; page 4-34, column 2, paragraph 2, line 1; page 4-37, column 2, paragraph 2, line 1; page 4-37, column 2, paragraph 3, line 13; page 4-38, column 1 paragraph 2, line 8; page 4-38, column 2, paragraph 3, line 8; page 4-39, column 1, paragraph 2, all, and paragraph 3, line 1, to name a few. See Section 8.2.5 in the FEIS.

Comment AP80: See Section 8.2.8 and Section 2.2 in the FEIS.

Comment AP81: See Section 8.2.3.1 in the FEIS.

Comment AP82: See response to Comment AP79. See Section 8.2.5 in the FEIS. Impacts due to displacement and stress are unknown; big game behavior around the development would be monitored (see Appendix B in the DEIS).

Comment AP83: Text in Table 2.11 has been modified to clarify the impact and proposed mitigation. See Sections 8.2.1.3, 8.2.2, 8.2.5, and 8.2.12 in the FEIS.

Comment AP84: Consideration has not been given to sage grouse wintering areas because these areas are not considered critical to sage grouse population dynamics.

Comment AP85: Land use impacts are discussed in Section 4.5 in the DEIS. Because the proposed development is compatible with existing land uses within the KPPA, BLM views the development as an added land use, thereby supporting BLM's mandate for multiple use land management. See Section 8.2.10 in the FEIS for a discussion of impacts and mitigation pertaining to recreation.

Comment AP86: See Section 8.2.1.1 in the FEIS.

Comment AP87: See response to Comment AP43.

Comment AP88: See response to Comment AP79. Noise displacement effects are discussed on page 4-40, column 2, paragraph 3 in the DEIS.

Comment AP89: The methodologies used for avian wildlife surveys, survey schedules, and areal coverage are described in Appendices A and B in the DEIS. See Sections 8.2.3 and 8.2.4 in the FEIS. Big game surveys were initiated in March 1995; none were conducted prior to release of the DEIS.

Comment AP90: See Section 8.2.4 in the FEIS.

Comment AP91: Text has been modified as requested.

Comment AP92: See response to Comment AE71.

Comment AP93: Standard errors have been calculated and error bars have been added to the figures. Figures 3.2A and 3.2B in the DEIS were based on the total number of raptor species observed per month divided by the number of survey days for that month. These numbers have been recalculated by averaging the total number of species per survey by month to give a more representative overview of the data. This eliminates the tendency to underrepresent species which were commonly observed (i.e., golden eagle).

Comment AP94: An overlay of the proposed turbine string locations and associated roads (Appendix H) has been provided for use with Maps 3.14 A-D, 3.15 A-F, 3.16 A-G, and 3.17 in Section 3.2 of the FEIS. See Section 8.2.12 in the FEIS.

Comment AP95: See response to Comment AE77.

Comment AP96: Because density is computed as number per square mile, the comparison made on page 3-53 is not affected by the different areas surveyed and is therefore valid as stated. Habitat mapping has not been completed within the Simpson Ridge area. No accipiter nests were found. See response to Comment AE83.

Comment AP97: See response to Comment AE77.

Comment AP98: Standard errors have been calculated and error bars have been added to Figure 3.3 in the DEIS. Figure 3.3A in the DEIS was based on the total number of passerine species observed per month divided by the number of survey days for that month. These numbers have been recalculated by averaging the total number of species per survey by month to give a more representative overview of the data. This eliminates the tendency to underrepresent species which were commonly observed (i.e., horned lark).

Comment AP99: An overlay of the proposed turbine string locations and associated roads (Appendix H) has been provided for use with Maps 3.14 A-D, 3.15 A-F, 3.16 A-G, and 3.17 in Section 3.2 of the FEIS. Mountain plovers were not observed during biweekly surveys in 1994-1995 on the Simpson Ridge area, nor have they been observed in the Simpson Ridge area during 1995 monitoring studies. The monitoring plan (Appendix B in the DEIS) proposes intensive surveys for this species to determine the number of birds, number of nesting pairs, clutch size, and number of young hatched within the KPPA. However, it is currently unknown if and to what extent mountain plovers use the Simpson Ridge area.

Comment AP100: The visual impact analysis conducted for this project resulted in a conclusion of significant impact. Since the key observation points, particularly along I-80, are well-traveled and in closer proximity (i.e., a greater proportion of foreground is affected) to the KPPA than areas south of I-80, analysis of visual impacts from south of I-80 would not change the conclusion of significant

impact. Visual classes as defined by the BLM GDRA RMP indicate the degree of acceptable visual change *within a characteristic landscape* (i.e., the actual area to which modifications are proposed), rather than the areas from which proposed changes might be visible. The project area does not extend south of I-80; therefore, visual classes south of the Interstate are not relevant to the discussion.

Comment AP101: See Section 8.2.5 in the FEIS.

Comment AP102: See Sections 8.2.1 and 8.2.7 in the FEIS.

Comment AP103: See Section 8.2.4 in the FEIS.

Comment AP104: See Sections 8.2.3.1, 8.2.4, and 8.2.5 in the FEIS.

Comment AP105: See Section 8.2.5 in the FEIS.

Comment AP106: As stated on page 4-1, column 2, paragraph 2, line 7 in the DEIS, significance criteria were established for those resources for which significance criteria can be reasonably supported by scientific or regulatory considerations. Consideration was given to issues and concerns raised about the level and nature of impacts; for example, the lengthy treatment of legal issues associated with bird mortality and the development of significance criteria for avian wildlife were included in response to scoping comments. See Table 8.3 in the FEIS for a description of the linkage between significance criteria and the monitoring program.

Comment AP107: See response to Comment AP9 in the FEIS.

Comment AP108: All mitigation measures described in the DEIS and FEIS would become a binding part of the ROW grant. Monitoring (wildlife, reclamation, etc.) would also become part of the ROW grant with the caveat that monitoring protocols could be altered if deemed appropriate by the AO (under advisement from the IDT and the technical committee). All mitigation measures would be enforced. See Section 8.2.5 in the FEIS.

Comment AP109: See Sections 8.2.3.1 and 8.2.5 in the FEIS.

Comment AP110: See Section 8.2.7 and response to Comment AP106 in the FEIS.

Comment AP111: See Section 8.2.8 in the FEIS.

Comment AP112: See Section 8.2.8 in the FEIS.

Comment AP113: On page 4-31, column 2, paragraph 2, line 3, the DEIS states that "Windplant owners and/or KENETECH personnel, under BLM supervision, would be responsible for monitoring reclamation success."

Comment AP114: See response to Comment AE55 in the FEIS. The AO would be under advisement from the IDT and the technical committee to determine when it would be appropriate to permit construction within sage grouse nesting habitat. Critical winter periods are defined as periods during which big game utilize crucial winter range as their primary source of forage because other habitats are unavailable or insufficient to provide adequate forage due to snow cover, access, exposure, etc.

Comment AP115: Mitigations for noise impacts are described in Section 5.1.3.8 in the DEIS. Based on the noise analysis, the proposed mitigation measures should be adequate. If, however, it is determined during monitoring that noise impacts require additional mitigation, the IDT and the technical committee would be responsible for recommending appropriate mitigation.

Comment AP116: Text on page 4-29 has been modified accordingly.

Comment AP117: See Section 8.2.5 in the FEIS.

Comment AP118: See Sections 8.2.3.1, 8.2.4, and 8.2.8 in the FEIS.

Comment AP119: See Section 8.2.4 in the FEIS.

Comment AP120: See Section 8.2.12 in the FEIS.

Comment AP121: See Section 8.2.8 in the FEIS.

Comment AP122: Text has been added as requested.

Comment AP123: See response to Comment AE108.

Comment AP124: Text has been added as requested.

Comment AP125: See Section 8.2.4 in the FEIS.

Comment AP126: See Section 8.2.12 in the FEIS.

Comment AP127: Text has been added as requested.

Comment AP128: See Section 8.2.4 in the FEIS.

Comment AP129: See response to Comment AE108. The literature search presented in Chapter 4.0 of the DEIS presents the best known available evidence concerning how big game would react to the proposed Windplant. BLM is requiring monitoring of big game movements to evaluate development impacts (see Appendix B in the DEIS).

Comment AP130: See response to Comment AP9.

Comment AP131: See Section 8.2.8 and response to Comment AP106 in the FEIS.

Comment AP132: See Section 8.2.2 and response to Comment AE44 in the FEIS. KENETECH has not obtained permits for takes for other projects, but is considering obtaining permits for this project. See response to Comment AE117.

Comment AP133: See Sections 8.2.2 and 8.2.12 in the FEIS.

Comment AP134: See response to Comment AE44 and Section 8.2.12 in the FEIS.

Comment AP135: See Sections 8.2.5 and 8.2.7 in the FEIS.

Comment AP136: See response to Comment AE117 in the FEIS.

Comment AP137: See Section 8.2.5 and response to Comment AE44 in the FEIS.

Comment AP138: Page 5-9 of the DEIS states that mitigation measures for raptors would include placing WTGs away from raptor high-use areas. See also Section 8.2.12 in the FEIS.

Comment AP139: The Estep (1989) citation has been added as suggested.

Comment AP140: This paragraph pertains to "raptors species observed on the KPPA (except for federally listed or candidate species)..." and therefore does not contradict Orloff and Flannery (1992). Section 4.2.4.3 of the DEIS, which discusses project impacts to federally listed and candidate raptor species, concludes that any mortality may be significant for these species, which is in agreement with Orloff and Flannery (1992).

Comment AP141: Table 4.15 describes species distribution differences between California and Wyoming and the last paragraph on page 4-51 discusses how these differences may contribute to higher collision-related mortality at the proposed Wyoming windplant for some species. Also see additions to Table 4.15 in Section 4.2.3.4 of the FEIS.

Comment AP142: Broad-winged hawk, northern goshawk, turkey vulture, peregrine falcon, great horned owl, northern saw-whet owl, osprey, short-eared owl, and sharp-shinned hawk have been added to Table 4.15 in the FEIS.

Comment AP143: See Section 8.2.12 in the FEIS.

Comment AP144: See Section 8.2.5 in the FEIS.

Comment AP145: Text has been added as requested.

Comment AP146: Mountain plovers have not been observed in the Simpson Ridge area, but no regional surveys have been completed. Foote Creek Rim could be a local concentration area for mountain plovers, but there is substantial mountain plover habitat to the east of the rim; therefore it is unlikely that mountain plovers are concentrated on Foote Creek Rim.

Comment AP147: See Sections 8.2.3.1 and 8.2.3.3, and response to Comment AE151 in the FEIS.

Comment AP148: See response to Comment AE129 in the FEIS.

Comment AP149: See response to Comment AE90 in the FEIS.

Comment AP150: See response to Comment AP94.

Comment AP151: Because significance criteria used throughout the DEIS were based on scientific or regulatory provisions, it was not possible to develop criteria pertaining to the utility of land. Overall landscape character changes are discussed in Section 4.5.2.1 in the DEIS. See also Section 8.2.10 in the FEIS.

Comment AP152: See Section 8.2.10 in the FEIS.

Comment AP153: See Section 8.2.5 in the FEIS.

Comment AP154: See Sections 8.2.3.1, 8.2.5, and 8.2.6 in the FEIS.

Comment AP155: See Sections 8.2.5, 8.2.6, and 8.2.7 in the FEIS.

Comment AP156: See Section 8.2.6 in the FEIS.

Comment AP157: See Sections 8.2.5, 8.2.6, and 8.2.12 and response to Comment AE55 in the FEIS.

Comment AP158: See Sections 8.2.3, 8.2.4, and 8.2.12 and response to Comment AE44 in the FEIS.

Comment AP159: The text has been corrected accordingly.

Comment AP160: See Section 8.2.12 in the FEIS.

Comment AP161: See Section 8.2.10 in the FEIS.

Comment AP162: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment AP163: Text has been changed accordingly. See response to Comment AE116.

Comment AP164: See Section 8.2.4 in the FEIS.

Comment AP165: See Section 8.2.4 in the FEIS.

Comment AP166: See Section 8.2.4 in the FEIS.

Comment AP167: See response to Comment AE71.

Comment AP168: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment AP169: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment AP170: See Section 8.2.3.1 and Table 8.3 in the FEIS.

Comment AP171: Text has been revised accordingly.

Comment AP172: See response to Comment AE153 in the FEIS.

Comment AP173: See Section 8.2.3.2 in the FEIS.

Comment AP174: The photographs used for the visual simulations in Appendix F of the DEIS were taken with a Noblex 120 panoramic format camera with a 50mm lens. The human eye is comparable tc a 48.2mm lens; therefore, the 5 x 12 cm format with a 50mm lens gives a panoramic view which virtually eliminates distortion of the subject (personal communication, May 16, 1995, Ron Fletcher, Visual Simulation Specialist, KENETECH).

AQ. Audubon Council of Wyoming

RECEIVED
APR - 3 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

Area Manager
Bureau of Land Management
Rawlins District Office
P.O Box 670
Rawlins, Wyoming 82301

Dear Manager:

The following comments are submitted by the Audubon Council of Wyoming. There are five Audubon Chapters and approximately 1300 members of the National Audubon Society in Wyoming.

These comments are based upon presentations made by representatives of Kenetech and representatives of the U.S. Fish and Wildlife Service; a field trip to the sites and a cursory examination of the Draft EIS issued in January of 1995.

In the Introduction to the Draft EIS it is stated that: "Utilities throughout the western U.S. are forecasting a marked increase in base load and peak power demands during the next 20 years," and also p. 1-6 " although BPA presently has a surplus of generation capacity, these losses plus the expected growth in the region would eventually create a need for new generating sources". We would like to suggest a much stronger statement on energy conservation in the document especially in line with mitigation which could help lessen the need for more energy and other energy projects. We would in addition suggest that an assessment of how energy conservation could be incorporated in the implementation of this project i. e. combining trips using fewer vehicles etc. be documented and become a part of Kenetech's commitment to a friendlier environmental-energy partnership. 1

We will concentrate on the 22 project-wide mitigation measures mentioned on p. vi-ix for the remainder of our comments.

In relation to 2) windplant facilities etc. there was an indication at one presentation that in the Foote Creek Rim Area not enough consideration was given in the proposed windplant placemment to wildlife considerations especially bird territories. We would suggest that consideration be given to redo windplant placement in the Foote Creek Rim Area with more attention paid to wildlife data collected. 2

In 3) and 4) phrases such as "where feasible" and "whenever feasible" leaves this to whose judgment as to "where or wherever" is feasible? We suggest feasibility of these issues be agreed to before the fact rather than be debated after the disturbance has taken place on federal lands. 3

In 6) emphasis should be placed on the least disturbance of topsoil possible. Its structure will be destroyed wherever it is disturbed and it will take decades to be restored. 4

The same comment applies to 7) the least amount of vegetative disturbance the better. This will undoubedly mean some re-education of construction workers who have not been schooled in this area in the past.

In 8) use word 'will' instead of "would". Let's face it; some erosion and sedimentation will occur, however, the best methods possible should be used to minimize it. Use 'reduce' instead of prevent. 5

9) 10) & 11) again "where feasible" comes into play again. These things need to be documented. 3

In 13) we suggest somehow markings on the ground, maybe stakes around the raptor sites to help avoid them. 6

In 14) does this mean 'all' towers will be tubular and that there will be no perching sites on them? This would be a much more acceptable statement. 7

Start statement 15) with word 'all' and also 'all' after second "would". 8

In 18) also should start hould start with the word 'all'. 9

In 20) who makes the judgment on "if deemed appropriate"? 10

We would like to commend Kenetech, the U.S. Fish and Wildlife Service; the Bureau of Land Management and others involved in the preperation of this EIS. We realize that some of the suggestions we have made, if implemented, may seem to make the project more costly, however, if externalities and total environmental costs are fully considered, we believe the overall cost may be reduced by implementing them.

We believe that windpower can be the one of the most environmentally friendly ways of providing our nation's energy needs when it is handled correctly and we would like to continue to be involved with Kenetech and others who are working on this project.

Sincerely,

William C. Edwards, Ph.D.
President, Audubon Council of Wyoming

Comment AQ1: BPA analyzed a conservation alternative in its 1993 Resource Programs FEIS (BPA 1993a), and this EIS is tiered to that document. BLM concurs that implementation of conservation programs would decrease the need to build new power plants.

Comment AQ2: See Section 8.2.12 in the FEIS.

Comment AQ3: The POD for each phase would contain site-specific information concerning the feasibility of construction on steep slopes, etc. Each development proposal would be reviewed by the AO, who would determine the type of mitigation required on a case-by-case basis. See also Section 8.2.6 in the FEIS.

Comment AQ4: Text has been added accordingly.

Comment AQ5: Use of the word "would" is in keeping with the parallel verb tense of the sentence and section, and is not meant to deny the possibility of minimal erosion and/or sedimentation. Accordingly, the word "prevent" has been replaced with "minimize" on pages vii (Executive Summary) and 2-30.

Comment AQ6: During construction, contractors would report to an environmental supervisor who would be responsible for ensuring that mitigation measures, such as preventing construction within 0.75 mi (1.20 km) of active raptor nests, would be implemented properly. The need for staking exclusion areas would be determined by the environmental inspector on a case-by-case basis.

Comment AQ7: KENETECH is committed to using a tower design which minimizes raptor perch sites; only solid tubular towers are

proposed for this project. Solid tubular towers represent a substantial reduction in the number of perch sites associated with the lattice towers.

Comment AQ8: The text on pages viii and 2-31 has been modified accordingly.

Comment AQ9: The text on pages viii and 2-32 has been modified accordingly.

Comment AQ10: The AO has authority to grant exceptions to stipulations presented in the DEIS. The IDT and the technical committee for wildlife monitoring would advise the AO on the possible impacts of such actions.

Comment AR1: See Section 8.2.9 in the FEIS.

AR. Union Pacific Resources-Minerals

Union Pacific Resources - Minerals

April 3, 1995

Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, Wyoming 82301
Attn: Walter E. George, Project Leader

RE: Kenetech Wind Energy Project
Carbon County, Wyoming

Thank you for affording us the opportunity to review the Draft Environmental Impact Statement for the captioned windpower development project.

1 We note that a 230-kV transmission line is planned to run from Foote Creek Rim to the Miner's substation and that the "Alternate No. 2" transmission line shown on Page 1-3 of Map 1.2 traverses the significant coal resources within the Carbon Basin coal resource area. We would suggest that any facilities within the Carbon Basin coal resource area be located in areas that would not inhibit future coal mining activities.

Very truly yours,

R. A. See

R. A. See
Manager - Land & Industrial Minerals

c: Harry Nagel

RECEIVED APR - 6 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

RAS.doc
L00476.LTR

Union Pacific Resources - Minerals
P.O. Box 7
Fort Worth, Texas 76101-0007
817 / 877-6000

AS. U.S. Fish and Wildlife Service

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
4000 Morrie Avenue
Cheyenne, Wyoming 82001

Initials Route
MIN
MULTI
RANGE
ADMIN
CC

RECEIVED APR 10 1995 BUREAU OF LAND MANAGEMENT RAWLINS DISTRICT

IN REPLY REFER TO ES-61411

April 6, 1995

Memorandum

To: Area Manager, Great Divide Resource Area, Bureau of Land Management, Rawlins, Wyoming

From: Field Supervisor, Ecological Services, Cheyenne, Wyoming

Subject: Kenetech/PacifiCorp Windpower Project Draft Environment Impact Statement

We have reviewed the subject document (DEIS) and offer the following comments.

1 Based on baseline monitoring done on the site, we are concerned that the project is being proposed for siting in an area used by a large number of birds during both migration and nesting periods. Although data on winter use was not available at the time the DEIS was written, we suspect that the area is used by wintering eagles and rough-legged hawks because of the proximity of crucial big game winter ranges. Please include data on winter use as appropriate in the final environmental impact statement (FEIS). If the project area is a *destination* for migrating raptors, this should be specifically stated.

2 Evidence that the site is used during migration includes the observations of flocks of birds, perhaps outside their normal habitats, during spring and fall (e.g. white-faced ibis, mountain bluebirds, etc.). The number of raptor observations per survey also peaked during April and August, which is attributed to migratory movement (page 3-47). These and any other relevant observations or data on use of the project site as a migratory corridor should be discussed in the FEIS.

3 The data on nest densities is useful, although the number and location of territories would potentially be more useful. Such information, as available, from the productivity studies being done by WEST, Inc., should be summarized in the FEIS.

4 Raptor nesting activity during 1994 was much lower than normal, due primarily to crashes in the cottontail and jackrabbit populations. This was especially true for golden eagles. Records from adjacent mines indicate that only two golden eagle nests were active in an area that had supported between 15 and 23 active golden eagle nests during the previous five years. Nesting activity by other raptors was down by approximately 50 percent. Jim Orpet of Intermountain Resources in Laramie has monitored these nests for several years. This data should be disclosed in the FEIS, to put the number of active nests in a more accurate perspective, and to underscore the need for an off-site control area in the productivity studies that will be implemented.

5 The context and relevance of the Hanna Raptor Concentration area should be more fully discussed in the FEIS. Was this area designated under the Federal coal unsuitability criteria? Does this designation offer protection or special management consideration? Is construction of facilities known to kill raptors appropriate and in compliance with relevant regulations?

6 The repeated observations of peregrine falcons (30 observations reported in 9 months) suggests that nesting may be occurring nearby, or that the site is used as a migration funnel. The timing of these observations may provide some clue. Further field work should be accomplished to determine if the species is nesting near the project area.

7 We note that Table 4.12 (page 4-47) indicates occurrence of golden eagles approximately 50 percent higher than at the Altamont site in California where golden eagle mortalities have been a notable problem. We are optimistic that tubular towers, as now proposed, will reduce mortalities by reducing the availability of perches. We are concerned, however, that Foote Creek Rim is an important area for eagles.

8 The baseline monitoring done to date indicates that the project site is an important raptor habitat throughout the year, as discussed above. This high level of raptor use warrants a cautious approach, particularly in light of the documented risks that wind turbines pose to raptors and other birds.

9 Alternative project sites in Wyoming may have lower bird populations during some or all of the year and could result in lower bird mortalities. The DEIS dismisses alternative project locations on the basis of winds inadequate to produce electricity that is cost-competitive with coal- or gas-generated energy. We request that the Bureau of Land Management's (Bureau) economists review this rationale carefully. If the data show that alternative project sites will not be economically feasible, the FEIS should specifically explain why windplant sites operated by Kenetech and others, using less efficient turbines, are economically feasible at sites outside Wyoming with much less favorable wind regimes.

10 If alternative project sites are not feasible, the Fish and Wildlife Service (Service) requests that the Bureau consider an additional project alternative. Because Foote Creek Rim has been shown, through baseline monitoring, to be a high-use site, we believe that a reasonable alternative is to site phase one in the least sensitive habitat within the proposed 95-square-mile project area. The Simpson Ridge portion of the project area may have sites with adequate winds that are not used to such a high degree as Foote Creek Rim. Additional survey data will be required to identify the most appropriate site. If thorough surveys indicate that Simpson Ridge is as heavily used by raptors and other birds as Foote Creek Rim, then building phase one at Foote Creek Rim, as proposed, may represent the least sensitive habitat. We believe, however, that less sensitive sites can be located within the Simpson Ridge area.

This approach offers several advantages. It will allow for experimentation and modification where the risks of significant impacts are lower. As improved technology and insight is gained, future phases incorporating safety

advances could expand into the more sensitive sites. Beginning at a site where bird mortalities are expected to be minimized also provides a better opportunity for Kenetech to demonstrate that its equipment does not pose a significant risk to birds. Perhaps there are other resources that would also be protected by this approach (e.g. cultural artifacts, etc.)

10 cont. By incorporating the Simpson Ridge area into the proposed project area, the Bureau and Kenetech have indicated that the area does have adequate wind resources to support a cost-competitive project. Re-arrangement of the order in which specific sites are developed appears to the Service to be warranted, prudent, and reasonable. Given the seriousness of the predicted impacts, we do not believe that the additional baseline surveys required are an undue burden on either the Bureau or Kenetech.

11 The Service is currently working with Kenetech to design long-term research aimed at evaluating specific placement or siting options for their effectiveness in reducing migratory bird deaths. We anticipate issuing a special purpose permit under the Migratory Bird Treaty Act to permit any such take. Incidental take of species listed under the Endangered Species Act (bald eagles and peregrine falcons) will be handled through either section 7 consultation or by a permit. To be most effective, the Service believes that a single variable at a time should be evaluated against a control group, and that as many other variables as possible should be controlled. For example, if painted rotor blades will be evaluated against unpainted blades, the entire phase should be sited at the same relative position on the slope, and a uniform distance from any canyons or steep drop-offs. Other variables thought to play a role in bird mortalities should also be considered and controlled (through siting, etc.) to the extent possible. The status of these negotiations, and any commitments agreed upon, should be summarized in the FEIS.

12 The Bureau has recently requested initiation of formal consultation with the Service under section 7 of the Endangered Species Act. The Bureau may wish to consider incorporation of the biological assessment done by Mariah Associates, Inc., as an appendix to the FEIS.

11 Appropriate procedures for dealing with take under the Bald Eagle Protection Act are under consideration at this time.

13 The potential for increased range fires should be evaluated in the FEIS, particularly in light of experiences at the Altamont site in California. According to the information from the State of California (attached), windfarms were the leading cause of fire in 1988 through 1993.

Thank you for the opportunity to comment on the DEIS. If you have any questions concerning these comments, please contact me at the letterhead address, or phone (307) 772-2374.

Charles P. Davis

Attachment

cc: ARD, LE, Denver, CO
ARD, ES, Denver, CO
Director, WGFD, Cheyenne, WY
Nongame Supervisor, WGFD, Lander, WY
Special Agent, LE, Casper, WY
Migratory Bird Office, Denver, CO

Comment AS1: See the Section 3.2.2 in the FEIS for updated baseline data, including the winter of 1994/1995. Only 36 rough-legged hawk observations were recorded in the Foote Creek Rim area between February 16, 1994 and March 17, 1995 (see Map 3.15F in the FEIS). Two of these observations involved immature birds observed during May and June. Three observations occurred during the fall of 1994 (September 1 - October 31), 19 observations occurred during the winter of 1994-1995 (November 1 - February 14), and seven observations occurred during spring of 1995 (February 15 - March 17). Thirteen of the 36 observations occurred on January 25, 1995; some of these probably represent repeat observations of the same individual(s). It is unknown whether the project area is a destination for migrating raptors.

Comment AS2: See response to Comment AE95.

Comment AS3: Prior to 1994, there had been no complete annual coverage of all raptor nests in the KPPA, making territory history data impossible to accurately present. Implementation of the monitoring protocol (page B-22, Appendix B in the DEIS) over several years will permit determination of territory occupancy. Only two years of nest survey data are available at this time; the data are not yet sufficient to determine territories. Nest densities for the 1994 nest survey area are presented on page 3-53 in the DEIS.

Comment AS4: A discussion of temporal variability in raptor reproduction, and evidence that 1994 appeared to be a poor year for raptor productivity has been added to Section 3.2.2.3.

Comment AS5: Text has been added in Chapter 3.0 as requested.

Comment AS6: See response to Comment AE90 in the FEIS.

Comment AS7: See Section 8.2.12 in the FEIS.

Comment AS8: See Sections 8.2.3.3 and 8.2.12 in the FEIS.

Comment AS9: The issue of the economic feasibility of alternative project locations is discussed in Section 8.2.1.1 in the FEIS. The economic feasibility of a particular site for wind energy generation depends on a myriad of environmental and economic factors, one of which is the price structure under which local utilities are operating. In areas where KENETECH and other wind energy producers operate Windplants using less efficient machines and in less energetic wind regimes, utilities will bear costs of 8 to 12 cents per kWh. In Wyoming, however, costs must be below approximately 5 cents per kWh to be competitive in the Wyoming market, which has an abundance of fossil fuel resources.

Comment AS10: See response to Comment U2 and Section 8.2.1 in the FEIS.

Comment AS11: See Section 8.2.2 in the FEIS.

Comment AS12: The biological assessment for the proposed project is available to any interested party from the BLM. Because few people would be interested in reading the biological assessment, BLM is not including it as an appendix in the FEIS.

Comment AS13: See Section 2.1.5 in the DEIS and modifications to Section 2.1.5 in the FEIS.

AT. Carbon County Coalition

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

Ruth Shepherd, Coordinator
Carbon County Coalition
P.O. Box 785
Saratoga, Wyoming 82331

April 7, 1995

Atten: Walter George

Re: Kenetech/PacifiCorp
Windpower Project EIS

Dear Mr. George,

Thank you for the opportunity to comment on the Kenetech Windpower project in Carbon County. I realize that you will receive this correspondence after the comment deadline; however, the responsibility is mine and should not reflect upon the Coalition. We realize it is incumbent upon our organization to participate in a manner that is meaningful to inform the agency of our position concerning the Windpower Project.

The Carbon County Coalition wishes to commend the Bureau of Land Management on the thorough analysis provided in the Draft EIS. It is our belief that the agency will follow the parameters proposed in this document, and subsequent management decisions for mitigation or termination of the project would be transacted based upon monitored data.

Although wind energy is not the most cost effective electrical power supply available in the United States at this time, it is a probable source for future generations. When non-renewable natural resources are no longer available for conversion into energy, the present experimental transition to wind generated power might alleviate a future energy crisis. The monitored data on this project should furnish pertinent information for future populations to determine whether investment in windpower is economically and ecologically viable.

The members of the Carbon County Coalition are not only committed to projects which satisfy our immediate economic needs, we also support research and programs which potentially enhance the future of the County. The Coalition expects to support the Kenetech Windpower Project throughout its various phases.

Cordially,

Ruth Shepherd

AU. State of Wyoming, Office of the Governor

STATE OF WYOMING
OFFICE OF THE GOVERNOR

JIM GERINGER
GOVERNOR

STATE CAPITOL BUILDING
CHEYENNE, WY 82002

April 11, 1995

Mr. Walt George
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301

Dear Mr. George:

Late last month you received comments from three state agencies on the Kenetech/Pacificorp Windpower Project. As you will note, those comments express support and raise some concerns about specific elements. They will, I believe, serve as a constructive component of the final environmental impact statement.

Regardless of the debate on some of these details, I want you to know that the State of Wyoming strongly supports this project. It is innovative, and will harness one of Wyoming's most underutilized natural resources - the wind.

The State of Wyoming looks forward to working with the Bureau of Land Management in moving this important project forward.

Sincerely,

Jim Geringer
Governor

RECEIVED
APR 13 1995
BUREAU OF LAND MANAGEMENT
RAWLINS DISTRICT

INTERNET GOVERNOR@WYDSPROD.STATE.WY.US • TELEPHONE (307) 777-7434 • FAX (307) 632-3909

AV. Ronald R. Wiggins

APR 18 '95 11:58 P.1

April 18, 1995

Ronald R. Wiggins
P.O. Box 493
Big Timber, MT. 59011
ph. 406-932-4857
406-932-6171 OPTS

Walter E. George
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY. 82301

Dear Walter,

After a closer look at the Draft EIS for the Kennetech Windpower Project, I almost hesitate to comment.(because I could be wasting my time) mainly because it looks like a Statement that was prepared by Kennetech themselves. I feel outraged that this could be taking place, when the facts are: The BLM by law is responsible to the needs of. The American People--not Kennetech Windpower Inc.

Why would the benefit of this project in terms of output, be continually and outrageously overstated throughout the draftEIS, from the 201 turbines producing 70.5 MW to the total 1390 turbines producing 500 MW? Why would someone be led to believe on pg.1-6, that this windplant will generate 72.8% of its capacity?(No windplant in the world has even approached such a figure. The Calif. windplants on a whole last year did 20%, Kennetech themselves 3 yrs. ago refering to their new 33M-VS claimed 25-30%, and their competitors, Zond and New World Power(Inercon) just recently were so bold as to claim 33%)) Then in the same paragraph someone has the gall to say: "For comparison" hydro electric is 40%. The facts are, Hydro is
1 flexible on demand power, and Wind is inflexible- maybe its there and maybe it is not. (And if its not, you must still have all the other generating sources available to come on line for that peak load) In short there is no comparison. None the less, throughout the draft EIS the 500 MW figure is used in all of the "comparisons" of this windplant with other generating sources. When the facts are, this could actually be 60,000 acres of wind turbines producing 125 MW of electricity "unreliably". ("in comparison" with other sources) Why in table 1.2 on pg. 1-7 in another "comparison", when refering to wind energy at this site, do they not include transmission costs (this is a very real cost that is part of this project, that consumers will be paying for), but they do include the energy production tax credit (which reduces the comparison price) when consumers are paying for that also?

Walter, it seems that I could go on and on, but time does not permit. Kennetech has simply pumped this Draft EIS full of their comparisons and
2 their one sided analyses of everything from Air Quality(controversial CO_2 impacts stated as fact)& Noise impacts (complete omission of low frequency
3 noise impacts, most damaging to wildlife and humans) to no mention of what
4 would happen to the cost per kwh if the Energy Production Tax Credit were to disappear.

The bottom line is: Are the people of Wyoming going to get a true picture of what they are getting for what they are giving up, or are they getting a snow job and being led to believe a lie? In Denmark they say that "windmills stand on lies". This is not an indictment of the BLM, but rather, of an industry and corporation that has painted itself as green, but in reality is blacker than many other industries.

Very Sincerely,

Ronald R. Wiggins

enclosures

letter faxed 4-18-95 307-321-1414
letter & enclosures sent priority mail 4-18-95

Comment AV1: The discussion on page 1-6 of the DEIS indicates that the expected capacity factor for the Windplant on Foote Creek Rim during on-peak hours would be 72.8%. Text has been added to this paragraph to indicate that the overall capacity factor of the Windplant is expected to be 25-35%. BLM acknowledges that the Windplant thus is expected to produce 125-175 MW annually. Table 1.2 presents costs to the utilities not consumers; therefore inclusion of transmission costs is not appropriate. Since the production tax credit is directly passed on to the utility, it is appropriately used in the table. Table 1.2 has been footnoted for clarification. Tables 4.2 and 4.3 in Section 4.1.1.2 in the DEIS have been footnoted to note that the reductions in emissions of air pollutants shown have not been corrected for the estimated capacity factor and thus reductions would be less than the amounts shown.

Comment AV2: On pages 4-10 and 4-12 in the DEIS, it is stated "The effects of greenhouse gases [e.g., CO_2, nitrous oxide (N_2O)] on the earth's climate is still controversial. Some of the mechanisms by which the earth's ecosystems absorb or convert excess CO_2 are understood, but the long-term effects on climate cannot be determined (Cogan 1992)." See also response to Comment AM1 in the FEIS.

Comment AV3: The noise modeling completed for the DEIS used the full spectrum of noise frequencies emitted by the KVS-33 turbines. The range included frequencies from 63-4,000 hertz.

Comment AV4: See response to Comment N2 in the FEIS.

APPENDIX A:

AVIAN STUDIES PROTOCOLS FOR THE KENETECH WINDPOWER, INC. WINDPLANT PROJECT

Page A-2, line 4. Insert "(0.8 km)" after "0.5 Mile".

Page A-3, paragraph 1, line 12. Replace "The purpose of this report is to document the protocols currently being used for baseline data collection." with "The purpose of this report is to document the protocols used for baseline data collection from October 1993 through March 1995. Additional monitoring would be conducted using protocols described in Appendix B."

Page A-4, paragraph 2, line 4. Add "as described in Appendix B." after "prior to development of subsequent phases".

Page A-11, paragraph 3, line 2. Replace "mitigation" with "migration".

Page A-16, paragraph 1, line 6. Replace "is" with "are". Line 8. Replace "Detailed surveys will be conducted in the turbine string areas 1-2 years prior to development." with "Detailed surveys will be conducted in development areas for three years in the Simpson Ridge area prior to development, unless otherwise approved by the AO (see Appendix B)."

Page A-20, line 1. Delete reference to Biosystems Analysis, Inc. (1992).

APPENDIX B:

GENERAL DESIGN WYOMING WINDPOWER MONITORING PROPOSAL

Page B-6, paragraph 2, line 6. Replace "construction" with "issuing an NTP."

Page B-6, paragraph 2, line 6. Replace "However, if KENETECH decides not to proceed with further development at Foote Creek Rim, due to wildlife or other concerns, then KENETECH may apply for a BLM Notice to Proceed for the Simpson Ridge area." with "However, if KENETECH determines that wildlife, public recreation, or cultural resource concerns at Foote Creek Rim are substantial enough to avoid, then KENETECH may apply for a BLM NTP for the Simpson Ridge area. The application shall thoroughly document the reasons development cannot proceed on Foote Creek Rim."

Pages B-31 and B-32. Replace the last paragraph on page B-31 and the first three paragraphs on B-32 with the following:

"The WGFD Pronghorn Survey Protocol (Johnson and Lindzey n.d.) would be followed with the possible exception that automated data entry/global positioning system equipment could be used. When possible, an aircraft with an on-board computer for data recording would be used. When an on-board computer is unavailable, a laptop computer interfaced to the global positioning system would be used for recording data.

Observer(s) would concentrate their efforts on a 656-ft (200-m) band on each side of the aircraft. Each band would be divided into four distance bands A, B, C, and D, with widths 82, 82, 164, and 328 ft (25, 25, 50, and 100 m) respectively at an altitude of 300 ft (91 m) above ground level. The first distance band would begin 164 ft (50 m) on either side of the aircraft because the fuselage blocks the view in a band approximately 328 ft (100 m) wide directly beneath the aircraft.

Observer(s) would record group size (count of individuals in each group of animals), distance band in which group is observed, and altimeter readings. These data would be recorded by the pilot when an on-board computer is available or by the observer if a laptop computer is being used. Once the survey has commenced, the airplane would attempt to maintain a constant altitude above ground level. Altimeter readings would be used to adjust the actual width of distance bands."

Page B-39, paragraph 1, line 2. Add this sentence to the end of the paragraph: "To obtain adequate replication, the transect in the reference area would be surveyed on three separate nights."

Pages B-51 and B-52. Insert the following references:

Collins, W.B. and P.J. Urness. 1981. Habitat preferences of mule deer as rated by pellet-group distribution. Journal of Wildlife Management 45:969-972.

Johnson, B. and F. Lindzey. n.d. Guidelines for estimating pronghorn numbers using line transects. Wyoming Game and Fish Department Coop. Fish and Wildlife Res. Unit. 30 pp.

Leopold, B.D., B.R. Krausman, and J.J. Hervert. 1984. Comment: the pellet group census technique as an indicator of relative habitat use. Wildlife Society Bulletin 12:325-326

Neff, D.J. 1968. The pellet-group count technique for big game trend, census, and distribution: a review. Journal of Wildlife Management 32:597-614

Rowland, M.M., G.C. White, and E.M. Karlen. 1984. Use of pellet-group plots to measure trends in deer and elk populations. Wildlife Society Bulletin 12:147-155.

White, G.C. 1992. Do pellet counts index white-tailed deer numbers and population change?: a comment. Journal of Wildlife Management 53:611-612.

APPENDIX D:

ANIMAL SPECIES LIST

Page D-12, footnote 3. Add "and 1995" after "1994".

Page D-4, line 10. Insert "[3]" after "Ruddy duck".

Page D-7, line 1. Delete "[3]" after "Red-headed woodpecker".

Page D-10, line 14. Delete "[3]" after "Clay-colored sparrow".

APPENDIX G:

PALEONTOLOGIC RESOURCE EVALUATION, KENETECH WINDPOWER PROJECT AREA, CARBON COUNTY, WYOMING

PALEONTOLOGIC RESOURCE EVALUATION KENETECH WINDPOWER PROJECT AREA, CARBON COUNTY, WYOMING

Prepared for

TRC Mariah Associates Inc.
605 Skyline Drive
Laramie, Wyoming 82070

By

Erathem-Vanir Geological Consultants
816 West Figueroa Street
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Principal Investigator

Gustav F. Winterfeld, Ph.D.
WPG No. 2224, BLM Paleontological
Collecting Permit No. 137-WY-PA92

Original 18 January 1995
Revised 19 June 1995

INTRODUCTION

Investigative Methods, Data Sources

To establish existing conditions for paleontologic resources in the KENETECH Windpower Area, Carbon County, Wyoming, pertinent scientific references and maps on the geology and paleontology of the area were identified by a GEOREF and CURRENT CONTENTS database search. The GEOREF database, available through most university library systems, indexes the world's publications in the geosciences. Coverage is from 1785 to current and is updated monthly. Materials covered include journal articles, conference publications, reports, theses, maps, books, and book chapters. CURRENT CONTENTS indexes current scientific information published in 6,500 scholarly journals during the past five years and contains over 5.6 million references.

A paleontologic records search was also conducted for the project area at universities or museums known or suspected to have staff with a research interest in the area. The search was conducted at the Geology Museum, University of Wyoming, Laramie, Wyoming by Mr. Brent Breithaupt. The Department of Geology and Geophysics at the University of Wyoming (Dr. Jason A. Lillegraven), U.S. Geological Survey (Dr. Thomas M. Bown), and Denver Museum of Natural History (Dr. Richard Stucky) were also queried about possible localities in their records and information about fossils in the area. These searches supplement the principle investigator's more than 19 years field experience in Wyoming geology and paleontology.

Paleontologic Resources-Defined

Paleontologic resources include the remains or traces of any prehistoric organism which has been preserved by natural processes in the Earth's crust (Bureau of Land Management (BLM) Information Bulletin WY-93-371, 1993). Energy minerals such as coal, oil shale, lignite, bitumen, asphaltum, and tar sands, as well as some industrial minerals such as phosphate, limestone, diatomaceous earth, and coquina, while of biologic origin, are not considered fossils in themselves. However, fossils of scientific interest may occur within or in association with such materials. Fossils of scientific interest include those fossils of particular interest to professional paleontologists and educators. Vertebrate fossils are always considered to be of scientific interest; other kinds of fossils may be placed in this category by the State

Director and District or Area Managers, in consultation with BLM staff paleontologists or other experts. Professional paleontologists generally consider scientifically significant fossils to include those that are unique, unusual, or rare, diagnostically or stratigraphically important, or those which add to the existing body of knowledge in specific areas of geology and evolutionary biology.

Applicable Laws, Regulations and Policies

Scientifically significant fossils are protected by a variety of federal laws, regulations, and policies, and considered nonrenewable resources by the BLM and other federal land agencies. Inclusion of fossil resources by federal land agencies in the environmental review process has been haphazard in the past, dependent largely on the knowledge and experience of local agency personnel. This situation, however, changed in 1993, when the BLM hired a lead paleontologist for their Wyoming State Office. The state office has since developed and implemented standard procedures for evaluating paleontologic resources as part of the environmental process as authorized by the National Environmental Policy Act of 1969 (NEPA), the Federal Land Policy and Management Act of 1976 (FLPMA), and other related regulations and guidelines. The BLM has also established specific criteria for the qualifications of paleontologists conducting work on lands under their jurisdiction. Other federal agencies have adopted or are in the process of adopting similar guidelines (Lazerwitz 1994).

As a result, the BLM and other federal agencies now require that a Class I survey (literature and records search) be conducted by a qualified paleontologist for areas known to contain, or that are suspected to contain, scientifically significant fossil resources, as part of the environmental process. Potential adverse impacts of project implementation to fossil resources must be addressed in environmental documents and appropriate procedures for mitigating those impacts must be developed prior to construction in order to satisfy environmental requirements. Appropriate mitigation measures can include any or all of the following: (1) worker education; (2) monitoring of excavation; (3) collection and sampling of significant fossils; or (4) relocation of excavation to avoid fossils of significance.

A Class III survey (field survey) to identify and quantify fossil resources is required prior to construction disturbance in areas identified by the Class I survey as having high or undetermined paleontologic potential, as defined below. The Class III survey can be completed any time prior to surface disturbance at specific sites within a project area. A report of findings is completed following the completion of the

Class III survey. The report details the results of the survey, including a discussion of any fossils collected during the survey, and either sets forth a plan to implement the mitigation of adverse impacts to scientifically significant fossil resources (as defined below) or details the steps taken if mitigation was conducted as part of the Class III survey. Mitigation measures may include any or all of those listed above. A qualified supervising paleontologist is responsible for the assessment and development of the program for mitigation during the initial planning phase, the adequacy of the mitigation measures, and the report of findings.

Significance Criteria for Fossils

Although all fossils contain some scientific information, few paleontologists consider all fossils to have scientific significance. The scientific significance of fossils can only be evaluated by a qualified paleontologist. There is no precise definition of what constitutes a significant fossil or fossil resource, even among paleontologists. Wyoming BLM guidelines (Information Bulletin WY-93-371, 1993) consider all vertebrate fossils to be of scientific interest; other types of fossils may also be placed in this category. The BLM provides no guidance on evaluating the significance of fossil resources, but professional paleontologists generally recognize fossils and their containing deposits to be of scientific value or significance if they provide taphonomic, taxonomic, phylogenetic, ecological, or stratigraphic information. Paleontologic resources are considered to be older than recorded history and/or greater than 5,000 years old [Society of Vertebrate Paleontology (SVP) 1995]. Remains of animals currently inhabiting an area under consideration are usually excluded from being considered fossil, unless it can be clearly demonstrated by geologic or other scientific information that such remains are older than Recent. Recent remains should not be collected and treated as fossils.

Paleontologic Potential Criteria for Geologic Formations

Criteria used to describe the paleontologic potential of geologic deposits in this investigation are consistent with those embodied in Wyoming BLM Information Bulletin WY-93-371 (1993). These criteria are as follows:

High Potential. Sedimentary units with high potential for containing significant paleontologic resources are those which are shown by literature or museum records and field surveys to have produced (or to be

very likely to produce) vertebrate fossils or significant invertebrate or plant fossils. Units with high potential may be so designated throughout their extent, or only in areas/lithologies that are especially productive. Areas need not be uniformly productive; they may produce only a few highly significant fossils that provide new taxonomic, phylogentic, ecological, and/or stratigraphic data.

Low Potential. Sedimentary units that have been studied may be found through literature, museum records, and field surveys to have produced few significant fossils. These units are judged by a qualified paleontologist to be unlikely to produce significant fossils in the course of surface disturbance.

Undetermined Potential. Sedimentary units for which no known published or unpublished information exists have undetermined potential for producing significant paleontologic resources. Field survey should be performed by a qualified paleontologist to make a specific determination of high or low potential and to develop a program of mitigation as necessary.

Although BLM guidelines do not specifically recognize geologic deposits as having no paleontologic potential, some deposits, such as non-fossil-bearing intrusive or extrusive igneous rocks, metamorphic rocks, and modern sediments that are clearly too young to contain fossils effectively have no paleontologic potential.

PALEONTOLOGIC OVERVIEW OF PROJECT AREA

Geologic Deposits

Geologic mapping (Dobbin et al. 1929, Lowry et al. 1973, Love and Christiansen 1985, Love et al. 1993) shown in Figure 1 documents the presence of at least 10 different geologic deposits in the project area. These include, from youngest to oldest: (1) unnamed deposits of late Holocene age, including unconsolidated eolian sands, stream gravels, alluvium, colluvium, and landslide material; (2) unnamed older alluvial and terrace deposits of late Holocene to possibly late Pleistocene age; (3) Browns Park Formation of middle Miocene age; (4) Wind River Formation of early Eocene age; (5) Hanna Formation of Paleocene age; (6) Ferris Formation of Late Cretaceous to Paleocene age; (7) Medicine Bow Formation of late Cretaceous age; (8) Lewis Shale of Late Cretaceous age; (9) Mesaverde Group of Late Cretaceous age; and (10) Steele Shale of Late Cretaceous age.

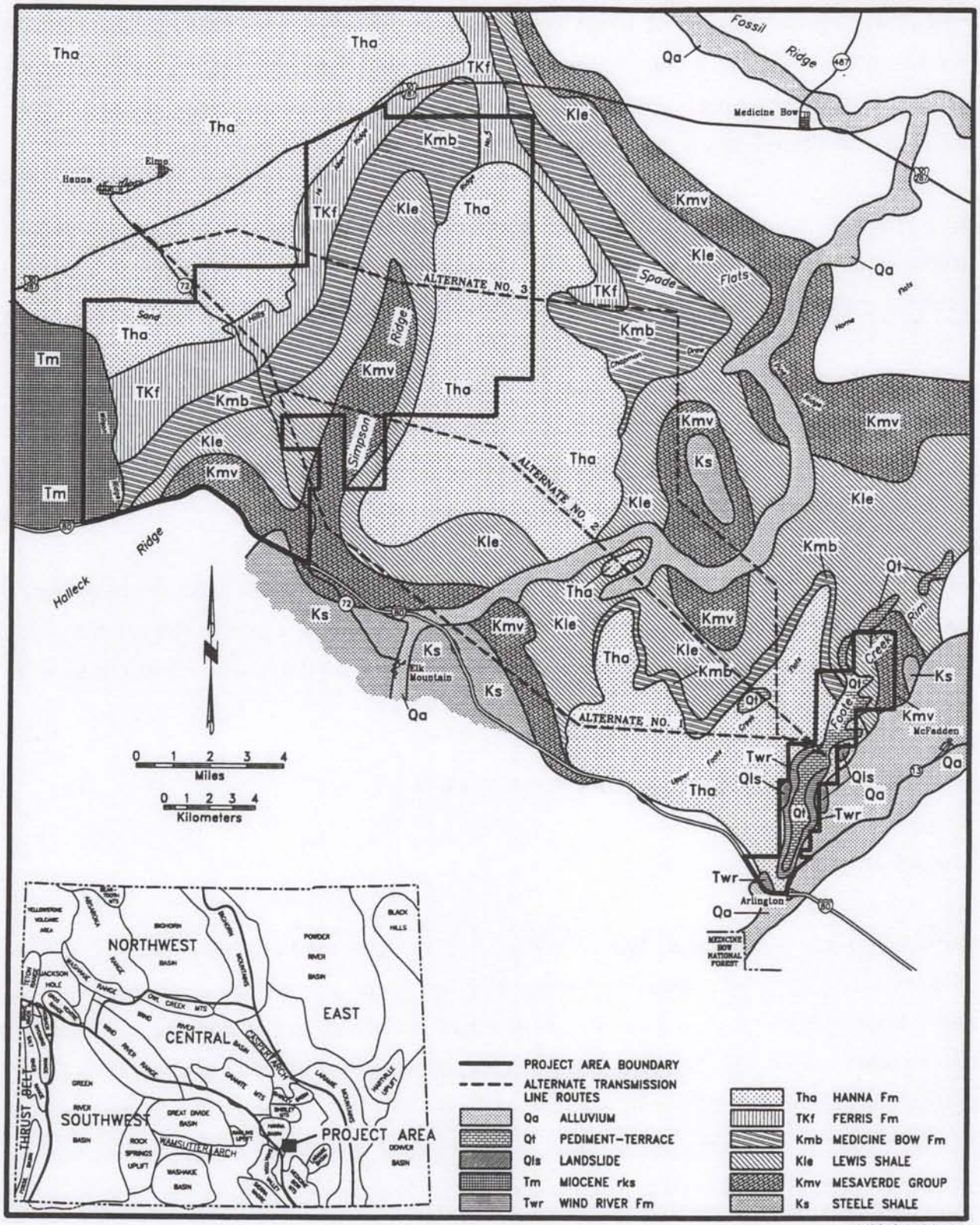

Figure 1 Geologic Map of Project Area.

Paleontologic resources within these sedimentary deposits record the history of animal and plant life in Wyoming during parts of the Mesozoic and Cenozoic Eras. The record represented by Mesozoic age deposits includes parts of the late Cretaceous. The record represented by Cenozoic age deposits includes parts of the Tertiary and Quaternary Periods. It is particularly important that the formations in the area preserve the continuous depositional record of events spanning the Cretaceous/Tertiary boundary. Areas preserving such a complete record are relatively rare and have a high potential to yield scientifically significant information about events associated with the extinction of the dinosaurs at the end of the Cretaceous and subsequent adaptive radiation of mammals in the succeeding Tertiary. The extinction of the dinosaurs is one of the most debated topics of modern paleontology and any area that can add knowledge to this event is of great scientific interest.

Paleontologic Potential Rating

With the exception of the Holocene and Pleistocene age sediments, geologic deposits that occur in the area are rated as having either a high or undetermined paleontologic potential rating, indicating a potential to produce scientifically significant fossils resources. Information on the geologic deposits exposed in the project area and their paleontologic potential is summarized in Table 1. Additional information on geologic deposits having a high or undetermined paleontologic potential is provided below. Geologic deposits are rated as having a high paleontologic potential if they are known to produce scientifically significant fossils anywhere in their known distribution. They are rated as having a low potential if they are not known to, or are unlikely to, contain such fossils. They are rated as having an undetermined paleontologic potential if not enough is known about the particular deposits in the area to either rate them as having a low or high potential.

The unnamed deposits of Late Holocene age that occur within the project area are too young to contain fossil remains. Terrace deposits of early Holocene to possibly latest Pleistocene in age that occur in the southeastern part of the area along Upper Foote Creek and Foote Creek Rim may be old enough to contain significant fossils. Similar terrace gravels of Pleistocene age are known to produce significant fossils at widespread localities throughout the western United States, but such fossils are relatively rare. For that reason, these deposits in the project area are accorded an undetermined, but probably low paleontologic potential.

Table 1 Summary of Surface Geologic Deposits and Paleontologic Resources, KENETECH Project Area.

Geologic Deposit	Geologic Age	Type of Deposit/ Environment of Deposition	Fossil Resources	Paleontologic Potential	Area(s) Present
Alluvial sediments (including alluvium, colluvium, and landslide debris)	Recent	Unconsolidated silts, sands of valleys and plains; terrestrial-fluvial, eolian.	None	Low	Foote Creek Rim, Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Terrace deposits	Early Holocene to Pleistocene (?)	Gravels, silts, and sands that predate current erosional cycle; terrestrial-fluvial.	None	Undetermined, probably low	Foote Creek Rim, Alternate 1, Alternate 2
Browns Park Formation	Middle Miocene (Arikareean-Barstovian)	White sandy tuff and tuffaceous sandstone, mudstone, conglomerate, limestone; terrestrial, fluvial, air-fall volcanic ash, lacustrine.	Vertebrates, invertebrates	Undetermined, probably high	Simpson Ridge area
Wind River Formation	Early Eocene (early Wasatchian)	Drab to varicolored sandstone, mudstone, coals; terrestrial, fluvial, floodplain, locally swamp and pond.	Vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Alternate 1, Alternate 2, Alternate 3
Hanna Formation (includes Dutton Creek Formation)	Paleocene (Torrejonian to Tiffanian)	Drab colored conglomerates, sandstones, arkose, mudstones, coals; terrestrial, alluvial fan, alluvial plain, lake, pond, swamp and fluvial.	Vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Simpson Ridge Area, Alternate 1, Alternate 2, Alternate 3
Ferris Formation	Cretaceous to Paleocene (latest Cretaceous to Puercan)	Lower part: conglomeratic sandstone, sandstone and shale of late Cretaceous age; Upper part: gray, brown, and yellow sandstone, mudstone, and coal beds; terrestrial, alluvial fan, alluvial plain, pond, swamp, and fluvial.	Vertebrates, invertebrates, plants, trace fossils	High	Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3

Table 1 (Continued)

Geologic Deposit	Geologic Age	Type of Deposit/ Environment of Deposition	Fossil Resources	Paleontologic Potential	Area(s) Present
Medicine Bow Formation (includes Foote Creek Formation)	Late Cretaceous (Maastrichtian)	Yellow, gray and carbonaceous shale, coal, gray and brown sandstone, conglomerate; marine-terrestrial, nearshore, estuarine, shoreline, swamp, alluvial plain.	Vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Lewis Shale (includes Fox Hills Sandstone)	Late Cretaceous (Campanian to Maastrichtian)	Dark colored shale, siltstone, and sandstone, minor limestones; marine, transgressive shelf, delta-front, nearshore to offshore marine floor, and shoreline.	Marine vertebrates, invertebrate, trace fossils	Undetermined, possibly high	Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Mesaverde Group (includes Haystack Mountains, Allen Ridge, Pine Ridge, and Almond Formations)	Late Cretaceous (Campanian)	Sandstone, siltstone, mudstone, shale, and coal; marine to terrestrial, nearshore, shoreline, deltaic, fluvial, estuarine, swamp.	Marine and nonmarine vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Steele Shale	Late Cretaceous [Santonian(?) to Campanian]	Dark gray shale, thin sandstone and limestone; marine, muddy shelf nearshore to offshore.	Marine vertebrates, invertebrates	Undetermined, possibly high	Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3

Paleontologic Potential vs Paleontologic Sensitivity

As described above, geologic deposits are rated as having a high paleontologic potential if they produce scientifically significant fossils anywhere in their aerial distribution based on review of literature and records. This should be differentiated from paleontologic sensitivity, which is a more specific rating of the likelihood that particular geologic deposits will contain scientifically significant fossils, based on field survey. Because it is based on field survey, sensitivity is a more specific measure of the likelihood of an area to yield scientifically significant fossils than paleontologic potential.

It is important to distinguish between paleontologic potential and paleontologic sensitivity because usually only a small fraction of an area of high paleontologic potential proves to be fossil-bearing, and hence, to have high paleontologic sensitivity. As described above, geologic formations, by definition, are assigned a high paleontologic potential if they have yielded scientifically significant fossils anywhere in their distribution. Formations, however, may contain several lithologies that differ in the degree to which they preserve fossils. Some lithologies may be very fossiliferous, whereas others may be entirely unfossiliferous. As a result, a formation known to produce spectacular fossils in some areas may prove to be fossil-barren in others. The practical result is that paleontologic resource inventories, based on literature and museum records searches alone will usually identify large areas of high paleontologic potential, whereas field surveys will usually more specifically identify areas of high paleontologic sensitivity. Areas of high paleontologic sensitivity rather than high potential should be the focus of proposed impact mitigation.

High or Undetermined Paleontologic Potential Deposits

Browns Park Formation

The Browns Park Formation of middle Miocene age occurs in the western part of the project area south of Wyoming State Highway 30 near Hanna. The deposits consist of a white, brown, and gray volcaniclastic sandstone, conglomerates, and air-fall tuffs and limestones, which are the remnants of more widespread deposits that once blanketed south-central Wyoming and are more widely exposed in the Saratoga Basin. Lithologically, the formation has been subdivided into a lower unit that is dominated by volcanic sandstone and pumiceite beds, and an upper unit which is dominated by limestones and other

lacustrine deposits (Montange 1991). Fossils from the lower part of the formation are of Arikareean to Hemingfordian age, whereas those from the upper part appear to be chiefly of Barstovian age. Limestone and lake deposits appear to dominate the formation in the Carbon and Hanna Basins (Lillegraven 1995), suggesting that the deposit may correlate with those of the upper Browns Park in the Saratoga Basin and that it is Barstovian in age.

No fossils have been reported from the formation in the Hanna and Carbon Basins, but significant finds of fossil invertebrate and vertebrate remains have been made in the formation in south-central Wyoming and north-central Colorado. In Browns Park of northwestern Colorado, the formation has produced the remains of a variety of fossil mammals including those of a mastodont, rhino, procyonid, chalicothere, camel, oreodont, and antelope of middle Miocene age (McGrew 1951, Bradley 1964). Abundant fossil vertebrates have also been found in the formation in the Saratoga Valley, including the remains of horses, camels, oreodonts, merycodonts, rabbits, bears, antelope, and a beaver (McGrew 1976, Montagne 1991). In addition to the fossils of mammals, the formation has produced the remains of freshwater algae, gastropods, diatoms, and pollen. The lack of fossils in the Browns Park in Carbon County appears to be the result of the lack of paleontologic study, rather than an indication of a lack of fossil potential. For that reason, the formation is rated as having an undetermined, but probably high paleontologic potential.

Wind River Formation

The Wind River Formation of the early Eocene occurs in the southeastern part of the project area along the Foote Creek drainage, immediately north of the town of Arlington, Wyoming. The formation consists of drab to varicolored sandstones and mudstones that accumulated in floodplain and fluvial environments during early Eocene time over most of the Cooper Lake Basin, Shirley Basin, and northern part of the Laramie Basin. Similar deposits, which are unnamed, occur in the Hanna Basin (Blackstone 1993). Fossils of terrestrial vertebrates, invertebrates, and plants have been noted in the formation at several localities in the Cooper Lake Basin (Prichinello 1971, Eaton et al. 1976-1978, Davidson 1987). Vertebrate specimens from these localities are curated into the collections of the Geology Museum at the University of Wyoming and include the remains of two extinct species each of fish, turtle, lizard, and crocodile, the giant ground bird *Diatryma*, and at least 27 species of mammals (Table 2). The mammalian species include multituberculates, marsupials, insectivores, primitive hoofed condylarths, primates, creodonts, carnivores, horses, tapirs, artiodactyls, rodents, and pantodonts. The wide diversity

Table 2 Fossil Vertebrates from the Wind River Formation (from Davidson 1987).

Class Osteichthyes

Order Amiiformes
- Family Amildae
  - *Amia* sp.

Order Lepisosteiformes
- Family Lepisosteidae
  - *Atractosteus* sp.

Class Reptilia

Order Testudinata
- Family Baenidae
  - cf. *Baena* sp.
- Family Dermatemydidae
  - *Adocus* sp.

Order Sauria
- Family Anguidae
  - *Melanosaurus* sp.
  - incertae sedis

Order Crocodilia
- Family Crocodylidae
  - cf. *Leidyosuchus* sp.
  - *Allognathosuchus* sp.

Class Aves

Order Diatrymaiformes
- Family Diatrymatidae
  - *Diatryma* sp.

Class Mammalia

Order Multituberculata
- Family Neoplagiaulacidae
  - *Ectypodus* sp. cf. *E. tardus*
  - *Parectypodus* sp. cf. *P. lunatus*

Order Marsupialia
- Family Didelphidae
  - *Peradectes protinnominatus*

Order Proteutheria
- Family Pantoletidae
  - *Palaeosinopa* sp.

Order Insectivora
- Family Dormaaliidae
  - *Macrocranion* sp. cf. *M. nitens*
- Family Incertae sedis
  - cf. *Talpavoides dartoni*

Order Condylarthra
- Family Phenacodontidae
  - *Phenacodus primaevus*
  - *P. vortmani*
  - *P. brachypternus*
  - *Ectocion osbornianum*
- Family Hyopsodontidae
  - *Hyopsodus* sp. cf. *H. miticulus*
  - *Haplomylus speirianus*

Order Primates
- Family Adapidae
  - *Cantius* sp. cf. *C. mckennai*
  - *Cantius* sp. cf. *C. trigonodus*
- Family Omomyidae
  - *Tetonius* sp.

Order Creodonta
- Family Hyaenodontidae
  - *Prototomus* sp.
  - cf. *Prolimnocyon atavus*
- Family Oxyaenidae
  - *Oxyaena* sp.

Order Carnivora
- Family Didymictidae
  - *Didymictis* sp.
  - Genus and species indet.
- Family Miacidae
  - *Miacis exiguus*

Order Perissodactyla
- Family Equidae
  - *Hyracotherium angustidens*
- Family Isectolophidae
  - *Homogalax protapirinus*

Order Artiodactyla
- Family Diacodexeidae
  - *Diacodexis secans*

Order Rodentia
- Family Ischyrdmyidae
  - *Paramys copei*
- Family Sciuravidae
  - *Sciuravus* sp.

Order Pantodonta
- Family Coryphodontidae
  - *Coryphodon eocaenus*
  - *C. oweni*

of scientifically significant fossils known from the Wind River Formation in Carbon County and throughout Wyoming document the high paleontologic potential of the formation.

Hanna Formation

The Hanna Formation of Paleocene age occurs in the area along the southeastern edge of the Hanna Basin and is widespread in the Carbon Basin along I-80 near the town of Arlington. The formation includes sediments previously referred to as the Dutton Creek Formation, a term now abandoned, by Hyden et al. (1965). The Hanna Formation consists of drab-colored conglomerates, sandstones, arkose, mudstones, and coals that accumulated in terrestrial environments during the Paleocene (Bowen 1918, Dobbin et al. 1929, Knight 1951, Gill et al. 1970, Hansen 1986, Blackstone 1993). In the Hanna Basin, coarse-grained conglomeratic deposits of the formation accumulated adjacent to ancient highlands to the north in alluvial fan environments. These deposits become finer-grained southeastward away from the highlands into the Carbon Basin where they are replaced by sediments that accumulated in fluvial, floodplain, and swamp environments.

Fossils known from the Hanna Formation include the remains of terrestrial vertebrates, invertebrates, and plants (Gill et al. 1970, Ryan 1977, Lillegraven 1995). The plant fossils include microfossil (pollen) and megafossil (leaf and stems imprints, and petrified and carbonized wood) remains. Invertebrate fossils of the Hanna Formation have been described by Kirchsner (1984), and include a variety of freshwater gastropods and bivalves. With the exception of fish scales, turtle fragments, a fragmentary jaw of a possible condylarth reported by Bowen (1918), and the unpublished discovery of a nearly complete mandible of the phenacodont condylarth *Tetraclaenodon* (collected by J.A. Lillegraven and J.G. Eaton in the late 1970s), little was known of the vertebrate fossils of the Hanna Formation until recently. That situation has changed over the past few years as the result of new discoveries made by field parties under the direction of Dr. Jason A. Lillegraven and his students, Ms. Jaelyn Eberle and Mr. Ross Secord at the University of Wyoming (UW). The newly discovered fossils (as yet unpublished) include the dental and skeletal remains of a wide variety of vertebrates, including many extinct mammalian species known from the Torrejonian to Tiffanian North American Land Mammal ages (Eberle 1994, Lillegraven 1995). These recent discoveries document the high paleontologic potential of the formation.

Ferris Formation

The Ferris Formation of late Cretaceous to Paleocene age occurs in the northern part of the project area, north of I-80 along the northern flanks of Halleck and Simpson Ridges and eastward along Spade Flats at the base of the Saddleback Hills. The formation includes sediments previously referred to as the Foote Creek Formation, a term now abandoned, by Hyden et al. (1965). The Ferris Formation consists of a thick sequence of continental rocks that have been traditionally subdivided into an upper and a lower part (Gill et al. 1970), based on age and lithology. The lower part of Late Cretaceous age consists of conglomeratic sandstone, sandstone, and shale, and is equivalent in age to the Lance Formation, which is well known for its fossil vertebrates, including dinosaurs. The upper part of Paleocene age consists of gray, brown, and yellow sandstone and thick beds of coal.

Fossils known from the Ferris Formation include the remains of terrestrial vertebrates, invertebrates, and plants (Gill et al. 1970, Ryan 1977, Hansen 1986, Lillegraven 1995). The plant fossils include microfossil (pollen) and megafossil (leaf and stems imprints, and petrified and carbonized wood) remains of late Cretaceous to Paleocene age. The invertebrates include the remains of freshwater gastropods, bivalves, and ostracods. Dinosaur bone fragments have long been known from the lower part of the Ferris Formation (Bowen 1918, Lull 1933, Breithaupt 1985, 1994). Until recently, fossil vertebrates from the formation have included remains identified only as the ceratopsian *Triceratops* and an undescribed genus and species of turtle. In recent years, UW field parties under the direction of Dr. Jason A. Lillegraven have discovered additional fossils from both the lower and upper parts of the Ferris Formation. Fossils from the lower part of the formation include the diverse remains of a wide variety of dinosaurs and crocodilians of late Cretaceous (Lancian) age. These fossils are currently being studied by Mr. Anton Wroblewski, a student at UW (Breithaupt 1994). Additional fossils from the upper part of the formation include the diverse remains of a wide variety of early Paleocene (Puercan) age mammals (Lillegraven 1995). These recent discoveries document the high paleontologic potential of the formation.

Medicine Bow Formation

The Medicine Bow Formation of late Cretaceous age occurs in the northern part of the project area, where it is exposed beneath the Ferris Formation in the same areas as the latter formation. The Medicine Bow Formation consists of dark gray carbonaceous shales, sandstones, and coals that accumulated in

marine, brackish water, and terrestrial environments in and along the last regression of the Bearpaw Seaway from Wyoming in latest Cretaceous time (Bowen 1918, Gill et al. 1970, Fox 1971, Ryan 1977, Blackstone 1993).

Fossils known from the formation include the remains of terrestrial plants, marine and freshwater invertebrates, and terrestrial vertebrates. The plants include microfossil (pollen) and megafossil (leaf and stems imprints, and petrified and carbonized wood) remains of Late Cretaceous age. Well-preserved leaf floras have been described from the formation by Dorf (1942). The invertebrates include the remains of marine foraminifera and brackish-water bivalves and gastropods represented by at least 21 different species (Gill et al. 1970). Dinosaur bone fragments have long been known from the lower part of the formation (Bowen 1918, Lull 1933, Breithaupt 1985, 1994) and include the remains of the ceratopsian *Triceratops*. The formation has also produced the remains of a small number of mammals of late Cretaceous (Lancian) age (Lillegraven 1995). These recent discoveries establish the high paleontologic potential of the formation.

Lewis Shale

The Lewis Shale of Late Cretaceous age occurs widespread in the project area, along the edges of the Hanna and Carbon Basins. The formation consists of a thick sequence of shale, siltstone, and sandstone that accumulated in deltaic, interdeltaic, and marginal marine to deep-water marine environments (Winn et al. 1985a, b). The Fox Hills Sandstone which accumulated in shoreline environments above the Lewis Shale during the retreat of the Lewis Sea is often lumped with the Lewis on maps because it is too thin to map separately at conventional map scales.

The Lewis Shale contains a large and varied marine invertebrate fauna, including many genera of bivalves, baculites, scaphites, and ammonites (Gill et al. 1970). Isurid shark teeth have also been recovered from the formation at localities in Carbon County (Breithaupt 1985). The Fox Hills Sandstone contains a shallow water marine fauna including a large variety of clams and snails, as well as three distinctive types of ammonites, a species of bryozoan, and burrow trace fossils. The remains of marine fish, sharks, rays, bony fish, and marine crocodiles and lizards (mosasaurs) have been reported from the Fox Hills Sandstone in Sweetwater and Converse Counties of Wyoming (Winterfeld 1978, Breithaupt 1985).

Fossils are known from the Lewis Shale and Fox Hills Sandstone in Carbon County, but no significant vertebrate finds have been made there to date. These formations have produced significant vertebrate fossils in other areas of Wyoming, and for that reason, the formations are rated as having an undetermined, but possibly high paleontologic potential.

Mesaverde Group

The Mesaverde Formation of Late Cretaceous age occurs widespread in the project area along the basin edges and in the core of the Big Medicine Bow Anticline. The formation consists of alternating sandstone, shale, carbonaceous shale, and coal of varying thickness that accumulated in marine, marginal marine, shoreline, and terrestrial environments. It includes in descending order, the Almond Formation, Pine Ridge Sandstone, Allen Ridge Formation, and Haystack Mountain Formation (Gill et al. 1970, Martinsen et al. 1993).

The Almond Formation consists of a sequence of interbedded carbonaceous shale, shallow-marine sandstone, and lenticular coal. The marine sandstones contain abundant marine and brackish-water fossils, including reef-like beds of oysters, other types of bivalves, ammonites, baculites, worm tubes, and burrow trace fossils (*Ophiomorpha*).

The Pine Ridge Sandstone consists primarily of white to gray nonmarine sandstone with thin interbeds of carbonaceous siltstone, carbonaceous shale, and coal. Apart from the burrows of marine and brackish-water organisms, no fossils have been reported from the Pine Ridge Formation.

The Allen Ridge Formation consists of a lower nonmarine unit of fluvial sandstone, shale and carbonaceous bed, a middle unit of marine shale and sandstone, and an upper unit of brackish-water origin. Fossils are scarce in the nonmarine member, but include vertebrate bone fragments and the isolated teeth of a few mammals (Lillegraven 1995). Fossil invertebrates are plentiful in the marine units of the formation and include the remains of several genera of bivalves, bryozoans, baculites, and ammonites.

The Haystack Mountain Formation consists of a sequence of thick units of marine sandstone interbedded with thick units of marine shale. The sandstone accumulated in nearshore and shallow offshore

environments, whereas the shale accumulated in deeper water environments. Fossils of marine invertebrates are abundant in the sandstone and shale of the formation. At least 17 genera of invertebrates have been reported from the formation, including the remains of bivalves, bryozoans, baculites, scaphites, and ammonites. Trace fossils, including the burrows of marine bivalves and worms, are also abundant.

The Mesaverde Group has produced diverse vertebrate fossils from many widely dispersed localities in central Wyoming, and although fossils from the group are not widely published on, they appear to be reactively common in parts of the formation (Winterfeld 1989). Not many fossils have been reported from deposits of the formation in Carbon County. Fossils from the group from nearby areas of Wyoming include the remains of plants, a wide variety of marine invertebrates, and marine and terrestrial vertebrates. Non-mammalian vertebrates known from the formation include nine species of shark, two of ray, nine of bony fish, six of amphibians, three of turtle, 14 of lizards, five of lizard, three of crocodile, four of ornithischian dinosaur, three of saurischian dinosaurs, and one each of champsosaur, pterosaur, snake, unidentified marine reptile, and bird (Breithaupt 1985). The Mesaverde Group has also produced the fossils of 12 species of mammals (Clemens and Lillegraven 1986, Lillegraven and McKenna 1986) in Natrona County and a few in Carbon County (Lillegraven 1995). The marine part of the formation has produced the abundant remains of invertebrates, including ammonites, baculites, bivalves, and planktonic formanifera (Keefer 1972, Kauffman 1977, Shapurji 1978). A varied fauna of fossil sharks is also known from marine beds in the formation in the southern part of the Bighorn Basin (Case 1987). Dinosaurs from the Mesaverde include the more popularly known genera *Edmontosaurus* and *Albertosaurus*. Mammals from the formation include species of multituberculates, primitive marsupials and placental mammals, and primitive mammals which can neither be classified as being either placental of marsupial, based on dental anatomy.

Significant fossils are known from the Mesaverde Group in Carbon County and elsewhere in Wyoming. The scarcity of fossils from the formations in the group in Carbon County is probably more a measure of the lack of work on the deposits than of its true potential, and for that reason, the group is rated as having a high paleontologic potential.

Steele Shale

The Steele Shale of Late Cretaceous age occurs in the south-central part of the project area along I-80 and in the core of the Big Medicine Bow Anticline. The formation consists of dark gray shale that contains sparse layers of gray weathering limestone concretions and thin beds of very fine sandstone and siltstone. Fossils are abundant in limestone concretions and thin sandy beds of the Steele Shale with a wide variety of marine invertebrates recorded, including the remains of at least 15 genera of bivalves, scaphites, and ammonites. Shark teeth have also been noted in the formation in Natrona and Carbon Counties (Wegemann 1911, Lillegraven 1995). The remains of marine reptiles, plesiosaurs, and crocodiles are known from equivalent strata (Cody Shale, Pierre Shale, Niobrara Formation) at widely dispersed localities in eastern and northern Wyoming (Weishampel 1992), and similar remains may yet be found in the Steele Shale as well. Although few fossils have been reported from the Steele Shale in Carbon County, the remains of significant vertebrate fossils are know from nearby areas of Wyoming. For that reason, the formation is rated as having an undetermined, but possibly high, paleontologic potential.

PROJECT IMPACTS

Introduction

Inventory of paleontologic resources in the KENETECH Windpower project area documents the presence of sedimentary deposits of Late Cretaceous, Paleocene, Eocene, and Miocene age that are known to contain plant, invertebrate, and vertebrate fossils of scientific interest and significance. Of particular importance are fossils from geologic deposits spanning the Cretaceous/Tertiary boundary which record the extinction of the dinosaurs and rise of modern orders of mammals. Impacts due to the proposed project would be potentially significant but would be reduced to less than significant via mitigation.

It is very likely that ground disturbance associated with construction of the project will encounter fossils of scientifically significance. Direct damage or destruction of these fossils, as a result of construction, with subsequent loss of scientific information, is of primary concern as an adverse impact of the project. Adverse impacts indirectly associated with construction are of additional concern.

Not all impacts of construction are adverse to paleontology, however. Excavation can reveal fossils of significant scientific interest that would have otherwise remained buried and unavailable for scientific study, and in this way, can be beneficial. The mere revelation of fossils of scientific importance is in itself not a beneficial impact. To have beneficial impacts, such newly discovered fossils must be properly collected and catalogued into the collections of a museum repository so that associated geologic data is preserved and the fossils are available for future scientific study.

Impact Assessment

The relative magnitude of potential construction impacts to paleontologic resources is related to the paleontologic potential of the sedimentary deposits disturbed during construction, the nature and extent of the disturbance, and the significance of the fossils disturbed. Paleontologic potential, as described above, is a measure of the probability that a deposit will contain not just fossils, but fossils of scientific significance. Criteria to describe scientific significance are given below.

Impact Significance Criteria

Adverse impacts to fossils resources occur when fossils of scientific significance are damaged or destroyed by construction. Significant impacts occur when scientifically significant nonrenewable fossil resources are damaged or destroyed as a result of project implementation. Scientifically significant fossils may occur anywhere within the project area, but are most likely to be encountered in areas of high paleontologic potential.

As described above, Wyoming BLM guidelines (Information Bulletin WY-93-371) consider all vertebrate fossils to be of scientific interest; other types of fossils may also be placed in this category. The BLM provides no guidance on evaluating the significance of fossil resources, but professional paleontologists generally recognize fossils and their containing deposits to be of significant scientific value if they provide taphonomic, taxonomic, phylogenetic, ecologic, or stratigraphic information.

Direct and Indirect Impacts

Direct damage or destruction of these fossils as a result of construction, with subsequent loss of scientific information, is of primary concern as an adverse impact of the project. Adverse impacts indirectly associated with construction are of additional concern. For example, fossils may be subject to damage or destruction by erosion that is accelerated by construction disturbance. In addition, improved access and increased visibility as a result of construction may cause fossils to be damaged or destroyed as a result of unauthorized collection or vandalism.

Adverse impacts to fossil resources are most likely and could be significant at known fossil localities or in places where geologic deposits with a high paleontologic potential are exposed at or near the surface. Deposits are considered to have a high paleontologic potential if they are known to yield scientifically significant fossils anywhere in the region. Adverse impacts to fossil resources are less likely and potentially less significant in places where geologic deposits with an undetermined paleontologic potential are exposed at or near the surface. Deposits are considered to have an undetermined paleontologic potential if either not enough information is known about their fossil-producing nature in the area, or their lithology, age, and depositional environment suggest they should be fossil-bearing, but fossils have yet to be reported from them. Adverse impacts to fossil resources are unlikely to be significant in areas underlain at the surface or near surface by geologic deposits with a low paleontologic potential. Deposits are considered to have a low paleontologic potential if they have been documented to lack significant fossils.

Beneficial and significant positive construction impacts, including the unanticipated discovery of previously undetermined scientifically significant fossils, are possible anywhere in the project area.

Cumulative Impacts

No cumulative impacts to fossil resources are anticipated from implementation of the project or alternatives if the prescribed mitigation measures are implemented.

Mitigation Summary

Paleontologic inventory of the KENETECH Windpower project area documented the presence of high and undetermined paleontologic potential in geologic deposits within the project area. A high paleontologic potential was documented in the Browns Park Formation, Wind River Formation, Hanna Formation, Ferris Formation, Medicine Bow Formation, and Mesaverde Group. An undetermined, but possibly high, paleontologic potential was documented in the Lewis (including Fox Hills Sandstone) and Steele Shales. An undetermined but probably low, paleontologic potential was documented in unnamed terrace sediments of Quaternary age.

To reduce the potential for significant adverse impacts to fossil resources in the project area to insignificant levels, the following mitigation measures should be implemented. Implementation of mitigation measures such as those described here are specifically designed to reduce adverse impacts of construction to fossil resources to nonsignificant levels. Mitigation measures include both general and specific measures. General measures mitigate impacts that may occur anywhere in the project area and specific measures are designated specifically for areas identified as having high or undetermined paleontologic potential.

General Mitigation Measures

General measures mitigate adverse impacts to fossil resources that may occur anywhere in the project area, including areas of low paleontologic potential. These measures are consistent with standard practice for paleontologic work within the professional paleontologic consulting community. The following measures are considered standard practice and should be applied to the entire KENETECH area:

> Worker instruction. Qualified paleontologists instruct construction personnel about the types of fossils they could encounter and the steps to take if they uncover fossils anywhere during construction of the project. This information can be conveyed in a short brochure/handout to be made available to construction personnel. This measure is particularly important in areas of low paleontologic potential that are unlikely to produce significant fossils and that are not likely to be monitored by qualified paleontologists.

Discovery contingency. Contingency is made for the unlikely event that significant fossils are discovered in areas that are not monitored during construction. Usually construction activities which could adversely affect the fossils are redirected until a qualified paleontologist has determined the importance of the uncovered fossils, the extent of the fossiliferous deposits and made, and implemented recommendations regarding further mitigation, if any, are warranted.

Specific Mitigation Measures

Specific measures are usually enacted to mitigate adverse impacts to fossil resources in areas of high and undetermined paleontologic potential on a project-by-project basis. Areas of high paleontologic potential include any area underlain at the surface, or within a few feet of the surface, by formations having a high paleontologic potential. These measures are consistent with standard practice for paleontologic work within the professional paleontologic consulting community and include the following:

Class III field survey. Prior to construction, areas of high or undetermined paleontologic potential should be surveyed by a qualified paleontologist to identify the location and extent of fossil resources, thereby defining areas of high paleontologic sensitivity.

Development of a mitigation and monitoring plan. A mitigation and monitoring plan is prepared for projects affecting geologic deposits of high paleontologic sensitivity (where scientifically significant fossils are likely to occur). Paleontologic sensitivity is a more specific measure of the likelihood of a geologic deposit to yield scientifically significant fossils than paleontologic potential. The plan is based on the Class III field survey and details the following:

1) results of the Class III survey, including the types of fossils identified and recovered, if any were found, their locality of discovery, and scientific significance;
2) procedures for preconstruction mitigation (mitigation may include any or all of the following: (a) avoidance of significant resources, (b) collection of significant resources, and (c) construction monitoring);
3) construction phase procedures if scientifically significant fossils are encountered during construction (Usually if fossils of significance are discovered during monitoring, construction activities are redirected until a qualified paleontologist has determined the

importance of the uncovered fossils, the extent of the fossiliferous deposits, and made and implemented recommendations regarding further mitigation.); and

4) procedures for curation of specimens collected during the Class III field survey. Fossil specimens collected during the field survey and subsequent construction mitigation, if any is conducted, must be curated into the collections of a museum repository acceptable to the lead agency. Curation as used here includes specimen preparation to the extent of identification; and preparation of accompanying catalogue tags and entry of locality and specimen data into archive records.

Submission of a final technical document. Adverse impacts to paleontologic resources are usually not considered reduced to insignificant levels until a final technical report is prepared and submitted following completion of the mitigation program, if one was implemented. If a mitigation program was implemented, the report should contain the results of the surveys and mitigation work conducted, including an accession list of fossil specimens collected listed by locality. If no mitigation was conducted because no significant fossil resources were identified, the report should contain the results of the survey. The report should also contain a discussion of the scientific significance of the specimens and geologic and paleontologic setting of any discovered fossils and their localities. A confidential appendix containing copies of locality maps and standard locality data sheets for each locality, if any specimens were discovered and collected, should be appended to the report, and copies of the report should be filed with the project proponent, agencies involved, and the repository where the fossils are curated.

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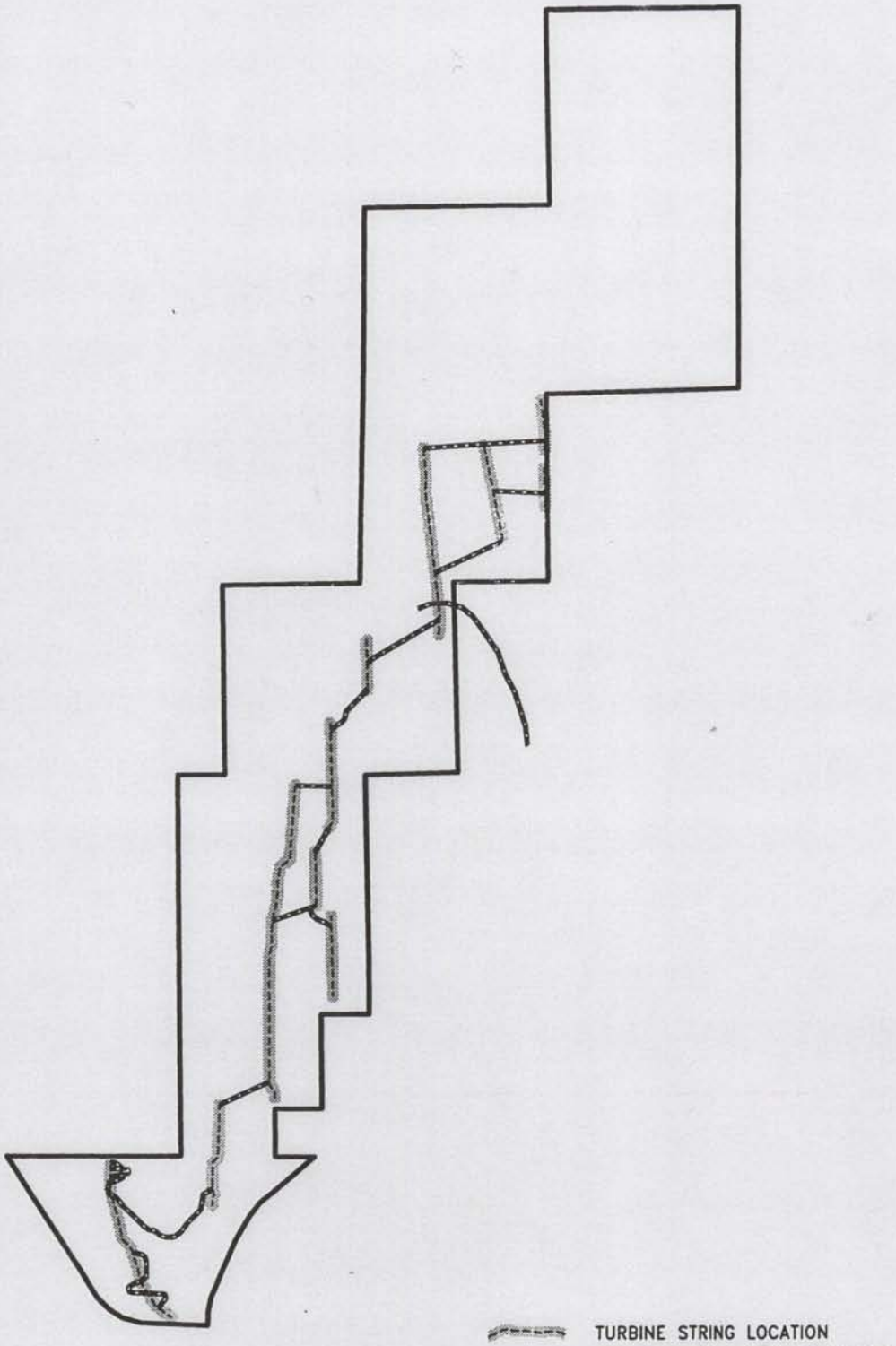
APPENDIX H:

OVERLAY OF PROPOSED PHASE I WINDPLANT FACILITIES LOCATIONS
FOR USE WITH FIGURES 3.14 THROUGH 3.17 IN THE FEIS



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APPENDIX J:

HAZARDOUS MATERIALS SUMMARY

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1.0 INTRODUCTION

This Hazardous Materials Summary (HMS) provides specific information regarding the types and quantities of hazardous and extremely hazardous materials that would be used during project development, operations, maintenance, and reclamation.

This HMS is was prepared pursuant to BLM Instruction Memoranda Nos. WO-93-344 and WY-94-059 which require that all NEPA documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of project activities. Hazardous materials are those substances listed in the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*, and extremely hazardous materials are those identified in the EPA's *List of Extremely Hazardous Substances* (40 C.F.R. 355).

2.0 HAZARDOUS MATERIALS

Lists of hazardous and extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of the proposed project were obtained from KENETECH and PacifiCorp, along with Material Safety Data Sheets (MSDS) for all chemicals, compounds, and/or substances that may be used during the construction, operation, maintenance, or reclamation of the proposed project. All hazardous and extremely hazardous substances known to be present within these materials are summarized in Table J.1. Where possible, the quantities of these materials have been estimated, and their use, storage, transport, and disposal methods identified.

2.1 WINDPLANT, TRANSMISSION LINE, AND SUBSTATION CONSTRUCTION, OPERATION, MAINTENANCE, AND RECLAMATION

2.1.1 Concrete

Concrete would be used in the construction of building foundations (quantity unknown), turbine foundations (70.5-MW Phase I, 3,000 yd^3; 500-MW Windplant, 18,000 yd^3), meteorological tower foundations (70.5-MW Phase I, 40 yd^3; 500-MW Windplant, 400 yd^3), transformer pads (quantity unknown), communications structures (2 yd^3/structure) and in anchoring overhead collection and communication line poles. Concrete and additives used for these purposes may contain the hazardous material classes of fine mineral fibers, polynuclear aromatic hydrocarbons (PAHs), and polycyclic organic matter (POM), though these substances would be bound in solidified concrete. No extremely hazardous materials are known to be present in the concrete or additives proposed for use on this project. Concrete would be transported to the project area by qualified concrete contractors in appropriate vehicles.

2.1.2 Explosives

Dynamite or a mixture of ammonium nitrate and diesel fuel may be used to facilitate the construction of foundations, overhead collection and communication line support structure installation, or communication line trenches. Nitroglycerin is a known hazardous material present in dynamite; ammonium nitrate and some components of diesel fuel (see Section 2.1.3.1, Fuels) are also considered hazardous. No known extremely hazardous materials are present in the types of explosives typically used during construction.

Table J.1 Hazardous and Extremely Hazardous Materials Proposed for Use in KENETECH-PacifiCorp Windplant, Transmission Line, and Substation Construction, Operation and Maintenance, Carbon County, Wyoming.

Source	Hazardous[1] and Extremely Hazardous[2] Constituents	CAS Number
Concrete	fine mineral fibers	--
	PAHs[3]	--
	POM[4]	--
Explosives	ammonium nitrate	6484-52-2
	nitroglycerin	55-63-0
Gasoline	benzene	71-43-2
	ethylbenzene	100-41-4
	methyl tert-butyl ether	1634-04-4
	m-xylene	108-38-3
	o-xylene	95-47-6
	PAHs	--
	POM	--
	p-xylene	106-42-3
	tetraethyl lead[5]	108-88-3
	toluene	
Diesel	benzene	71-43-2
	ethylbenzene	100-41-4
	methyl tert-butyl ether	1634-04-4
	m-xylene	108-38-3
	naphthalene	91-20-3
	o-xylene	95-47-6
	PAHs	--
	POM	--
	p-xylene	106-42-3
	toluene	108-88-3
Lubricants/oils	barium	7440-39-3
	cadmium	7440-43-4
	copper	7440-50-8
	lead	7439-92-1
	manganese	7439-96-5
	nickel	7440-02-0
	PAHs	--
	POM	--
	zinc	7440-66-6
Coolant/antifreeze	ethylene glycol	107-21-1

Table J.1 (Continued)

Source	Hazardous[1] and Extremely Hazardous[2] Constituents	CAS Number
Paints	barium	7440-39-3
	cobalt	7440-48-4
	lead	7439-92-1
	manganese	7439-96-5
	PAHs	--
	POM	--
	sulfuric acid	7664-93-9
	xylene (mixed isomers)	1330-20-7
Wood preservative	pentachlorophenol	87-86-5
Miscellaneous	ethyl ether	60-29-7
	hexane	110-54-3

[1] As defined under the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*, as amended.
[2] As defined in 40 C.F.R. 355.
[3] Polynuclear aromatic hydrocarbons.
[4] Polycyclic organic matter.
[5] Extremely hazardous material.

The quantity of explosives required for construction would be dictated by specific construction needs and is not known at this time.

2.1.3 Fuels, Lubricants, Coolant/Antifreeze

Vehicles and equipment typically used during construction, operation and maintenance, and reclamation require various fuels, lubricants, and coolant/antifreeze solutions, though the specific quantities of these products used, transported, or stored is not known. Windplant operation and maintenance (O&M) vehicles would include three pickups for the first phase of development and 15-20 pickups for the full 500-MW Windplant. Transmission line O&M would require two inspections per year by a single pickup, and reclamation efforts would probably require the use of a pickup, a grader, and a tractor.

2.1.3.1 Fuels

Gasoline would be used as a fuel for transport vehicles and miscellaneous machinery powered by internal combustion engines. The volume of gasoline required through the LOP is unknown due to the variability in vehicle fuel efficiencies, distance traveled to and within the project area, etc. Gasoline would be stored in 1,000-1,500 gal above ground storage tanks and transported primarily in vehicle gas tanks. Small quantities (approximately 5 gal) may be stored in appropriately designed and labeled containers for supplemental use as vehicle and machinery fuel. Hazardous materials present in gasoline include benzene, ethylbenzene, methyl tert-butyl ether, m-xylene, o-xylene, PAHs, POM, p-xylene, and toluene. Leaded gasoline, which contains the extremely hazardous material tetraethyl lead, may be required as fuel for some older equipment. Unleaded gasoline contains no known extremely hazardous materials.

Diesel fuel would be used, transported, and stored in a manner similar to gasoline including an above ground storage tank (1,000-1,500 gal). The quantity of diesel required for the LOP is not known. Diesel potentially contains hazardous materials including benzene, ethylbenzene, methyl tert-butyl ether, m-xylene, naphthalene, o-xylene, PAHs, POM, p-xylene, and toluene. No extremely hazardous materials are known to be present in diesel fuel.

2.1.3.2 Lubricants

Various lubricants and oils, including motor oil, hydraulic oil, gear oil, transmission oil, and grease, would be used for vehicles, turbines, and other equipment and machinery needed for the project. Specific lubricants include, but are not limited to, Mobil DTE 13M, Mobil Synthetic, Mobil HC 100, Mobil SHC 632, Mobil SHC 460, Chevron Delo 400, Chevron Dexron, Chevron EP Industrial Oil 46X, Chevron SRI2, Chevron VISTAC 150, Stihl 50:1 2-Cycle Oil, High Performance Gear Lube 80W90, Gear Oil #150, Valvoline Hydraulic Fluid, and WD40. Some of these lubricants would likely contain PAHs and POM, and some may additionally contain compounds of barium, cadmium, copper, lead, manganese, nickel, and zinc. No known extremely hazardous materials are present in the lubricants proposed for use in conjunction with this project. Though specific quantities are not known, lubricants would be stored at the construction site as well as within vehicle and other equipment reservoirs, and would be used, transported, stored, and disposed of following manufacturer's guidelines. No unauthorized disposal of lubricants would occur as a result of project-related activities.

Lubricating oils in turbines would be checked biannually, filled as needed, and changed annually. Accidental spills or leaks would be contained within the nacelle to minimize risk of site contamination. Each KVS-33 turbine uses less than 64 gal of lubricants per year, therefore a maximum of 12,864 gal and 88,960 gal per year would be used for the 70.5-MW Phase I and the 500-MW full Windplant respectively. All waste oil would be transported off-site and recycled by a certified waste contractor.

2.1.3.3 Coolant/Antifreeze

Coolant/antifreeze would be utilized in combustion engines associated with construction, operation, maintenance, and reclamation efforts. Ethylene glycol is the principle component of these fluids and is classified as a hazardous material. No extremely hazardous materials are known to be present in engine coolant/antifreeze. The quantity of coolant/antifreeze to be stored or transported in vehicle radiators during construction of the Windplant is unknown, however, its use, storage, transport, and disposal would be in accordance with manufacturer's recommendations.

2.1.4 Paints

Turbine towers would be painted prior to their arrival on-site, and repainting would be required approximately every 10 years. Communications and O&M buildings would also be prepainted and may require repainting at 10-year intervals. Small quantities of aerosol spray paints may be used to mark stakes, etc. during activities associated with construction. Hazardous materials contained in paints potentially include barium, cobalt, lead, manganese, PAHs, POM, sulfuric acid, and mixed isomers of xylene. No extremely hazardous materials are known to be present in the paints that would be used during construction and O&M of the proposed Windplant, transmission lines or substations. Small quantities of paints may be stored on-site in the O&M building.

2.1.5 Transformer Oils

Transformer oils would be required for the operation of the Windplant and substations. Oils proposed for use in this project would not contain polychlorinated biphenyls (PCBs), though PAHs and POM are potential hazardous constituents of these fluids. Approximately 34,200 gal of transformer insulating oil would be required for the 70.5-MW Phase I; the full 500-MW Windplant would require approximately 236,300 gal. Transformer insulating oils would be completely contained within sealed transformer units.

Additionally, approximately 10,000 gal of non-PCB dielectric oils would be required for use in substation equipment. These oils may contain PAHs and POM which are considered hazardous materials. No known extremely hazardous constituents occur in the dielectric oils to be utilized in this project.

2.1.6 Miscellaneous Hazardous Materials

Engine starting fluid is likely to be present during Windplant and transmission line construction, O&M, and reclamation activities, and is known to contain the hazardous materials ether and hexane. Engine starting fluid would be stored in vehicles and other equipment on-site.

Transmission and distribution line structures would consist of wooden poles which have been treated with pentachlorophenol, a hazardous material. Approximately 384 structures would be required for Phase I; 2,034 structures would be required for the full Windplant. Poles would be pretreated prior to their

arrival on-site, and no additional pentachlorophenol would be stored or used in conjunction with the construction or O&M of the Windplant or transmission line. Structures may be replaced at approximately 20-year intervals. Treated poles that have been replaced would be transported to an approved disposal facility.

Fertilizers may be used during reclamation within the proposed Windplant and along the transmission line corridor. Site-specific reclamation procedures would be developed by KENETECH and PacifiCorp in consultation with the BLM. Although the quantities and specific hazardous constituents of the fertilizers to be used on the project are unknown at this time, the use, storage, transport, and disposal of these products would be consistent with manufacturer's guidelines.

Some herbicides may be used in the proposed Windplant for vegetation control around buildings and turbine pads. Specific brands, quantities, and hazardous constituents of these herbicides are unknown at this time. Herbicides would be stored in accordance with BLM stipulations and state and county regulations.

2.1.7 Emissions

Hazardous emissions would occur as a result of this project (Table J.2). These emissions would originate from two sources: internal combustion engines and transmission lines.

2.1.7.1 Combustion Emissions

Combustion emissions from gasoline and diesel engines would consist of unburned hydrocarbons, particulate matter, nitrogen oxides, and sulfur oxides. Secondary contaminants would likely include the formation of ozone from the photolysis of nitrogen oxides.

Unburned hydrocarbons may contain potentially hazardous PAHs and POM; particulate matter may contain metal-based particulates from lead anti-knock compounds in the fuel, metallic lubricating oil additives, and engine wear components. Hazardous materials in particulate matter may include fine mineral fibers and compounds of barium, cadmium, copper, lead, manganese, nickel, and zinc.

Table J.2 Potential Combustion and Transmission Line Emissions Produced by the Proposed KENETECH-PacifiCorp Windplant and Transmission Line, Carbon County, Wyoming.

Source	Hazardous[1] and Extremely Hazardous[2] Constituents	CAS Number
Hydrocarbons	PAHs[3]	--
	POM[4]	--
Particulate matter	barium	7440-39-3
	cadmium	7440-43-9
	copper	7440-50-8
	fine mineral fibers	--
	lead	7439-92-1
	manganese	7439-96-5
	nickel	7440-02-0
	zinc	7440-66-6
Gases	nitrogen dioxide[5]	10102-44-0
	ozone[5]	10028-15-6
	sulfur dioxide[5]	7446-09-5
	sulfur trioxide[5]	7446-11-9

[1] As defined under the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*, as amended.
[2] As defined in 40 C.F.R. 355.
[3] Polynuclear aromatic hydrocarbons.
[4] Polycyclic organic matter.
[5] Extremely hazardous material.

Nitrogen dioxide, sulfur dioxide, sulfur trioxide, and ozone are probable combustion emissions, each of which is classified as an extremely hazardous material in their gaseous form. These materials would be directly released in minor quantities from internal combustion engines or formed through photolysis (e.g., ozone).

No releases of these or other materials would occur in excess of those allowed for Prevention of Significant Deterioration Class II areas, WDEQ-Air Quality Division Implementation Plan, or National Ambient Air Quality Standards for the project area. Particulate matter and larger unburned hydrocarbons would eventually settle to the surface of the ground, whereas gaseous emissions would react with other air constituents and integrate into the nitrogen, sulfur, and/or carbon cycles.

2.1.7.2 Transmission Line Emissions

Nitrogen oxides and ozone, which are classified as extremely hazardous, are naturally formed as a by-product of electromagnetic radiation from transmission line conductors. The quantity of these materials potentially released is not known; however, the quantities released would be very insignificant making it extremely unlikely that releases would exceed allowable levels for Prevention of Significant Deterioration Class II areas, WDEQ-Air Quality Division Implementation Plan, or National Ambient Air Quality Standards.

3.0 MANAGEMENT POLICY AND PROCEDURE

Windplant and transmission line construction, O&M, and reclamation would be in compliance with regulations promulgated under the Resource Conservation and Recovery Act, Federal Water Pollution Control Act (Clean Water Act), Safe Drinking Water Act, Toxic Substances Control Act, Occupational Safety and Health Act, and the Federal Clean Air Act. Additionally, project operations would comply with all attendant state and local rules and regulations pertaining to hazardous material reporting, transportation, management, and disposal. All project-related activities involving the production, use, and/or disposal of hazardous or extremely hazardous materials would be conducted to minimize potential environmental impacts.

KENETECH, PacifiCorp, and other Windplant owners would comply with emergency reporting requirements for releases of hazardous materials. Any release of hazardous or extremely hazardous materials in excess of reportable quantities, as established in 40 C.F.R. 117, would be reported as required by the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980*, as amended. The materials for which such notification must be given are the extremely hazardous substances listed under the *Emergency Planning and Community Right to Know (EPCRA)* Section 302 and the hazardous substances designated under Section 102 of CERCLA, as amended. If a reportable quantity of a hazardous or extremely hazardous substance is released, immediate notice would be given to the BLM's AO and all other appropriate federal and state agencies. Additionally, notice of any spill or leakage (i.e., undesirable event) would be immediately given by KENETECH, PacifiCorp, or other Windplant owners to the AO and other federal and state officials as required by law.

KENETECH and PacifiCorp have evaluated field operations in the project area and would prepare and implement a Spill Prevention and Control Countermeasure Plan, an Emergency Response Plan, and inventories of hazardous chemical categories to ensure environmental protection from hazardous and extremely hazardous materials. These plans/policies shall be available for review at the BLM Great Divide Resource Area in Rawlins prior to construction of Phase I. Other future Windplant owners would also be responsible for preparing these plans prior to development of future phases.

APPENDIX I:

RESULTS OF INDEPENDENT ANALYSIS OF POTENTIAL ALTERNATIVE WIND DEVELOPMENT LOCATIONS IN SOUTHERN WYOMING

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19 Jun 95

Ms Karyn Classi
Mariah Assoc, Inc
Laramie WY 82070

Dear Karyn,

I have received the following manuscript from KENETECH Windpower, Inc, and have carefully reviewed it. I offer the following comments as per your request:

> "Assessment of the Windplant™ Production Potential at Other Wyoming Locations with Respect to the Foote Creek Rim 70.5 MW Windplant" by Bob Baker dated 19 April 1995.

In this manuscript Mr Baker has compared the wind energy potential at Foote Creek Rim with about 25 other locations in Wyoming. Some of these locations were based on data collected by Kenetech, some by UW and some by the National Weather Service. The potential at Foote Creek was estimated based on recent wind data collected at 19 sites located on Foote Creek Rim. The 1994 wind speed frequency data at hub height (85 ft) on Foote Creek along with a windplant power curve were used to estimate the gross wind energy which would have been generated if that windplant had been installed and operating. The gross wind energy was discounted to net wind energy by assuming various losses. These losses were estimated to be 17%. The wind speed frequency data for the 25 other locations were adjusted to hub height based on an assumed wind speed profile. Again, using a windplant power curve along with these adjusted wind speed frequencies, the gross wind energy was estimated for each location. The gross wind energy was also discounted to net wind energy for each location based on assumed losses. The results indicate that the Foote Creek Rim and Hanna/Simpson Ridge are the two best wind energy locations of the 26 locations.

The analysis provided by Baker is straight forward and typical for the wind energy industry. My major concern has to do with the assumed 1/7th power law profile used to adjust the observed wind speed to hub height. An extensive analysis of vertical wind speed profiles was done by two of my colleagues (Martner and Gilmer 1981) based on tower data collected near Medicine Bow at 33, 200, and 350 ft. The results indicate that during the day from March to November the power law parameter, α, is about 60% of 1/7 and during the night α is about 140% of 1/7. In December and January α is always less than 1/7. When α is less than 1/7, then wind speed increases slowly with height and when α is greater than 1/7, then wind speed increases rapidly with height. Half of the comparative locations were based on UW data. The UW data was collected at 13 ft and was adjusted to hub height at 85 ft using the 1/7th power law profile. A small error in α combined with the approximate wind speed squared relation between wind speed and wind energy can result in a large error in the estimated wind energy potential.

It appears that there may be significant compensating errors in the procedure because the net wind energy potential at the Arlington site (UW data collected at 13 ft) was 1075 MWh [1250 x (1-0.14)]. This site is very close to the Foote Creek site where the net wind energy potential was 1300 MWh. The only other location which competes with Foote Creek and Arlington was the Hanna/Simpson locations where the net wind energy potential was 1175 MWh. All other locations have a net wind energy potential of < 1000 MWh.

My major concern still remains with the assumed 1/7 power law profile. Does the Kenetech tower data, collected at multiple heights, support the 1/7th power law profile? If not, does it agree with the seasonal and diurnal varying profile described by Martner and Gilmer 1981? Is there a better α which should be used to estimate the wind energy potential at the other locations? Perhaps Mr Baker was lucky and the compensating errors were just right?

Some minor comments are as follows:

1. Rather than using Cheyenne Airport as the long term station I would think that the nearby Rawlins Airport data would be more highly correlated with the UW and Kenetech wind data.

2. Why was the wake loss assumed to be zero for the other locations when it was assumed to be 3% for the Foote Creek location?

3. On page 3, first paragraph, the mean annual wind speeds for Medicine Bow and Arlington are given as 14.5 mph and 19.2 mph, respectively. These values don't agree with the values listed in Table 8.

4. Out of the 19 sites available, why was site #202 selected to represent the Foote Creek location?

I have long contented that the Foote Creek location is one of the best sites in the world in terms of gross wind energy potential. The winds are steady, unidirectional, and strong. The hazards of major wind gusts, turbulence, and icing are small. Mr Baker's analysis supports this contention.

If you have any questions, please feel free to ask.

Sincerely,

John Marwitz

John Marwitz
Professor

cc: Bob Baker, Kenetech
Kenneth Whitting, Kenetech