United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

In Reply Refer To:
FWS/DHRC/BAPHC/EC05/7

JAN 12 2006

Ms. Julia Souder
Department of Energy
Office of Electricity Delivery and Energy Reliability
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Ms. Souder:

We have reviewed the Department of Energy and Bureau of Land Management's Notice of Intent to Prepare a Programmatic Environmental Impact Statement, Amend Relevant Agency Land Use Plans, Conduct Public Scoping Meetings, and Notice of Floodplain and Wetlands Involvement and have prepared the enclosed detailed comments pursuant to the: (1) Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*); (2) Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*); (3) Migratory Bird Treaty Act, 16 U.S.C. 703; (4) Bald and Golden Eagle Protection Act, 16 U.S.C. 668; (5) the Clean Water Act and other applicable Executive Orders, regulations and policies.

This Notice of Intent (NOI) lists eight preliminary potential environmental issues in accordance with the National Environmental Policy Act (NEPA) that could be addressed by the Programmatic Environmental Impact Statement (PEIS). Of these eight issues, of particular interest to the U.S. Fish and Wildlife Service (Service) are issues numbers two, three, and six: "(2) Impacts on protected, threatened, endangered, or sensitive species of animals or plants, or their critical habitats; (3) Impacts on floodplains and wetlands; and (6) Impacts on existing and future land uses;" respectively.

Enclosures 2-5 are included to assist in the development of the PEIS. As part of our comments in enclosure 1, we have specifically addressed general items, such as endangered species, migratory birds and raptors, wetlands, and other trust responsibilities, that should be included in any PEIS of this nature.

Early coordination is essential in identifying other important areas where the Service and other partners have made investment in protecting and conserving fish and wildlife habitats, such as through the Partners for Fish and Wildlife Program, the North American Waterfowl Conservation Act Joint Venture efforts, and the Coastal Wetlands Program. In keeping with our mutual interest to promote a better environmental decision, we request to be a cooperating agency in the preparation of the PEIS, pursuant to 40 CFR 1501.6.

Ms. Julia Souder

Thank you for the opportunity to provide comments for this action. We look forward to meeting with you to discuss assisting you on the development of the PEIS. Please contact Dr. Mamie Parker, Assistant Director - Fisheries and Habitat Conservation at (202) 208-6394, if you have any questions or need further information.

Sincerely,

H Dale Hall

DIRECTOR

Enclosures

Enclosure: 1

U.S. Fish and Wildlife Service
Division of Habitat and Resource Conservation
Comments on the

Notice of Intent to Prepare a Programmatic Environmental Impact Statement, Amend Relevant Agency Land Use Plans, Conduct Public Scoping Meetings, and Notice of Floodplain and Wetlands Involvement (EC 05/0007)

The comments provided below address potential project effects to fish and wildlife and their habitats and recommended minimizing unavoidable effects. It is critically important that direct, indirect and cumulative effects to fish, wildlife plants and their habitats are evaluated and that all reasonably foreseeable developments are identified and analyzed. It is our understanding that this Programmatic Environmental Impact Statement (PEIS) provides a general evaluation of potential impacts to fish and wildlife resources from subsequent development and that site-specific analyses pursuant to the National Environmental Policy Act and other applicable laws will be conducted and the appropriate documents prepared prior to construction. The value of this PEIS is largely the assessment of cumulative effects, identification of corridor alternatives that avoid sensitive habitats, and identification of best management practices (BMPs) that would reduce the impact of all subsequent developments tiered to this effort. We look forward to future opportunities to address potential impacts to trust resources and other species that may be affected by designation of transmission corridors.

Energy development poses potential threats to fish, wildlife and their habitats. Habitat fragmentation, invasive weeds, disruption of seasonal migration routes and breeding activity, and increased predation may be caused by access roads, pipelines, power lines, transmission stations, compressor noise, and the increase in traffic that accompanies such developments. We recommend the PEIS evaluate these issues as well as analyze any impacts to fish and wildlife as a result of temporary facilities, access roads, and various other construction activities. To the extent available, specific information regarding affected resources, project design, function, and anticipated future operations should be provided to us as soon as possible. This information would help to determine whether new or additional data are needed and, if warranted, would help to determine the most appropriate study methodologies and data collection and analysis techniques.

The information provided below is general in nature and addresses our major program areas: (1) threatened, endangered and candidate species (including petitioned species), (2) migratory birds, (3) wetlands and riparian areas, and (4) other trust resources. The Bureau of Land Management (BLM) and Department of Energy (DOE) should continue to work closely with our field offices to ensure that fish and wildlife resources can be effectively identified and addressed early in the planning process. In addition, companies intending to utilize the PEIS should plan and develop their projects in close coordination with our field offices. This early engagement should help to streamline any subsequent permitting that may be necessary.

Endangered Species

The Fish and Wildlife Service (Service) recommends action agencies and their non-Federal representatives work with the Service to evaluate potential impacts and develop conservation measures for all federally listed species that may occur within or near a designated corridor. If any proposed project may affect a listed species, consultation with the Service pursuant to section 7(a)(2) of the Endangered Species Act (ESA) will be required. Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation and recovery of listed species. We recommend working with the Service to develop conservation measures and incorporate into the project design for the conservation of listed species.

In accordance with section 7(c) of the ESA, the list of threatened and endangered species, as well as the locations of any designated critical habitat for these species can be accessed from the Service's website at http://www.fws.gov/endangered/wildlife.html#. Information on designated critical habitat can also be found at 50 *Code of Federal Regulations* 17.95 (animals) and 17.96 (plants). A Biological Assessment (BA) is required for construction projects (or other undertakings having similar physical impacts) determined to be major Federal actions. For projects other than major construction activities, the Service suggests that a biological evaluation similar to the BA be prepared to determine whether the proposed activity may affect listed and proposed species. Recommended contents of a BA are described at 50 CFR 402.12. If the DOE and/or BLM determine, based on the BA or evaluation, that threatened and endangered species and/or critical habitat may be affected by the project, the agency is required to consult with the Service following the requirements of 50 CFR 402 which implement the ESA.

A list of candidate species being considered for listing can also be found at the above website. The lists reflect changes to the candidate species list published May 11, 2005, in the Federal Register (Vol. 69, No. 86, 24876) and the addition of "species of concern." Candidate species have no protection under the ESA but are included for consideration because of their potential for listing. Species of concern are those taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed. If a proposed project may affect only candidate species or species of concern, DOE and BLM are not required to prepare a BA or evaluation or consult with the Service but the Service still recommends minimizing impacts to these species to the extent possible. The PEIS should consider all possible direct, indirect and cumulative effects to these species. If early evaluation of the project indicates that it is likely to adversely impact a candidate species or species of concern, DOE and/or BLM may wish to request technical assistance from the appropriate Service regional or field office.

Migratory Birds, Eagles and other Raptors

Migratory birds including waterfowl and raptors are not included in the potential environmental issues list. These are important natural resources for which all Federal agencies have responsibilities to protect. See attached Executive Order 13186 and Director's Order No. 172. Also see attached "Guidelines to Address Bird Strikes and Electrocutions," voluntary guidelines developed in partnership between the Service and the Avian Power Line Interaction Committee (APLIC).

Federal agencies and their non-Federal representatives are obligated to protect the many species of migratory birds, including eagles and other raptors protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). The MBTA has no provision allowing unauthorized take. While it is not possible under the MBTA to absolve individuals, companies, or agencies from liability if they follow Service recommendations, the Office of Law Enforcement and Department of Justice have used enforcement and prosecutorial discretion in the past regarding individual companies or agencies who have made good faith efforts to avoid the take of migratory birds.

Transmission lines may impact birds in flight. In areas where birds congregate, the loss can be substantial. Large migratory water birds may be more susceptible to collision mortality due to their relatively large size, low maneuverability, and flocking behavior. Of specific concern is the potential loss of rare species or locally limited populations due to transmission line collisions. Transmission line construction should be designed to avoid sensitive or problematic areas. Where avoidance is not possible, monitoring studies should be performed to determine the site-specific impact of the transmission line and recommend appropriate mitigation measures designed to minimize any significant impact. If nesting migratory birds are present on, or near the project area, timing is a significant consideration and needs to be addressed in project planning.

In order to promote the conservation of migratory bird populations and their habitats, we recommend the strategies outlined in Executive Order 13186. In addition, Avian Protection Plans (APP) should be developed as described in *Avian Protection Plan Guidelines, A Joint Document prepared by The Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service*. The APP Guidelines presented in that document are intended to serve as a "tool box" from which a utility can select and tailor components applicable to its site specific needs. Those guidelines are intended to be used in conjunction with APLIC's *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* and *Migrating Bird Collisions with PowerLines: The State of the Art in 1994*, or the most current editions of these documents, which contain more detail on construction design standards and line siting recommendations. These APPs should be developed with our field offices to ensure the most up to date information is used for each State.

Wetlands/Riparian Areas

Wetlands and riparian or streamside areas may also be impacted by the proposed projects. These areas are a valuable natural resource and perform significant ecological functions including: providing habitat for many aquatic and terrestrial wildlife species; aiding in the dispersal of floods; improving water quality through retention and assimilation of pollutants from storm water runoff; recharging the aquifer; protecting streams; reducing erosion and sedimentation; and providing shade and cover. They also possess aesthetic and recreational values.

We recommend that the PEIS include measures to avoid and minimize impacts to wetland and riparian or streamside areas in accordance with the FWCA, CWA section 404 and Executive Order 11988 (floodplain management) as well as the goal of "no net loss of wetlands." If wetland impacts are unavoidable, the related wetlands should be inventoried and fully described in terms of their functions and values. Measures to compensate for unavoidable losses of riparian areas should be developed and implemented as part of the project. The PEIS should evaluate the direct, indirect and cumulative effects to all wetland, riparian and stream habitats.

Best Management Practices (BMPs) should be included in the project description and evaluated in the PEIS as part of the analysis. BMPs include, but are not limited to: installation of sediment and erosion control devices; adequate and continued maintenance of sediments and erosion control devices to insure their effectiveness; minimization of the construction disturbance to further avoid streams, wetlands and riparian areas; locating equipment staging, fueling and maintenance areas outside of wetlands, streams and riparian areas; and reseeding and replanting native riparian vegetation in order to stabilize shorelines and streambanks.

Streams and stream crossings may be presumed to be included under the general heading of floodplains, but are well worth emphasizing, particularly for projects such as pipelines transporting liquid products. Leaks and spills at these points can have serious impacts on aquatic resources. Thus, the location of such crossings and necessary environmental safety requirements are important. BMPs specifically for stream channel crossings were developed in BLM's "Hydraulic Considerations for Pipeline Crossings of Stream Channels" (attached). We suggest that they be considered for inclusion in the PEIS.

Other trust responsibilities

The PEIS should evaluate alternative routes for the west-wide energy corridor that avoid, to the maximum extent possible, sensitive habitats and other areas set aside for special purposes. Avoiding these areas would greatly facilitate subsequent review and permitting efforts and greatly reduce overall environmental effects. These areas include: wetlands, riparian areas and streams (as discussed); National Wildlife Refuge System fee lands including satellite refuges, Waterfowl Production Areas, Waterfowl Management Areas and wetland/grassland easements; Research Natural Areas; Areas of critical Environmental Concern; State Wildlife Management areas (especially those purchased with Federal funding); mitigation sites; and habitat restoration projects. If these lands cannot be avoided, we recommend working with our field offices to minimize impacts.

Energy transmission facilities, particularly oil and gas pipelines and their related facilities also include numerous contaminants related issues that should be identified and evaluated in the PEIS (e.g., pipeline ruptures, other spills, and chemical/toxicant storage). Where pipelines cross streams, automatic shut-off valves should be installed at each end of the crossing and toxicity risk analyses should be done to evaluate, based on the constituents in the pipeline, the acute toxicity risk to aquatic life if there is a spill or event causing a break in the pipeline. All construction should occur outside of the 100-year floodplain. Also, projects should include procedures for promptly notifying us of spills, releases and/or incidents that involve the pipeline and/or the stream corridor or floodplain, and quarterly inspection for the pipeline/floodplain summarizing the number of inspections (including where, to what extent, etc.) and any issues noted during the inspection and corrective actions taken should be provided to us. If any environmental sampling is conducted (e.g., water quality, hydrologic determinations of stream stability, etc), these results should be included along with interpretation of the results.

In the selection process for new corridors across lands owned and managed by the Bureau of Land Management and Forest Service, early involvement and coordination with State and Federal agencies that manage relatively smaller acreages of land is important. This early involvement and coordination will help ensure that the origins and termini of corridors across large areas of public lands are compatible with adjacent or nearby smaller units of public lands such as National Wildlife Refuges, military lands, National Parks and Monuments, State wildlife and park areas. We look forward to working with you on the development of your PEIS.

Enclosure 2:

HYDRAULIC CONSIDERATIONS FOR PIPELINE CROSSINGS OF STREAM CHANNELS

(*From Vernal, Utah BLM Resource Management Plan Draft Environmental Impact Statement*)

Pipeline crossings of perennial, intermittent, and ephemeral stream channels should be constructed to withstand floods of extreme magnitude to prevent breakage and subsequent accidental contamination of runoff during high flow events. Surface crossings must be constructed high enough to remain above the highest possible stream flows at each crossing, and subsurface crossings must be buried deep enough to remain undisturbed by scour throughout passage of the peak flow. To avoid repeated maintenance of such crossings, hydraulic analysis should be completed in the design phase to eliminate costly repair and potential environmental degradation associated with pipeline breaks at stream crossings.

Surface Crossings

Pipelines that cross stream channels on the surface should be located above all possible flood flows that may occur at the site. At a minimum, pipelines must be located above the 100-year flood elevation, and preferably above the 500-year flood elevation. Procedures for estimating 100-year and 500-year flood magnitudes are described in the U.S. Geological Survey's National Flood Frequency Program (Jennings, et al. 1994). Two sets of relationships for estimating flood frequencies at ungauged sites in Utah are included in the NFF program: Thomas and Lindskov (1983) use drainage basin area and mean basin elevation for flood estimates for six Utah regions stratified by location and basin elevation. Thomas et al (1997) also use drainage area and mean basin elevation to estimate magnitude and frequency of floods throughout the southwestern U.S., including five regions that cover the entire state of Utah. Results from both sets of equations should be examined to estimate the 100- and 500-year floods, since either of the relations may provide questionable results if the stream crossing drains an area near the boundary of a flood region or if the data for the crossing approach or exceed the limits of the data set used to develop the equations.

Estimating the depth of flow, or conversely the elevation of the pipeline at the crossing, may be approached a number of ways. The simplest procedure would be based solely on a field reconnaissance of the site, using basic geomorphic principles. Identification of the bankfull elevation and the active floodplain (i.e., floodplain formed by the present flow regime) provides inadequate conveyance for extreme flood events. Past floodplains/present terraces also must be identified, since these represent extreme floods in the present flow regime, especially in arid and semi-arid environments. Pipeline crossings should be constructed to elevate the pipeline above the level of the highest and outermost terrace at the crossing. This level represents the geomorphic surface likely to be associated with the maximum probable flood. Since this method is entirely based on a geomorphic reconnaissance of the site, no flood-frequency analysis is required and no recurrence interval is assigned to the design elevation. While this is the simplest approach to design of the crossing, it likely will result in the most conservative estimate (i.e., highest elevation) for suspension of the pipeline.

A slightly more intensive approach to crossing design is based on the Physiographic Method described by Thomas and Lindskov (1983) for estimating flood depths at ungauged sites. The procedure utilizes regional regression equations (similar to the flood-frequency equations described above) to estimate depth of flow associated with a specified recurrence-interval flood. Flood depth is then added to a longitudinal survey of the stream channel in the vicinity of the crossing, resulting in a longitudinal profile of the specified flood. Elevation of the flood profile at the point of pipeline crossing is the elevation above which the pipeline must be suspended. While this procedure requires a field survey and calculation of actual flood depths, it may result in a lower crossing elevation (and possibly lower costs) for the pipeline. Also, since the regional regression equations estimate flood depth for specified recurrence-interval floods, it is possible to place a recurrence interval on the crossing design for risk calculations.

It may be possible to reduce pipeline construction costs associated with channel crossings even further with a water-surface-profile model of flow through the crossing site. The water-surface-profile model requires a detailed survey of both the longitudinal channel profile and several cross sections along the stream. Design flows (e.g., 100-year and 500-year floods) are calculated for the channel at the crossing (with the regional regression equations described above) and routed through the surveyed channel reach utilizing a step-backwater analysis. The step-backwater analysis uses the principles of conservation of mass and conservation of energy to calculate water-surface elevations at each surveyed cross section. Since the computation utilizes a detailed channel survey, it is probably the most accurate method to use; however, it is likely the most expensive method for the same reason. The step-backwater computations require an estimate of the Manning n-value as an indicator of resistance to flow, and assume fairly stable channel boundaries. Estimates of the n-value for ungauged sites are a matter of engineering judgment, but n-values typically are a function of slope, depth of flow, bed-material particle size, and bedforms present during the passage of the flood wave. Guidance is available in many hydraulic references (e.g., Chow 1959). The assumption of fairly stable channel boundaries is not always met with sand-bed channels, and is an issue of considerable importance for designing subsurface pipeline crossings as well (see below).

Subsurface (Buried) Crossings

Since many of the pipelines are small and most of the channels are ephemeral, it is commonplace to bury the pipelines rather than suspending them above the streams. The practice of burying pipelines at channel crossings likely is both cheaper and easier than suspending them above all flood flows; however, an analysis of channel degradation and scour should be completed to ensure the lines are not exposed and broken during extreme runoff events. Without such an analysis, pipeline crossings should be excavated to bedrock and placed beneath all alluvial material.

Buried pipelines may be exposed by stream bed lowering resulting from channel degradation, channel scour, or a combination of the two. Channel degradation occurs over a long stream reach or larger geographic area, and is generally associated with the overall lowering of the landscape. Degradation also may be associated with changes in upstream watershed or channel conditions impacting the water and sediment yield of the basin. Channel scour is a local phenomenon associated with passage of one or more flood events and/or site-specific hydraulic conditions that may be natural or man-caused in origin. Either process can expose buried pipelines to excessive forces associated with extreme flow events, and an analysis of each is required to ensure integrity of the crossing.

Detection of long-term channel degradation must be attempted, even if there is no indication of local scour. Plotting bed elevations against time permits evaluation of bed-level adjustment and indicates whether a major phase of channel incision has passed or is ongoing. However, comparative channel survey data are rarely available for the proposed location of a pipeline crossing. In instances where a gauging station is operated at or near the crossing, it's usually possible to determine long-term aggradation or degradation by plotting the change in stage through time for one or more selected discharges. The procedure is called a specific gauge analysis and is described in detail in the Stream Corridor Restoration manual published by the Federal Interagency Stream Restoration Working Group (1998). When there is no gauging station near the proposed pipeline crossing, nearby locations on the same stream or in the same river basin may provide a regional perspective on long-term channel adjustments. However, specific gauge records indicate only the conditions in the vicinity of the particular gauging station and do not necessarily reflect river response farther upstream or downstream of the gauge. Therefore, it is advisable to investigate other data in order to make predictions about potential channel degradation at a site.

Other sources of information include the biannual bridge inspection reports required in all states for bridge maintenance. In most states, these reports include channel cross sections or bed elevations under the bridge, and a procedure similar to specific gauge analysis may be attempted. Simon (1989, 1992) presents mathematical functions for describing bed level adjustments through time, fitting elevation data at a site to either a power function or an exponential function of time. Successive cross sections from a series of bridges in a basin also may be used to construct a longitudinal profile of the channel network; sequential profiles so constructed may be used to document channel adjustments through time.

In the absence of channel surveys, gauging stations, and bridge inspection reports (or other records of structural repairs along a channel), it may be necessary to investigate channel aggradation and degradation using quantitative techniques described in Richardson et al. (2001) and Lagasse et al. (2001). Techniques for assessing vertical stability of the channel include incipient motion analysis, analysis of armoring potential, equilibrium slope analysis, and sediment continuity analysis. Geomorphic indicators of recent channel incision (e.g., obligate and facultative riparian species on present-day stream terraces elevated above the water table) also may be helpful for diagnosing channel conditions.

In addition to long-term channel degradation at the pipeline crossing, local scour of the crossing must be addressed for pipeline safety. Local scour occurs when sediment transport through a stream reach is greater than the sediment load being supplied from upstream and is usually associated with changes in the channel cross section. Local scour can occur in natural channels wherever a pipeline crosses a constriction in the channel cross section (contraction scour). Equations for calculating contraction scour generally fall into two categories, depending on the inflow of bed-material sediment from upstream. In situations where there is little to no bed-material transport from upstream (generally coarse-bed streams with gravel and larger bed materials), contraction scour should be estimated using clear-water scour equations. In situations where there is considerable bed-material transport into the constricted section (i.e., for most sand-bed streams), contraction scour should be estimated using live-bed scour equations. Live-bed and clear-water scour equations can be found in many hydraulic references (e.g., Richardson and Davis 2001). In either case, estimates of local scour in the vicinity of the pipeline crossing must be added to the assessment of channel degradation for estimating the depth of burial for the crossing.

Even in the absence of contraction scour, local scour will still occur in most sand-bed channels during the passage of major floods. Since sand is easily eroded and transported, interaction between the flow of water and the sand bed results in different configurations of the stream bed with varying conditions of flow. The average height of dune bedforms is roughly one-third to one-half the mean flow depth, and maximum height of dunes may nearly equal the mean flow depth. Thus, if the mean depth of flow in a channel was 5 feet, maximum dune height could also approach 5 feet, half of which would be below the mean elevation of the stream bed (Lagasse et al. 2001). Similarly, Simons, Li and Associates (1982) present equations for antidune height as a function of mean velocity, but limit maximum antidune height to mean flow depth. Consequently, formation of antidunes during high flows not only increases mean water-surface elevation by one-half the wave height, it also reduces the mean bed elevation by one-half the wave height. Richardson and Davis (2001) report maximum local scour of one to two times the average flow depth where two channels come together in a braided stream.

Pipeline crossings that are buried rather than suspended above all major flow events should address all of the components of degradation, scour, and channel-lowering due to bedforms described above. In complex situations or where consequences of pipeline failure are significant, consideration should be given to modeling the mobile-bed hydraulics with a numerical model such as HEC-6 (U.S. Army Corps of Engineers 1993) or BRI-STARS (Molinas 1990). The Federal Interagency Stream Corridor Restoration manual (FISRWG 1998) summarizes the capabilities of these and other models, and provides references for model operation and user guides where available.

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