Table O-4 Vegetation Types Crossed by the Proposed Transmission Line Routes in Montana

Pump Station Number	Agriculture	Forest	Grassland	Wetland	Total
Route A1A					
PS 09	8.4	0.1	46.6	0.1	55.1
PS 10	18.7	0.3	31.8	0.3	51.1
PS 11	23.2	0.0	21.3	0.0	44.5
PS 12	16.7	0.1	17.9	0.0	34.7
PS 13	1.8	0.0	4.9	0.0	6.8
Total	**68.7**	**0.6**	**122.6**	**0.4**	**192.3**
Route B					
PS-09	8.2	0.1	46.7	0.1	55.0
PS-10	18.0	0.3	27.7	0.3	46.2
PS-11	1.7	0.2	9.4	0.0	11.4
PS-12	2.0	0.0	1.1	0.1	3.1
PS-13	0.0	0.0	0.8	0.0	0.8
PS-14	1.2	0.0	3.9	0.0	5.1
PS-15	3.3	0.0	36.6	0.0	39.9
Total	**34.4**	**0.5**	**126.2**	**0.4**	**161.5**

Terrestrial and Aquatic Wildlife

Terrestrial and aquatic wildlife potentially impacted by the transmission line Routes would be similar to those described for the Project and are summarized in **Attachment H** (Special Status Species). **Attachment A, Transmission Line, Figure 1**, details the location of sensitive species affected by the routes including sage grouse leks and other sensitive species. **Attachment A, Transmission Line, Figure 2**, describes the big-game, fisheries, and avian resources potentially affected by the proposed Routes.

During construction, impacts to terrestrial and aquatic wildlife resources would be similar to those for the Project. The primary potential adverse impacts include direct mortality, habitat loss and fragmentation, disturbance and displacement of individual animals, interference with behavioral activities, and increased public access. Many impacts to habitat associated with sensitive species can be avoided during construction and operation by spanning these habitats therefore, relatively few permanent disturbances to terrestrial or aquatic wildlife would occur.

Transmission line construction could also include the improvement of access roads that may increase access to remote habitat and, therefore, increase hunting and fishing pressures on public properties. As shown in **Table O-2**, the Routes would cross approximately 70.3 miles of public lands on Alternative B, 51.3 miles on Alternative A, and 56.6 miles on Alternative A1A. These public lands allow access to hunting and fishing. In addition, these associated facilities may provide additional access to the Missouri River, a Class II fishery**.**

Additionally, impacts to avian wildlife would occur related to permanent standing structures and associated facilities. The Routes cross rivers and riparian areas that are likely to attract migratory birds including raptors,

waterfowl, and whooping cranes. ~~raptors and migratory birds.~~ The new transmission line segments will incrementally increase the collision potential for migrating and foraging bird species (e.g., raptors and migratory birds [APLIC 1994]). However, collision potential typically is dependent on variables such as the line location in relation to high use habitat areas (e.g., nesting, foraging, and roosting), line orientation to flight patterns and movement corridors, species composition, visibility, and line design. In addition, distribution lines that are less than 69 kV but greater than 1 kV could pose an electrocution hazard for raptor species attempting to perch on the structure. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 1996).

Spanning wetlands and waterbodies has the potential to increase impacts to migratory birds including raptors, waterfowl, and whooping cranes ~~raptors and migratory birds~~ that likely utilize these habitat locations. Transmission lines associated with PS 12 on Route A1A crosses a diversion canal that supplies, and is included within, Medicine Lake NWR, an area important to waterfowl as described for the project in Section 4.3.4.3. Other prime habitat locations occur in vegetated cover types grassland/rangeland and upland forest.

Potential collision and electrocution impacts to bird species from the Project could be reduced further if electrical service providers agree to implement the following mitigation measures.

- Incorporation of standard, safe designs, as outlined in Suggested Practice for Raptor Protection on Transmission Lines (APLIC 1996), into the design of electrical distribution lines in areas of identified avian concern to prevent electrocution of raptor species attempting to perch on the transmission poles and lines. These measures include, but are not limited to, a 60-inch separation between conductors and/or grounded hardware and recommended use of insulating materials and other applicable measures depending on line configuration (APLIC 1996).
- Incorporation of standard raptor-proofing designs, as outlined in Mitigating Bird Collision with Transmission Lines (APLIC 1994), into the design of the electrical distribution lines to prevent collision to foraging and migrating raptors within the project area, as applicable.

In addition to electrocution and collision impacts, transmission lines may have impacts to grouse species occurring along the route. According to the final management plan and conservation strategies for sage grouse in Montana (MSGWG 2005), “Transmission lines provide additional hunting perches for raptors in otherwise treeless areas. Transmission lines most likely impact grouse near leks, in brood-rearing habitat, and in wintering areas that also support large numbers of wintering raptors.”

Geology

Geologic resources found along the Routes would be similar in character to those associated with the Project. Generally, the geology consists of gently sloping sedimentary rocks of late Cretaceous to early Tertiary age. Stream erosion has formed dendritic drainage patterns producing moderate to steeply incised valleys. Extensive areas of glacial outwash and Quaternary fluvial deposits are exposed throughout each of the alternative Routes.

Potential issues associated with geology would be due to construction of the transmission lines; no additional impacts would be expected during operation. Issues could include potential hazards associated with seismic activities and landslides. Other hazards may result from construction on Cretaceous shales that contain bentonite beds. The high swelling hazard may cause slope instability during periods of precipitation.

Additionally, impacts would occur due to the upgrading of existing roads. Shales of the Bearpaw and Claggett formations are known to be susceptible to mass wasting and slope failure. The high swelling and high plasticity characteristics of these shales, coupled with their high slaking potential, tend to produce slope failure in moderate to steep terrains. Areas of potential slope failure are shown in **Attachment A, Transmission Line, Figure 3**.