6.3 Presence of Foraging and Roosting Sites (W)

Biological Justification

Whooping cranes often make low altitude flights between roosting and foraging habitat and are thus at risk of collision with power lines and other structures (CWS and USFWS 2007; Stehn and Wassenich 2008; USFWS 2009). Austin and Richert (2001) found that agricultural crops, especially corn, sorghum, and winter wheat were the habitat most often contiguous to roosting areas and that most cranes traveled 0.62 mile from a roosting site to a foraging site. Therefore, wetlands located within 0.62 mile of agricultural crops form a wetland-agricultural matrix that is often used by whooping cranes during migration (Austin and Richert 2001). Tetra Tech determined the proportion of the project area that was comprised of wetland-agricultural matrix. Tetra Tech included water bodies of any type (hereafter wetlands), but restricted the analysis to wetlands greater than 0.25 acre to eliminate inclusion of unusable wetland (e.g., borrow pits). Tetra Tech limited the analysis to crop agriculture because it is most often used for feeding habitat and restricted the analysis to agriculture greater than 1 acre because most observations of cranes occurred in agriculture greater than 1.0 acre (Austin and Richert 2001).

Scoring

To quantify the amount of roosting and foraging habitat in a project area, GIS landcover data (GAP data) was obtained for North Dakota (Strong et al. 2005). Water features and the spatial extent of waters were verified with NWI data (USGS 2007). The GIS analysis was designed to calculate the total area of wetland-agricultural matrix, which may include other habitat types between patches of wetlands and agriculture. Thus, based on the size restrictions and spatial configuration, the total acres of wetland-agricultural matrix could be greater or less than the sum of the acres of wetland and agriculture. Tetra Tech calculated the proportion of the project area that was wetland-agricultural matrix by dividing the total acres of wetland-agricultural matrix by the total acres of the project. Tetra Tech used the proportion as the score in the likelihood index; therefore, scores may range from 0 to 1.

Field Verification

Tetra Tech verified the presence of suitable roosting locations during a site visit in October timed to coincide with the fall migratory period for whooping cranes in North Dakota. Any desktop-identified wetlands that were found to (a) either not exist or (b) exist in a form that might render then unusable by cranes were removed from the analysis. The field visit resulted in the removal of 855 acres of wetland from the analysis; no suitable wetlands were added.

Assumptions

The optimal distance of foraging habitat from roosting habitat is 0.62 mile.

Habitats not classified as suitable wetlands or agriculture are of neutral value and do not influence the availability of suitable wetlands or agriculture on the landscape.

6.4 Likelihood Index Formula (LI)

The likelihood index of whooping cranes occurring at the WEP was calculated by evaluating the landscape features in and around the project. Tetra Tech used the following formula to calculate the likelihood index:

$$LI_i = (L_i \times A_i) + W_i$$

Where:

L_i = location of project in relation to the migration corridor score;

A_i = attractiveness score, or the ratio of suitable wetlands in a project to suitable wetlands in a 35-mile area around a project; and

W_i = wetland-agricultural matrix score.

The equation places the most weight on the location in the migration corridor because of the wide range of scores. Thus, a project within the 75-percent corridor will tend to score higher than a project within the 95-percent corridor unless the attractiveness score for the project within the 75-percent corridor is low (e.g., <0.50) or the attractiveness score for the project within the 95-percent corridor is high (>4.0), when other values are equal. Projects located outside of the 95-percent corridor will tend to score low unless the attractiveness score is high because the location score is less than 1.0.

7.0 ASHLEY WEP ASSESSMENT

The likelihood index score was 2.99 for the entire WEP (Table 2) implying a low likelihood of occurrence. The WEP is located within the 89-percent buffer (Figure 3); therefore, the Location (L) parameter was 2.0. A total of 7 observations of 26 individuals have been reported within the 35-mile buffer around the WEP (Figure 4). The percentage of available and suitable wetlands within the WEP is higher than the surrounding 35-mile buffer area, with a calculated Attractiveness on the Landscape (A) value of 1.39. Twenty-one percent of the WEP consists of suitable wetland-agriculture matrix habitat, making the Presence of Feeding and Roosting Sites (W) value 0.21 (Figure 4).

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