

## **V-5.0 NATURAL RESOURCES**

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The natural resources of the 115 kV transmission line area have been extensively studied and documented throughout the development stage of the Kibby Wind Power Project, as well as through earlier studies performed in support of the licensing of the former Kenetech project. TransCanada has conducted rare raptor surveys, rare plants surveys, vernal pool surveys, and wetland delineations to characterize natural resources. TransCanada is engaged in ongoing consultations with applicable state and federal resource agencies to ensure that resources of concern have been identified and appropriate studies have been conducted according to acceptable protocols. TransCanada's studies, when combined with those conducted over a decade earlier by Kenetech, provide a comprehensive, long-term assessment of the specific natural resources in vicinity of the 115 kV transmission line. This assessment has formed the basis for the detailed design work, allowing not only an identification of potential impacts, but development of avoidance strategies resulting in a minimization of those impacts, as well as design of appropriate mitigation measures where impacts are unavoidable.

The following subsections provide a description of the existing natural resources in the proposed 115 kV transmission line area, and a review of potential construction and operation impacts.

### **V-5.1 Vegetative Communities**

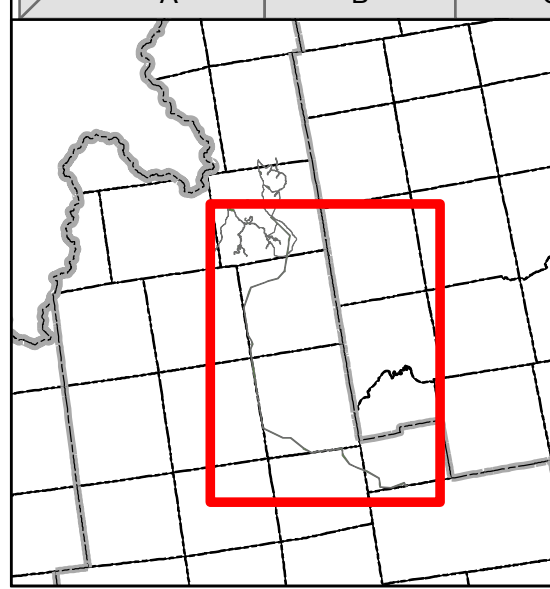
#### ***V-5.1.1 Existing Resources***

The proposed Kibby Wind Power Project 115 kV transmission line will have its origin at the Kibby Substation, which is located in Kibby Stream valley, between Kibby Range and Kibby Mountain. The entire region is generally undeveloped and dominated by working industrial forest and a mountainous landscape. The proposed transmission line ROW extends roughly south, leaving the mountains, and traversing Jim Pond Township, Eustis Township, Coplin Plantation, Wyman Township, and Carrabassett Valley to the existing Bigelow Substation (see Figure V-5-1).

This area is within the Western Mountains Biophysical Region, which is best characterized by its rugged topography, cool climate, low annual precipitation, and high snowfall. The average maximum temperature in July is approximately 75°F (24°C), which is lower than any other part of the state except the Eastern Coastal Region. The average minimum temperature in January is -1°F (-18°C), comparable to that of northern Maine. The average annual precipitation in this region is low at approximately 39 inches (99 centimeters [cm]), although this varies with elevation and aspect. Due to the rain shadow effect that mountains and mountain ranges produce, windward slopes may receive up to 50 inches (127 cm) of annual precipitation while leeward slopes may receive less than 35 inches (89 cm) (McMahon 1990).

The proposed Kibby Substation will be situated in the Kibby Stream valley, between Kibby Mountain and Kibby Range. Kibby Mountain is one of the highest mountains in the area, and





**Legend**

- Mile Post Marker
- Bigelow Substation
- Proposed Kibby Substation
- Transmission Line
- Town Boundary
- County Boundary
- State Boundary

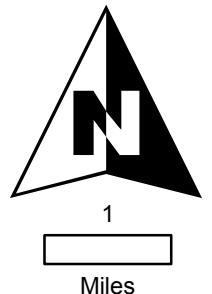


Figure V-5-1  
**Kibby Wind Power Project**  
*Transmission Line Location*

Base Map: 100k USGS topographic map. Political boundaries courtesy of MEGIS.



Kibby Range is one of the largest in terms of area and number of peaks included along its ridgeline. Kibby Range's multiple peaks range from approximately 3,002 to 3,281 feet (915 m to 1,000 m) high. From the Kibby Substation, the proposed transmission line ROW descends out of the mountains into the North Branch of the Dead River valley, crossing the Jim Pond watershed, North Branch of the Dead River, Alder Stream, Tim Brook, South Branch of the Dead River, Nash Stream, and Stoney Brook. See Section V-6.0 for more detail on water resources associated with the 115 kV transmission line.

Vegetation in the general vicinity of the 115 kV transmission line consists primarily of mixed softwoods and northern hardwoods. Aerial photographs were used to identify preliminarily the cover types and potential natural communities. Subsequent field activities in 2006 included traveling along the proposed transmission ROW to identify and characterize natural communities and other natural resources, including wetlands. Notes on the dominant plants, tree heights, hydrology, signs of wildlife use, and physical characteristics were recorded. Photos were taken to document typical habitat characteristics and to illustrate important natural community and wetland features.

Natural communities have been classified using the Maine Natural Area Program's (MNAP) most recent classification system (Gawler and Cutko 2004). A natural community is defined by Gawler and Cutko (2004) as an assemblage of interacting plants and animals and their common environment, recurring across the landscape, in which the effects of recent human intervention are minimal. Natural communities found in the vicinity of the 115 kV transmission line include the Beech-Birch-Maple Forest and Spruce-Northern Hardwoods Forest. These communities occur within the Spruce-Fir-Northern Hardwoods Forest Ecosystem of Maine (Gawler and Cutko 2004).

The 115 kV transmission line is located within a working forest. Virtually all of the area surrounding the ROW has been influenced by timber harvesting activities. This activity has ultimately affected the composition of the forest, particularly by reducing the amount of mature spruce (*Picea* spp.) and sugar maple (*Acer saccharum*) stands in the area and by converting large areas of mature forest to younger stands. Consequently, the dominant forest types are present in a variety of different ages and species composition. It is typical that natural communities are not present or the natural communities present are not in good condition. In those cases where natural communities are not readily assignable, the woodland has been identified as "regenerating forest" due to recent or active timber harvesting. In cases where the forest has been disturbed, the natural community present has been determined by the later-successional tree species present, the understory, and other site characteristics, such as elevation and landscape position. Following are descriptions of natural communities and wetland types found in the vicinity of the 115 kV transmission line.

#### **V-5.1.1.1      *Beech-Birch-Maple Forest***

Beech-birch-maple forests were originally included under a broader classification called Northern Hardwood Forest (Gawler 1991). Beech-birch-maple forests are most common at

elevations below 2,300 feet (701 m) around the bases of the mountains, on the lower valley side slopes, and on higher, protected slopes.

Dominant canopy trees in this community include sugar maple, red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), and yellow birch (*Betula alleghaniensis*). Striped maple (*Acer pensylvanicum*) is a dominant sub-canopy and shrub species. Hobblebush (*Viburnum lantanoides*), mountain maple (*Acer spicatum*), and red-berried elder (*Sambucus racemosa*) are also common shrubs. The herb layer is typically dominated by partridgeberry (*Mitchella repens*), wood fern (*Dryopteris intermedia*), bracken fern (*Pteridium* spp.), bluebead lily (*Clintonia borealis*), northern wood-sorrel (*Oxalis montana*), and whorled aster (*Aster acuminatus*). As elevation increases, balsam fir (*Abies balsamea*) becomes a more common component of this community type. A representative photo of this community is provided in Figure V-5-2.

Many of the beech-birch-maple stands in vicinity of the 115 kV transmission line have been affected by harvesting activities. Some of these stands have been selectively harvested, or have not been harvested for a number of years, and contain many of the characteristics of the defined natural community. Where more intensive harvesting has occurred, these usually shaded forests contain relatively open canopies that in turn tend to support species not commonly associated with mature hardwood forests, including willows (*Salix* spp.), red raspberry (*Rubus idaeus*) and a wide array of herbaceous species. Historically, this was likely a common community found along the 115 kV transmission line ROW, however, more recent logging has removed much of the mature forest in this area, which is now in a stage of regenerating forest that is not readily assigned to a community.

#### **V-5.1.1.2 Spruce-Northern Hardwood Forest**

Spruce-northern hardwood forest is the transitional natural community between the lower elevation beech-birch-maple forest and higher elevation softwood-dominated communities. It is believed that many of the regenerating conifer areas at elevations mainly below 2,700 feet (823 m) were once spruce-northern hardwood forest. Where this community is still intact, the canopy is a mixture between hardwood (yellow birch, beech, and sugar maple) and softwood (mainly red spruce [*Picea rubens*] with some balsam fir and white pine [*Pinus strobes*]) species. The sapling and shrub layer can be well developed with red spruce, balsam fir, beech, striped maple, mountain maple, red maple and hobblebush. Wood fern, northern wood sorrel, and starflower (*Trientalis borealis*) are common herbaceous plants found in this community. See Figure V-5-3 for a representative photograph of this community.

#### **V-5.1.1.3 Regenerating Forest Stands**

Regenerating forest stands occur all along the 115 kV transmission line ROW. These include clearcuts that are being actively managed to promote softwood growth. Some areas are well- to over-stocked with fir and spruce regeneration ranging from 3 to 15 feet (1 to 5 m) in height, though very recent clearcuts frequently have little vegetation at all. Many of these regenerating forests have recently been thinned (pre-commercial). Other areas have been selectively cut





**Figure V-5-2: Photo of beech-birch-maple forest**



**Figure V-5-3: Photo of spruce-northern hardwood forest**

and are being managed for hardwood. Many of these areas have a thick regeneration of hardwood. There are also several areas of softwood plantations. A large proportion of the cut areas have been harvested in the last 20 years (see Figures V-5-4 and V-5-5 for representative photos).

#### **V-5.1.1.4 Wetlands**

Details with regard to wetlands and streams found along the 115 kV transmission line are provided in Section V-6.5. The following sections generally describe the major wetland cover types (forested, scrub-shrub, and emergent) that occur in the proposed transmission line area.

##### ***Forested Wetlands***

Forested wetlands are characterized by woody vegetation that is at least 20 feet (6 m) tall (Cowardin et al. 1979). Forested wetlands comprise 51 percent of the total number of wetlands within the 115 kV transmission line ROW. Most of these are classified as broad-leaved deciduous and/or needle-leaved evergreen forested wetlands (see Figure V-5-6).

##### ***Scrub-Shrub Wetlands***

Scrub-shrub wetlands are characterized by woody vegetation less than 20 feet (6 m) tall (Cowardin et al. 1979). These areas are typically dominated by shrubs and young trees, but may also include older trees that are stunted due to environmental conditions. Scrub-shrub wetlands within the 115 kV transmission line ROW occur as three general types: scrub-shrub wetlands associated with seeps or small streams; scrub-shrub wetlands associated with large streams; or scrub-shrub wetlands that are in early-successional stages due to recent tree harvesting. Approximately 26 percent of the total number of wetlands within the proposed 115 kV transmission line ROW consists of the scrub-shrub wetland cover type. Scrub-shrub wetlands are structurally similar to early successional habitats. However, they generally have a greater diversity and abundance of wildlife species due to the seasonal presence of water (see Figure V-5-7).

##### ***Emergent Wetlands***

Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et al. 1979). Emergent wetlands include areas commonly referred to as marshes and wet meadows. Emergent wetlands within the 115 kV transmission line ROW are often intermixed with scrub-shrub wetlands. Therefore, areas that could be classified solely as emergent wetlands comprise approximately 22 percent of the total number of wetlands within the proposed transmission line corridor. Most of the emergent wetlands are found in narrow openings in the forest canopy, and are classified as emergent because the wetland area is dominated by herbaceous vegetation (see Figure V-5-8).





**Figure V-5-4: Representative photo of regenerating forest stand**



**Figure V-5-5: Representative photo of regenerating forest stand**





**Figure V-5-6: Representative photo of forested wetland**



**Figure V-5-7: Representative photo of scrub-shrub wetland**





**Figure V-5-8: Representative photo of emergent wetland**

## V-5.1.2 Potential Impacts to Vegetative Communities

### V-5.1.2.1 Habitat Conversion

Transmission line construction inherently entails the construction of a ROW corridor and the placement of poles. Construction and access requires the use and/or improvement of access roads. Also inherent to new transmission is the use, upgrade/expansion or construction of one or more substations. A description of each transmission line feature and the potential associated impacts is found in the following subsections.

#### **Transmission Line Corridor**

Approximately 485.7 acres of land will be occupied by the 115 kV transmission line ROW (see Table V-5-1). Cut areas and regenerating forests comprise roughly 67 percent of this total. Approximately 18 percent is comprised of mature deciduous, mixed or coniferous forests, and about 14 percent is comprised of wetlands. All other cover types represent 2 percent or less of the total area of the proposed transmission corridor.

**Table V-5-1: Habitat Cover Types Along 115 kV Transmission Line ROW**

<b>Cover Type</b>	<b>Approximate Acreage</b>	<b>Percent Total</b>
<i>Coniferous Forest</i>	10.2	2%
<i>Deciduous/Mixed Forest</i>	76.6	16%
<i>Heavily Cut</i>	192.6	40%
<i>Lightly Cut</i>	92.5	19%
<i>Regenerating Forest</i>	37.6	8%
<i>Wetlands</i>	66.7	14%
<i>Scrub/Shrub</i>	0.5	0%
<i>Road/Runway</i>	7.6	2%
<i>Open Water</i>	1.4	0%
<b>TOTAL:</b>	485.7	100%

The proposed transmission line corridor will be cleared of trees, where necessary. After construction, the corridor will be allowed to revegetate; shrubs and low trees will be allowed to establish to a height of approximately 10 feet (3.1 m). The ROW will become dominated by shrubs and a variety of broad- and narrow-leaved herbaceous vegetation as is typical of transmission line ROWs. Vegetation along the corridor will be trimmed or maintained every 4-6 years.

In areas of mature forest, construction and maintenance of the 115 kV transmission line will result in habitat conversion from forested habitats to shrub and herbaceous vegetation. Mature coniferous and deciduous/mixed forest cover types represent approximately 87 acres (18 percent) of the 115 kV transmission line ROW. In these areas, habitat conversion will be similar to what is currently common in the vicinity of the proposed transmission line due to ongoing logging practices. The potential impacts of these habitat changes on wildlife are discussed in Section V-5.4.



In areas that have already been impacted by forestry practices, the ROW will more closely resemble its surroundings. Such areas combined represent 323 acres, or about 67 percent of the total area of the proposed 115 kV transmission line ROW. Due to the similarity in current and expected resultant cover types, habitat conversion in these areas will be minimal.

As for the entire Kibby Wind Power Project, the proposed 115 kV transmission line layout has been designed to avoid wetlands to the extent possible. Wetland avoidance planning has resulted in minimization of potential clearing impacts, and the proposed construction practices will further limit these impacts. Temporary impacts to wetland habitat include the use of mats for wetland equipment crossings during non-winter construction. Permanent impacts include conversion of forested wetlands to scrub-shrub or emergent cover types. Section V-6.5 discusses wetland impact associated with the 115 kV transmission line in more detail.

In total, 77 streams will be spanned by the proposed transmission line. No pole placement is proposed within 100 feet of perennial streams, and only 4 anchors for one structure are within 100 feet of streams. Most of these streams are small, and may be temporarily impacted by equipment mat crossings associated with construction access. Larger streams such as the North Branch of the Dead River, Alder Stream, and Tim Brook will not be crossed by equipment. Pole placements adjacent to the streams will be designed so the conductors provide ample vertical clearance above the streams; this will allow buffers of woody riparian vegetation to be maintained to the maximum practical height. This, in turn, will help to provide continued shade to the streams, which will help maintain water quality.

### ***Pole Placement***

In all cover type areas, installation the transmission structures will result in a small direct loss of habitat. Roughly 150 to 200 square feet of area around each structure will be temporarily impacted during construction. This area will be cleared of vegetation and will be traversed by heavy construction equipment during pole placement. After poles are installed, the area around the base of the structures will be allowed to revegetate. The area that is strictly isolated to the discrete footprint of each structure (typically less than 20 square feet for a typical wood H-frame structure) will experience permanent loss of habitat. Cumulatively, this will result in a minimal loss of habitat.

### ***Access Roads***

Existing access roads will be used to construct the 115 kV transmission line. No new roads will be developed. Access roads are discussed in more detail in Section V-1.5.2 and in Appendix 1-A. Use of existing roads and traveling down the ROW itself eliminates the need for TransCanada to construct new temporary or permanent access roads for construction and operation of the 115 kV transmission line. Some of the existing access roads are logging roads that are in various states of repair. Improvements to some of these roads may be required, and include trimming overhanging vegetation, minor grading, addition of gravel, replacing damaged or non-functional culverts, and installing temporary mat bridges. Any grading or new gravel will be limited to that which is necessary to maintain safe, reliable surfaces; these activities will not

result in any new impervious area, and will not be placed in protected resources such as wetlands.

No impacts are anticipated from use of existing access roads.

### ***Bigelow Substation Interconnection***

CMP will address any improvements to the existing Bigelow Substation that may be required as a result of the Kibby Wind Power Project. Impacts associated with the proposed construction of the new Kibby Substation in Kibby Township are addressed in Volume 1.

#### ***V-5.1.2.2 Invasive Species Infiltration***

The establishment of invasive plant species is a concern in any area where soil is disturbed. Soil disturbance during construction of the 115 kV transmission line will be minimal; this will limit the opportunity for non-native and invasive plant species to colonize disturbed areas, and will provide a suitable medium for indigenous shrub and tree regeneration.

Some areas may potentially require seeding for stabilization. In such areas, TransCanada will perform routine checks specifically to insure proper growth of desired species, and absence of invasive species. After construction, TransCanada will perform routine inspections for invasive plant species (particularly purple loosestrife [*Lythrum salicaria*] and Phragmites [*Phragmites australis*]) along the transmission line ROW. If invasive species are observed, appropriate control and/or removal programs will be implemented.

#### ***V-5.1.2.3 Fragmentation***

Continuous large tracts of mature forest wildlife habitats are considered highly valuable. Fragmentation, loss of habitat and loss of connectivity between large blocks of forested habitat have been cited as threats to Maine's forests. Fragmentation is the division of habitat into smaller and smaller patches that become more and more isolated from each other and from larger forested areas. These smaller patches are believed to be of lower quality, consequently providing less suitable habitat for native wildlife populations. Maine's Comprehensive Wildlife Conservation Strategy (Maine Department of Inland Fisheries and Wildlife [MDIFW] 2005a) defines "Large-scale forestry operations that result in habitat fragmentation, change in over- and under-story species composition (stand conversion); significant reduction in rotation length resulting in reduction in area of mature forest stands; loss of large blocks of forested habitat (>10,000 acres) and connectivity between large blocks; habitat loss and fragmentation associated with development and building of permanent roads..." as threats to upland coniferous, deciduous and mixed forest communities in Maine.

For the above reasons, the United States Fish and Wildlife Service (USFWS) Interim Guidelines to Avoid and Minimize Impacts from Wind Turbines (USFWS 2003) recommends that such developments: "Avoid fragmenting large, continuous tracts of wildlife habitat. Where practical, place turbines on lands already altered or cultivated, and away from areas of intact and healthy



native habitats. If not practical, select fragmented or degraded habitats over relatively intact areas.”

The area that will be traversed by the 115 kV transmission line ROW is largely characterized by harvested-forest zones that range from recent clearcuts to previously cut stands in varying degrees of regeneration. In addition, the area is already infiltrated with numerous logging roads. Furthermore, approximately 6.0 miles (9.7 km) of the proposed route (at the southeastern end, from Milepost 21.7 to Milepost 27.7) abuts already existing transmission line ROW. Overall, the natural forest landscape in the area is already heavily perforated by logging operations, and dissected by roads. Therefore, much of the 115 kV transmission line ROW represents lands that are “already altered...fragmented or degraded (USFWS 2003).” Figures V-5-9 through V-5-12 illustrate these existing conditions.

It is important to consider that logging is an ongoing practice in the vicinity of the 115 kV transmission line ROW. Therefore, the landscape is constantly changing, with mature forests being actively cut and infiltrated by associated logging roads while regenerating stands inherently grow towards maturity.

The conversion of habitat incurred by the 115 kV transmission line ROW will resemble the regenerating clearcuts that are already common to the area. Given the existing condition and dynamic nature of the area’s landscape, the 115 kV transmission line will not result in fragmentation impacts that are not already extant, occurring, or impending due to current uses.

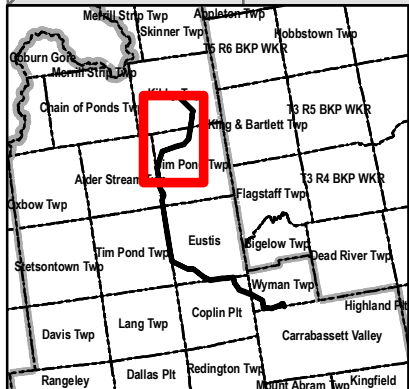
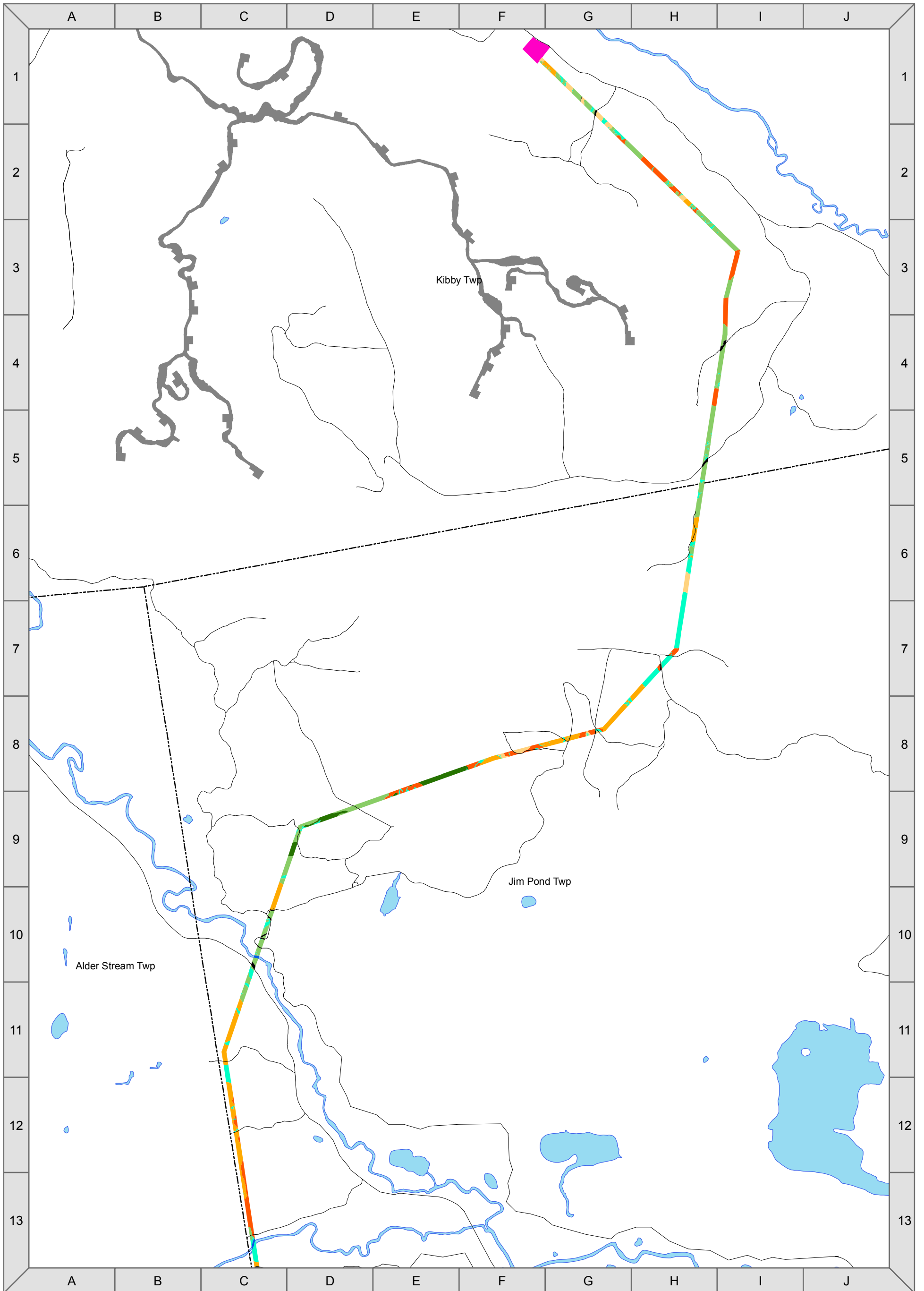
## **V-5.2 Unusual Natural Areas**

### ***V-5.2.1 Existing Resources***

TransCanada consulted with MNAP regarding the presence of rare or unique botanical features in the vicinity of 115 kV transmission line (Appendix V-C). Rare and unique botanical features are areas that include habitat for rare, threatened or endangered plant species and unique or exemplary natural communities. This consultation identified the presence of several rare plant species with the potential to be located in the area of the proposed transmission line.

Initial correspondence from MDIFW and MNAP resulted in the identification of five rare plant species known to occur within 1 mile (1.6 km) of the 115 kV transmission line ROW. These records include:

- Swarthy sedge (*Carex adusta*);
- Boreal bedstraw (*Galium kamtschaticum*);
- Giant rattlesnake plantain (*Goodyera oblongifolia*);
- Auricled twayblade orchid (*Listera auriculata*); and
- Lesser wintergreen (*Pyrola minor*).

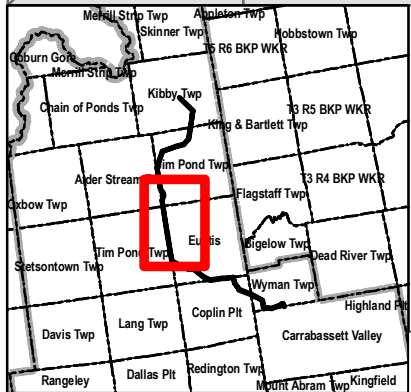
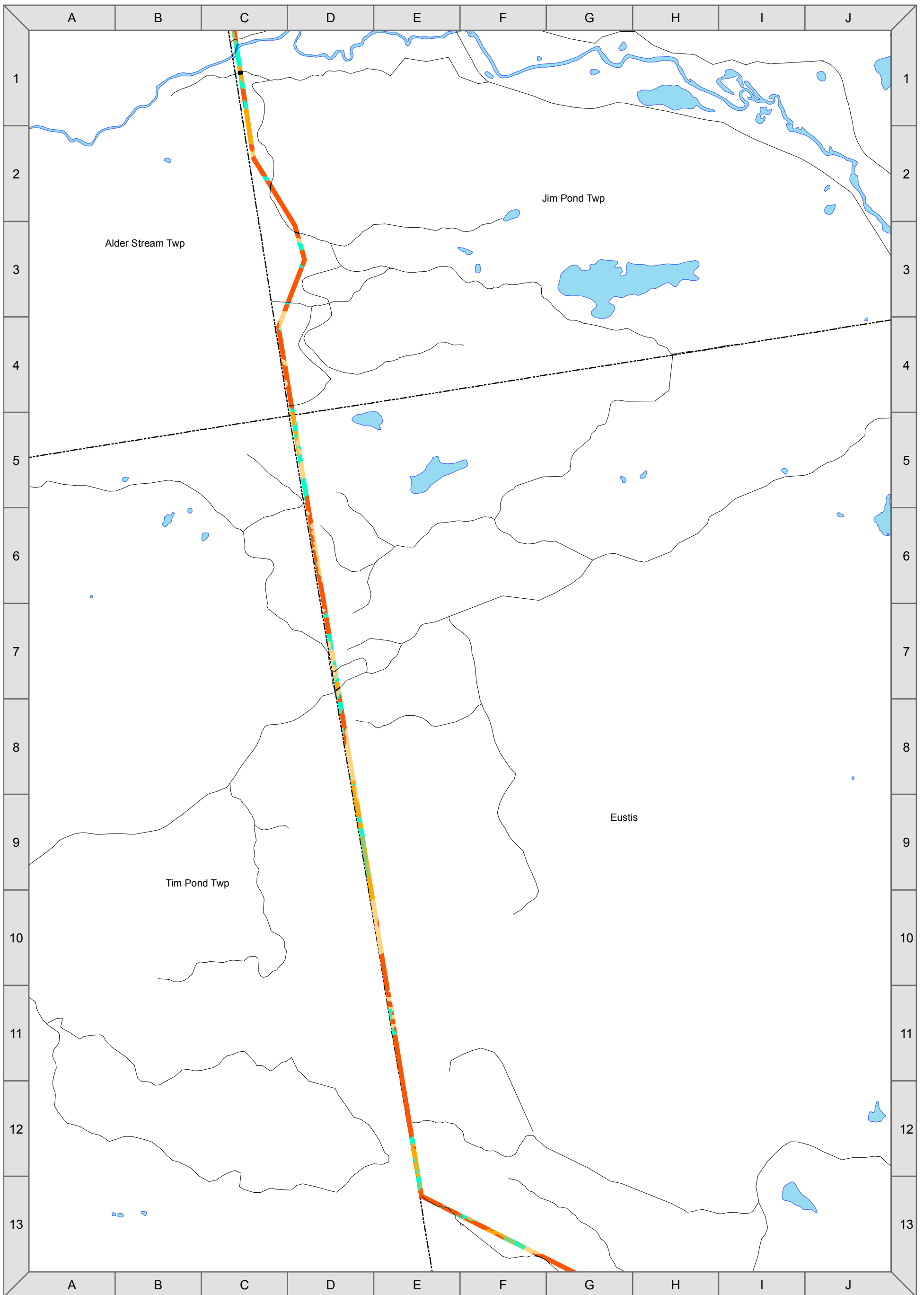


Legend	
	Coniferous Forest: 10.2 AC
	Deciduous/Mixed Forest: 76.8 AC
	Heavily Cut: 192.7 AC
	Lightly Cut: 92.7 AC
	Open Water: 1.4 AC
	Regenerating Forest: 37.6 AC
	Road/Runway: 7.6 AC
	Scrub/Shrub: .5 AC
	Wetlands: 66.2 AC
	Hydrography











Base Map: 100k USGS topographic map. Political boundaries courtesy of MEGIS.

Figure V-5-9  
**Kibby Wind Power Project**  
*Land Cover in the Vicinity of the Proposed Transmission Line ROW*





**Legend**

 Coniferous Forest: 10.2 AC	 Deciduous/Mixed Forest: 76.8 AC	 Heavily Cut: 192.7 AC	 Lightly Cut: 92.7 AC	 Open Water: 1.4 AC	 Regenerating Forest: 37.6 AC	 Road/Runway: 7.6 AC	 Scrub/Shrub: .5 AC	 Wetlands: 66.2 AC	 Hydrography
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Base Map: 100k USGS topographic map. Political boundaries courtesy of MEGIS.

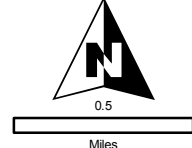
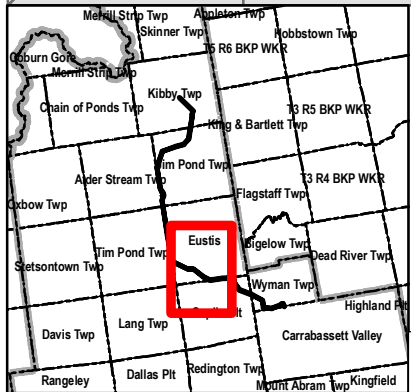
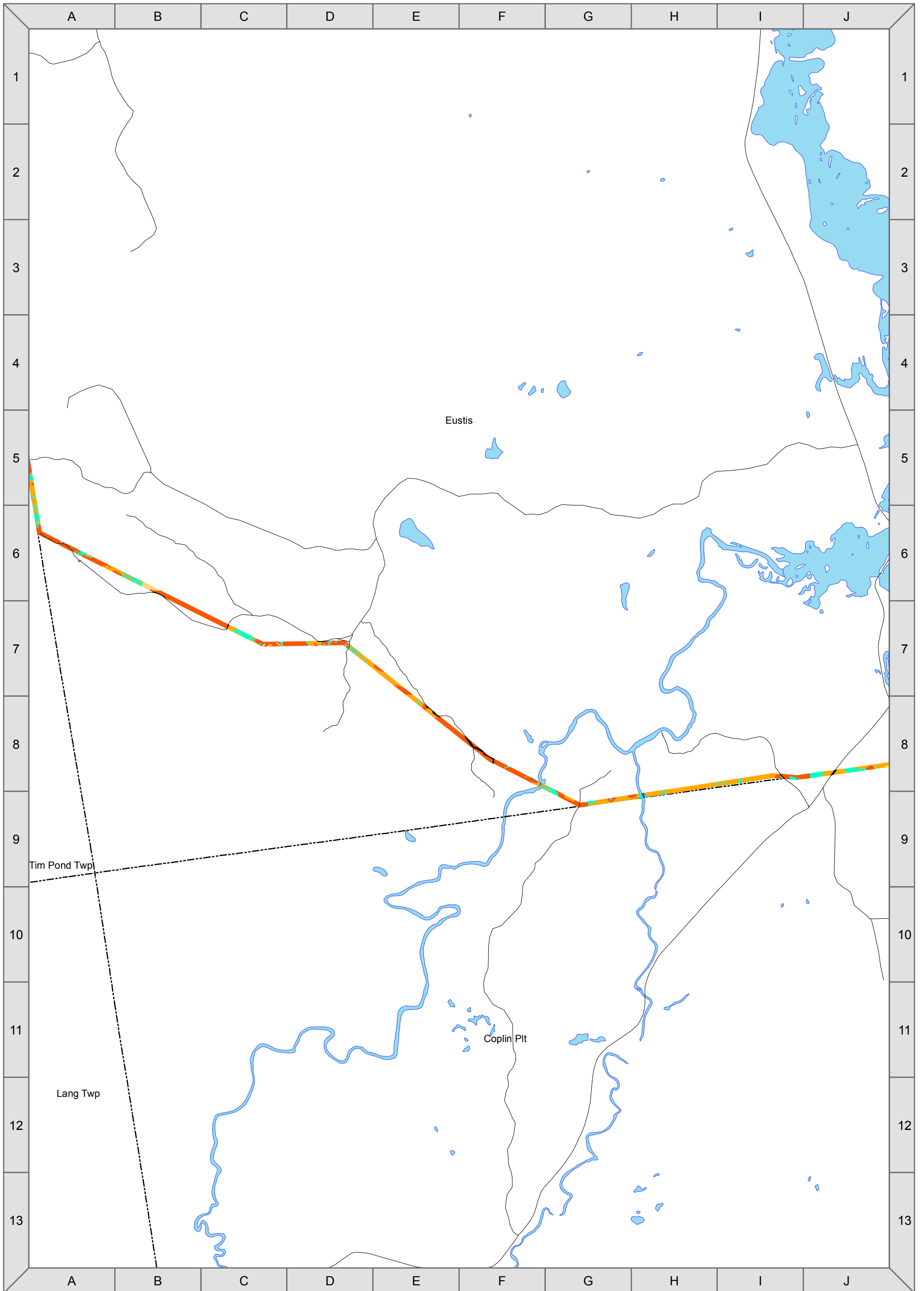


Figure V-5-10  
**Kibby Wind Power Project**  
*Land Cover in the Vicinity of the Proposed Transmission Line ROW*



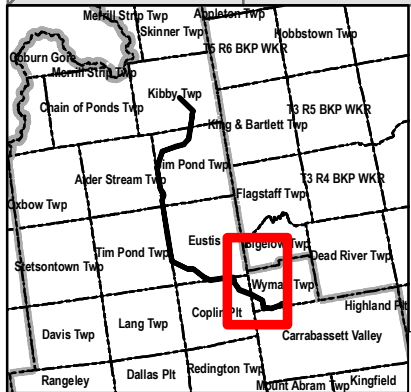
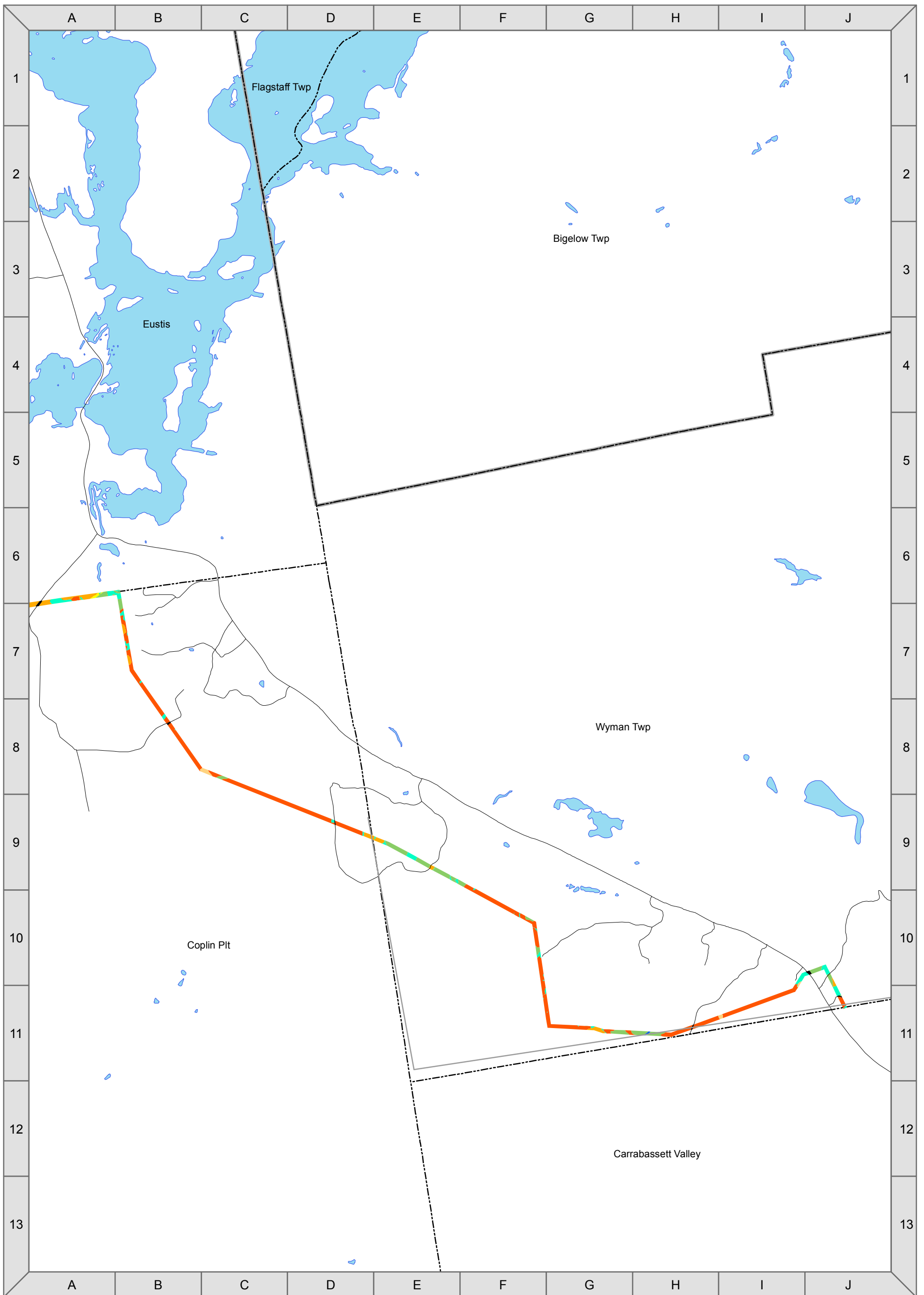
Legend	
	Coniferous Forest: 10.2 AC
	Deciduous/Mixed Forest: 76.8 AC
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	Lightly Cut: 92.7 AC
	Open Water: 1.4 AC
	Regenerating Forest: 37.6 AC
	Road/Runway: 7.6 AC
	Scrub/Shrub: .5 AC
	Wetlands: 66.2 AC
	Hydrography

Base Map: 100k USGS topographic map. Political boundaries courtesy of MEGIS.

0.5  
Miles

Figure V-5-11  
**Kibby Wind Power Project**  
*Land Cover in the  
Vicinity of the Proposed  
Transmission Line ROW*





**Legend**

- Surveyed Town Line
- Coniferous Forest: 10.2 AC
- Deciduous/Mixed Forest: 76.8 AC
- Heavily Cut: 192.7 AC
- Lightly Cut: 92.7 AC
- Open Water: 1.4 AC
- Regenerating Forest: 37.6 AC
- Road/Runway: 7.6 AC
- Scrub/Shrub: .5 AC
- Wetlands: 66.2 AC
- Hydrography

Base Map: 100k USGS topographic map. Political boundaries courtesy of MEGIS.

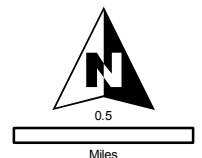


Figure V-5-12  
**Kibby Wind Power Project**  
*Land Cover in the Vicinity of the Proposed Transmission Line ROW*

Initial rare plant field investigations were conducted in August 2005, with further species-specific surveys during August and September 2006; the report is provided in Appendix 7-C. During these surveys, the growing season was well advanced and plants were readily identifiable from vegetative, flowering, or fruiting parts. On all days of the searches, the weather was dry and was conducive to efficient and thorough searches. Searches in the vicinity of the 115 kV transmission line ROW were species habitat-based, with particular attention paid to rich northern hardwood communities, ledge outcrops, seeps, and cedar-dominated wetlands.

Two special concern state-listed plant species, the auricled twayblade and lesser wintergreen, were observed within the proposed transmission line corridor. These species are ranked as S2, which according to the state rarity rank, means that these species are imperiled in Maine because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

Auricled twayblade was observed in two locations along the proposed transmission line ROW. The first is on the banks of the North Branch of the Dead River, where the 115 kV transmission line will cross this stream. This site is in Jim Pond Township at approximately Milepost 7.3 of the proposed transmission line (see Figure V-5-13). This plant was observed on both sides of the stream, but appeared more commonly on the southerly side (at least in the area of the crossing). This population was first observed in 1994 (Gilman 1994), and appears much the same now as then (Gilman 2006). The second population of auricled twayblade was discovered during rare plant surveys at other potential sites identified by TransCanada's consultants. This new record was represented by only one plant at the time of the survey. The individual plant was located on the north bank of Tim Brook at approximately Milepost 13 of the 115 kV transmission line ROW (see Figure V-5-13).

Lesser wintergreen was observed in one new location along the 115 kV transmission line corridor, with very small numbers present. This species was found at Milepost 13, on the banks of Tim Brook, at the same location as the above described auricled twayblade (see Figure V-5-14). The lesser wintergreen observed in that location grows on the steep south bank, close to the water's edge, and is associated with various mosses and other pyrolids (e.g., shinleaf, *Pyrola elliptica*). Five plants were observed in this location (one was collected for a voucher specimen).

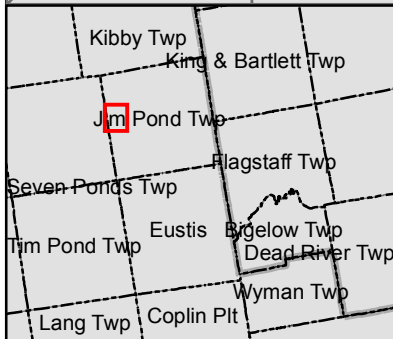
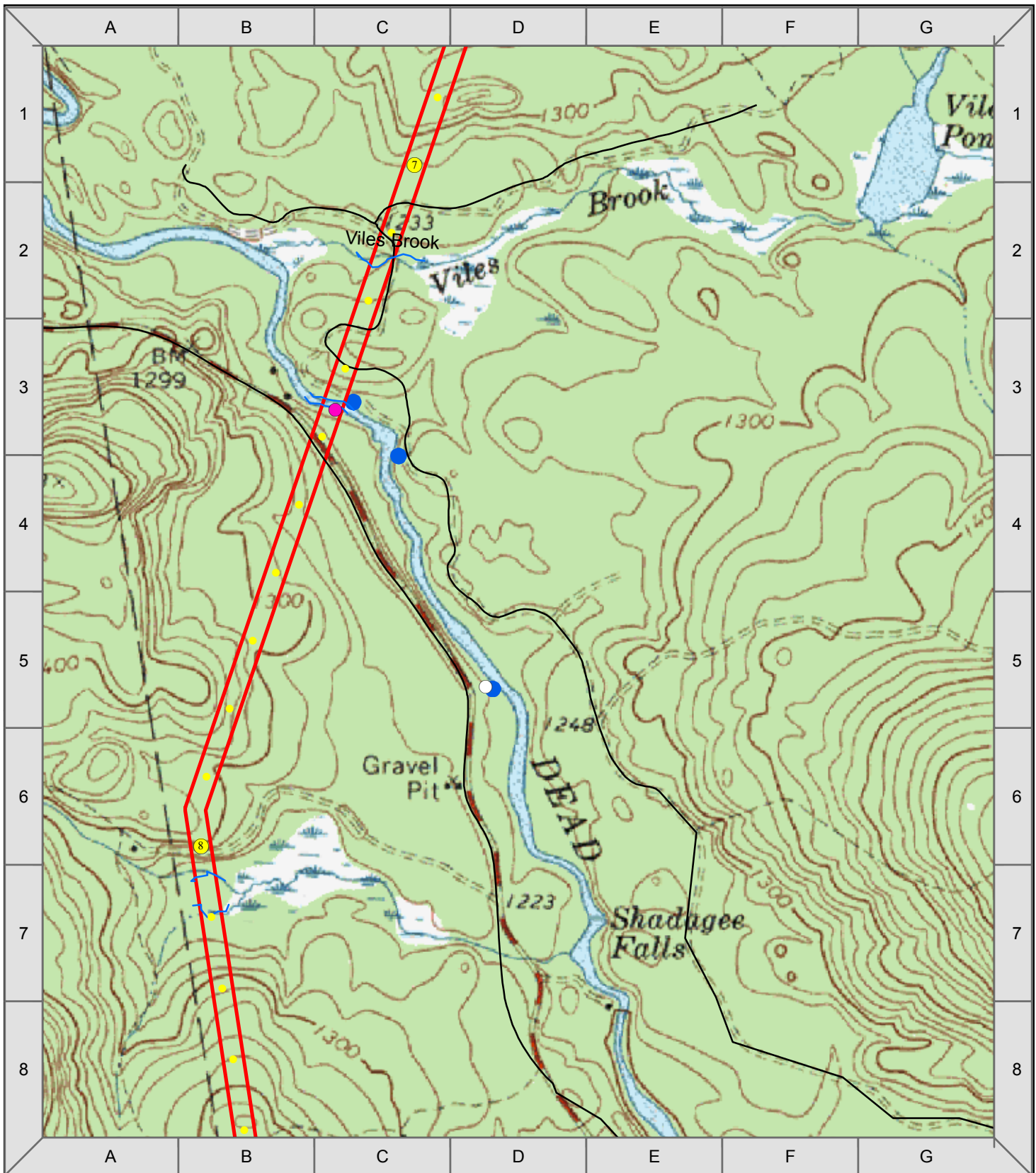
#### **V-5.2.2 Potential Impacts to Unusual Natural Areas**

No impacts are anticipated to unusual natural areas. To ensure that the rare plant species found in the project area are not adversely impacted, TransCanada is proposing to implement several best management practices where they occur.

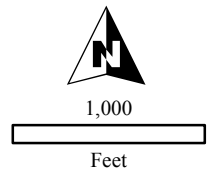
TransCanada proposes the following measures to protect auricled twayblade:

Structures are not placed in the habitat for this species but are located on either side of the stream to maximize conductor height above the streambanks, which will allow continued growth of alders and other shrubs up to 15 feet (4.6 m), to provide shade for this species.





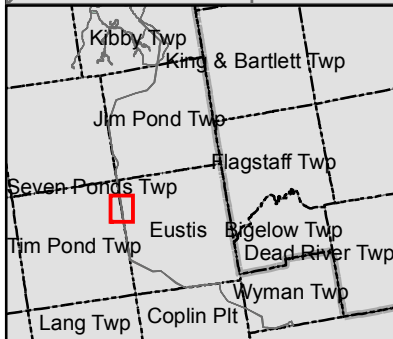
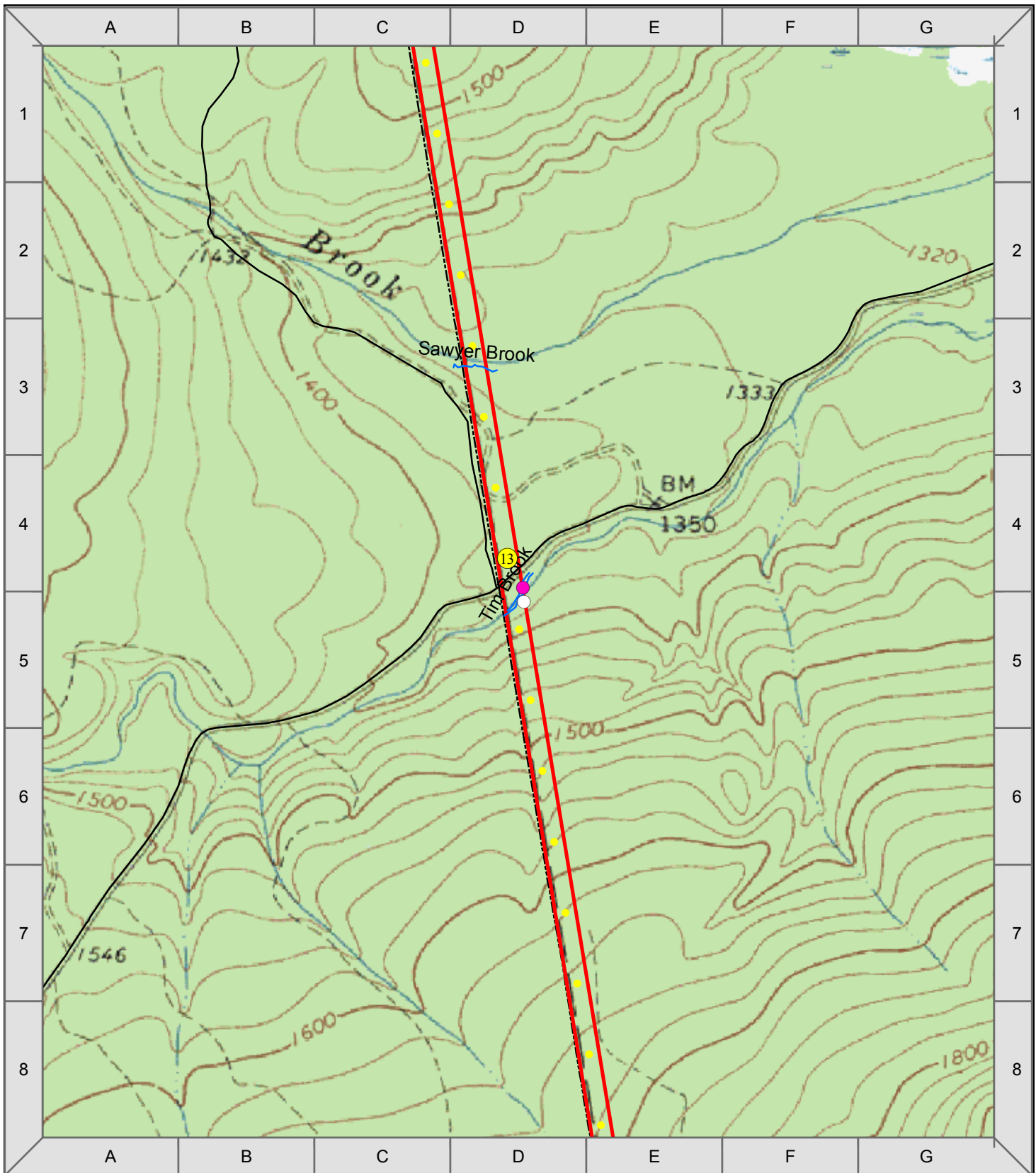
- Legend**
- Mile Marker
  - Observed *Listera auriculata*
  - MNAP *Listera auriculata*
  - Streams
  - Road
  - ▭ Proposed Transmission Line



**Figure V-5-13**  
**Kibby Wind Power Project**  
*Listera auriculata* at  
 North Branch of Dead River

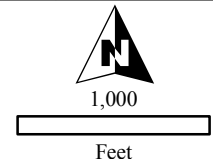
**Notes:** Base map: USGS 24k Topographic Map.  
 Coordinate Grid: NAD83 UTM Zone 19N, Meters.

INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES. TRC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.



- Legend**
- Mile Marker
  - Observed *Pyrola minor*
  - Observed *Listera auriculata*
  - MNAP *Pyrola minor*
  - MNAP *Listera auriculata*
  - Streams
  - Road
  - ▭ Proposed Transmission Line

**Notes:** Base map: USGS 24k Topographic Map.



**Figure V-5-14**  
**Kibby Wind Power Project**  
*Listera auriculata*  
 and *Pyrola minor*  
 at Tim Brook

- Mark sites with “Sensitive Resource Area” signs during construction.
- Take care in clearing and stringing lines to minimize foot traffic at streambank.
- No clearing of shrubs or small trees less than 15 feet (4.6 m) tall along streambank.
- No stacking of brush from clearing at streambank or on first terrace (generally, not within 15 feet [4.6 m] of the top of bank), or in any manner that brush would be washed into or become lodged on the stream terrace.
- Add a notation on the site plans and add identification of this area to long-term vegetation management plans so that impacts will not occur in future.
- Monitor for 3 years after construction, with the final report making recommendations with regard to future vegetation management.

In order to avoid impacts to lesser wintergreen, TransCanada proposes the following measures to protect this species in the location where it has been identified:

- Flag the small area where this species occurs, and mark the site with “Sensitive Resource Area” signs, in order to avoid during project clearing.
- Minimize clearing of shrubby vegetation in the immediate vicinity to maintain shade.
- Exercise care in clearing to minimize foot traffic at streambank.
- Add notation on the site plans and add to long-term vegetation management plans so that impacts will not occur in future.
- Monitor for 3 years after construction, with final report to make recommendations in regard to future vegetation management.

Given these measures, no impacts to state-listed plant species are expected as a result of the 115 kV transmission line.

### **V-5.3 Essential and Significant Wildlife Habitat**

#### ***V-5.3.1 Existing Resources***

TransCanada consulted with MDIFW and USFWS regarding the potential presence of Significant and Essential Wildlife Habitat in the vicinity of the 115 kV transmission line ROW (Appendix V-D and Appendix V-E).

Essential Habitats are defined as “areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine and which may require special management considerations.” Currently, Essential Habitat protection in Maine applies to bald eagle, roseate and least tern and piping plover nest sites. No protected Essential Habitat areas were identified within the project area.

Significant Wildlife Habitat is defined by the NRPA and includes certain of the following types of areas:



- Mapped habitat for state and federally listed endangered and threatened species;
- Mapped high and moderate value deer wintering areas (DWAs) and travel corridors;
- High and moderate value waterfowl and wading bird habitats (WWHs), including nesting and feeding areas;
- Shorebird nesting feeding and staging areas; and
- Seabird nesting islands.

Starting in September 2007, significant vernal pools will also be regulated as significant wildlife habitat under NRPA. Vernal pool habitats are discussed in Section V-8.5.

Consultation with MDIFW and USFWS agencies revealed that several mapped inland waterfowl and wading bird habitats (IWWH) and a DWA occur along the 115 kV transmission line ROW. These are listed in Table V-5-2.

**Table V-5-2: Significant Wildlife or Rare Species Habitats Along the 115 kV Transmission Line ROW**

Mile Post	Town	Jurisdiction	Habitat Type / IFW ID	Value / Status	Acreage Traversed	Length of Crossing (ft)	Associated Wetland(s)
7.1	Jim Pond Twp.	LURC	IWWH/UMO-9184	Low	1.95	572	B127
8	Jim Pond Twp.	LURC	IWWH/UMO-9279	Low	2.52	737	B118
9	Jim Pond Twp.	LURC	IWWH/UMO-8635	Low	2.99	874	B113
10.2	Jim Pond Twp.	LURC	IWWH/UMO-9568	High	3.31	965	B107
15.7	Eustis	DEP	IWWH/UMO-10314	Low	6.62	1876	A174, A-176, A-175, C-174
20	Eustis	DEP	DWA/060027	IND.	1.95	613	A142
21	Eustis	DEP	DWA/060027	IND.	1.74	267	A136
21.1	Eustis	DEP	IWWH/UMO-10487	High	2.79	803	A135

IND. = Indeterminate: these areas, although they may provide important habitat, have not been assigned a value status.

### **V-5.3.1.1 Inland Waterfowl and Wading Bird Habitat**

Wading birds and waterfowl are a diverse assemblage of species which make significant, but not exclusive use of wetland habitats. MDIFW defines wading birds as herons, egrets, glossy ibis, bitterns, rails, coots, common moorhens, and sandhill cranes (MDIFW 2005b). Maine

statute defines migratory waterfowl as “members of the family Anatidae or waterfowl including brant, wild ducks, geese, and swans (12 MRSA, §7001-22.A, MDIFW 2005b).

Wading bird habitats consist of breeding, feeding, roosting, loafing, and migration stopover areas. Waterfowl habitats are divided behaviorally and seasonally into three categories: breeding habitats, migration and staging habitats, and wintering habitats (MDIFW 2005b). MDIFW’s identification of IWWHs is largely based on the existing Maine Wetland Inventory (MWI), completed in 1973, with minor modifications. Modifications include: a system of combining or splitting certain wetlands; updates based on some field verification and; inclusion of a 250-foot (76.2 m) buffer zone in high and moderate value WWHs.

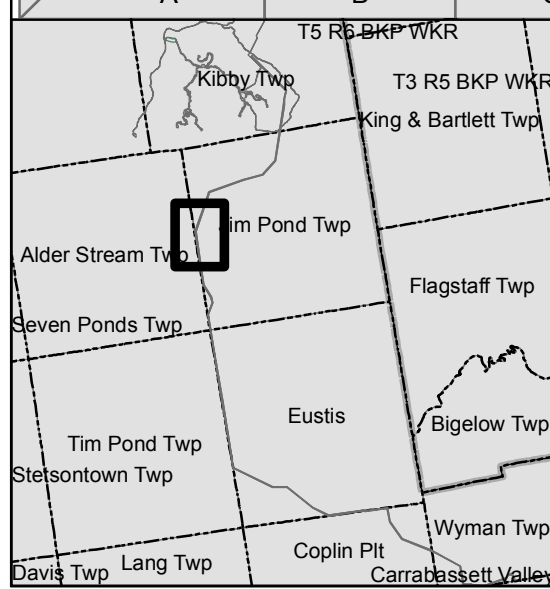
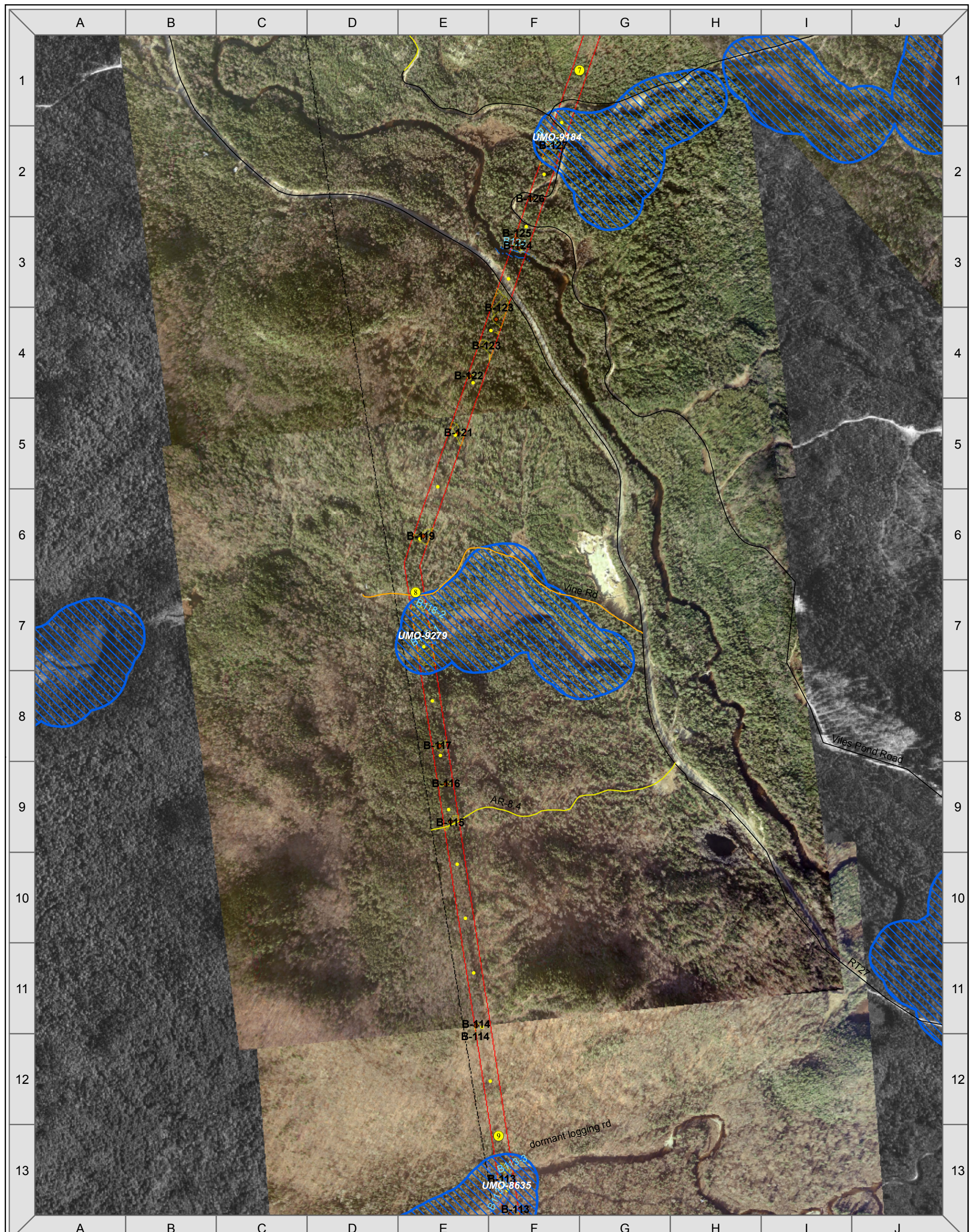
Values are assigned using a multi-criteria rating system developed by MDIFW. This system is designed to use existing wetland inventories (including the MWI, the NWI, the Maine Department of Conservation’s Maine Geological Survey Fresh-Water Wetland Map Series, and aerial photography) to assess the value of IWWHs (MDIFW 2005b). In the first stage of evaluation, numerical values are assigned for each of three criteria which include: dominant wetland type, diversity of wetland types, and habitat size. A second stage of evaluation takes into account wetland type interspersion and percent of open water. The result is a numerical score which places each IWWH within one of four value categories: low, indeterminate, moderate or high. If data are not available to perform this assessment, then the IWWH is described as “unranked” until the missing information becomes available (MDIFW 2005b).

MDIFW has mapped six IWWH areas that will be traversed by the 115 kV transmission line ROW. These habitats are identified by a prefix which denotes the type of assessment or survey in which they were identified and a unique number. All six IWWH areas have the “UMO” prefix, which denotes that they were identified and assessed using remote sensing techniques, modeling, and geographic information systems (GIS), but they have not been surveyed on the ground by MDIFW biologists. Four of these are mapped with a rating of low value, but the other two are rated high value and are, therefore, regulated as a Significant Wildlife Habitat under the NRPA (see the maps presented in Figures V-5-15 through V-5-18). Through consultation with MDIFW, it has been determined that MDIFW will survey each of these potential IWWH areas and perform a formal assessment to determine the value they provide for waterfowl habitat more accurately. Once these assessments have been completed, for those that will remain as mapped IWWH, the identifying prefix will be changed to “IFW” to denote that a formal survey and assessment has been performed. Each of these areas is briefly described, below.

***MDIFW ID: UMO-9184***

This IWWH has been assigned a low value status. It is located in Jim Pond Township and is therefore subject to LURC jurisdiction. The total mapped area of this IWWH is 35 acres, 1.95 acres of which are within the proposed ROW. The proposed ROW crosses a narrow portion of the mapped wetland where a logging road bisects it. The portion of this wetland that is within





**Legend**

- Road
- CONFIRMED ACCESS
- UNCONFIRMED ACCESS
- - - SKIDDER TRAIL
- - - ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- ▨ DWA
- ▨ IWWH
- - - Town Boundary
- Mile Post Marker
- Streams
- ▨ Wetlands
- ▭ Proposed Transmission Line

Notes: Base Map 24k Topo by Maine OGIS;  
Aerial photography courtesy of AMEC and J.W. Sewall

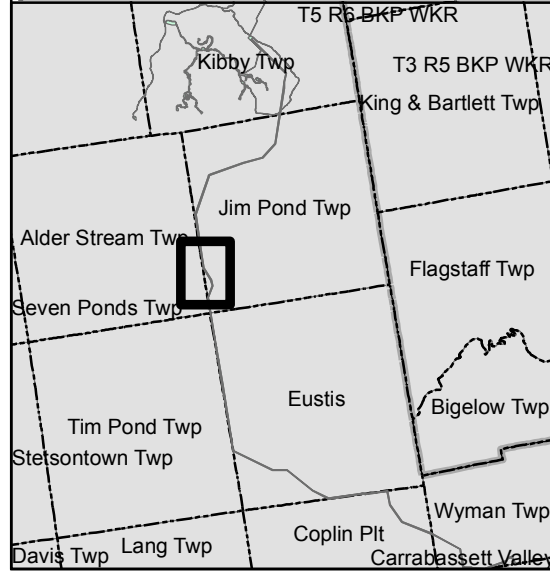
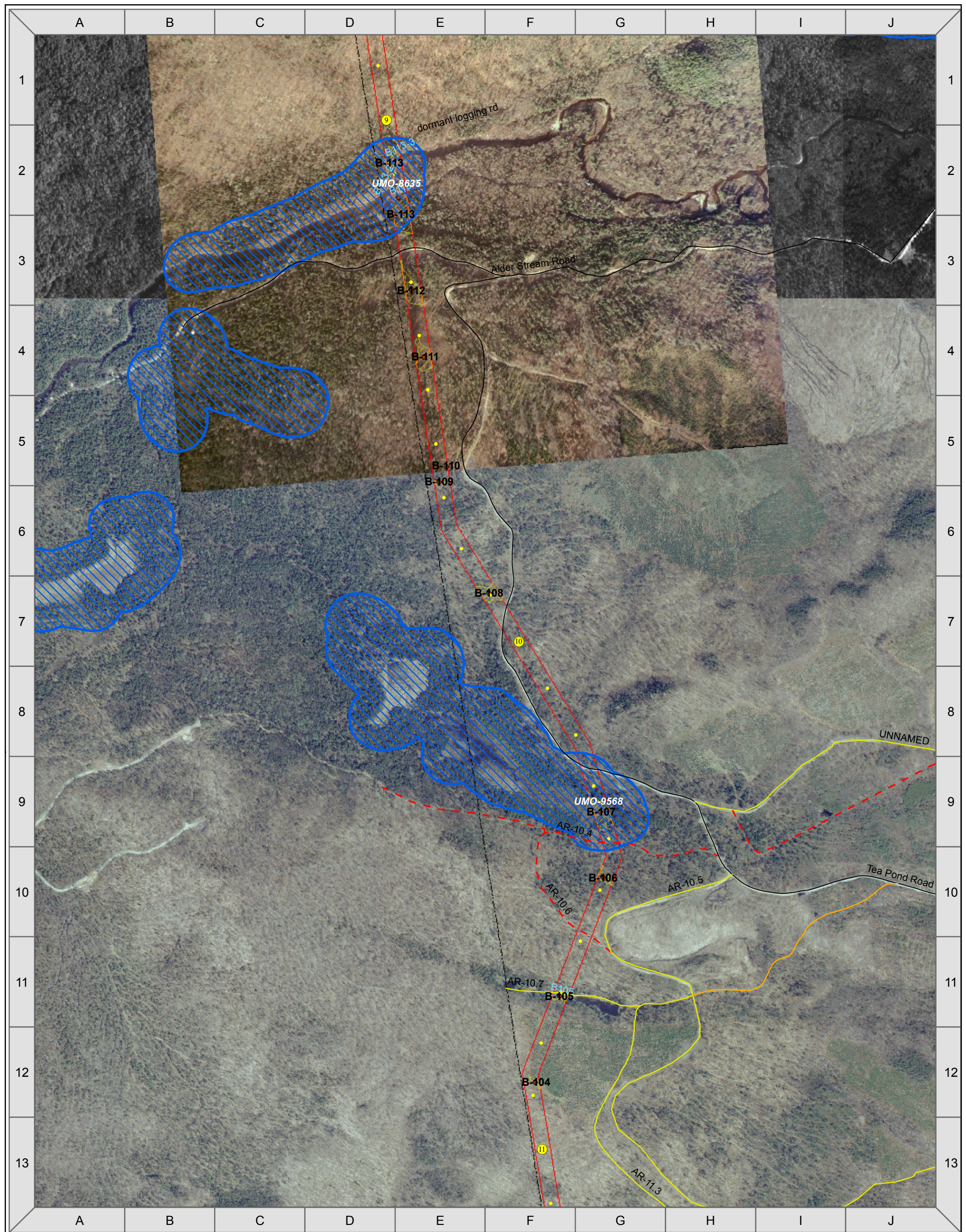


500  
Feet

Figure V-5-15

**Kibby Wind Power Project**  
*Significant Wildlife Habitat*





**Legend**

- Road
- CONFIRMED ACCESS
- UNCONFIRMED ACCESS
- - - SKIDDER TRAIL
- - - ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- ▨ DWA
- ▨ IWWH
- - - Town Boundary
- Mile Post Marker
- Streams
- ▨ Wetlands
- ▭ Proposed Transmission Line

Notes: Base Map 24k Topo by Maine OGIS;  
Aerial photography courtesy of AMEC and J.W. Sewall

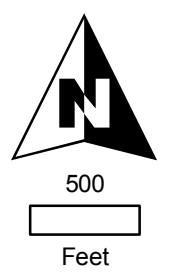
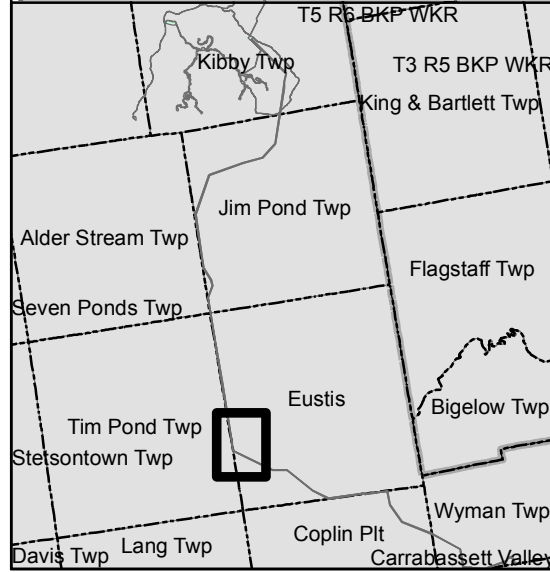
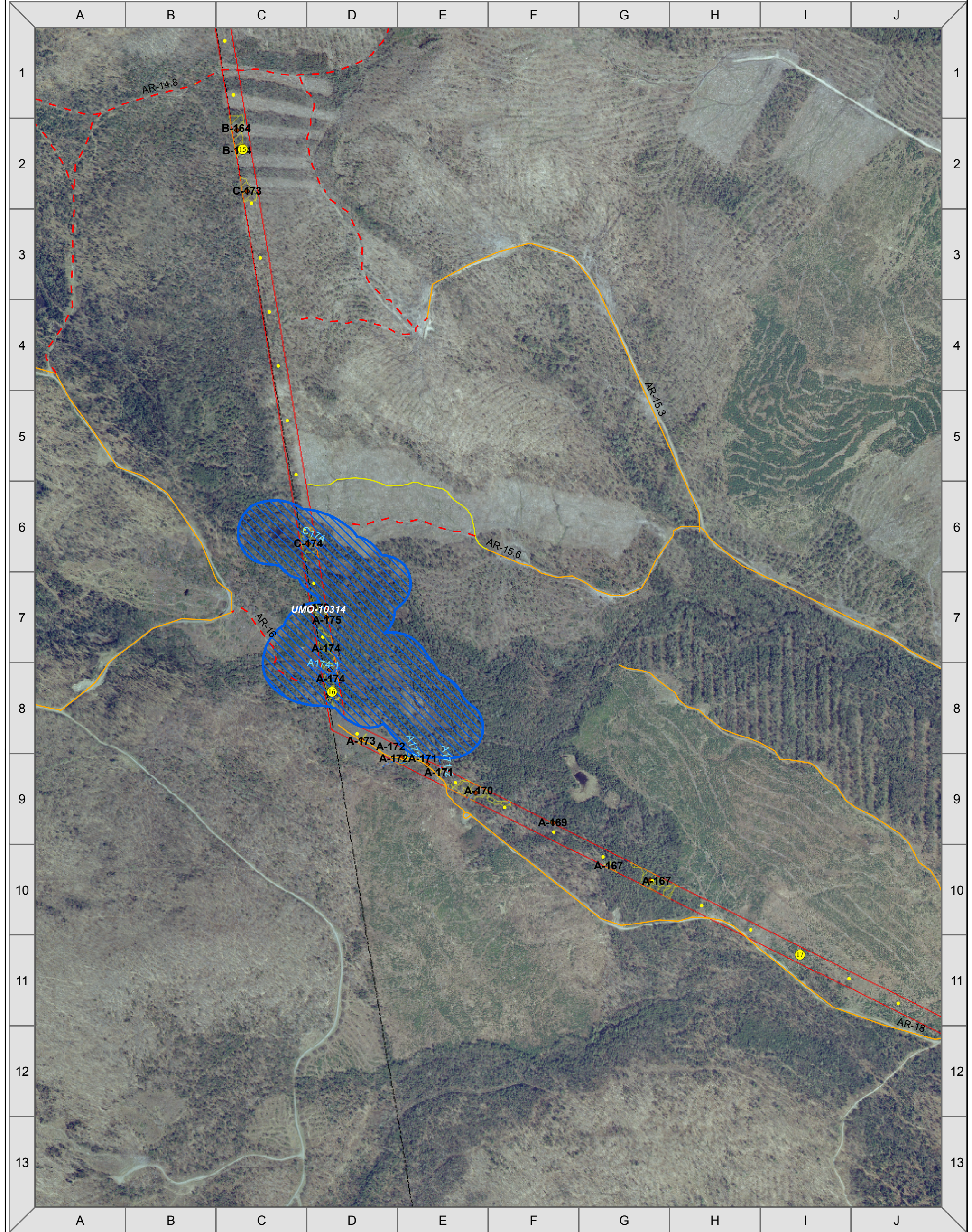


Figure V-5-16

**Kibby Wind Power Project**  
*Significant Wildlife Habitat*





**Legend**

- Road
- CONFIRMED ACCESS
- UNCONFIRMED ACCESS
- - - SKIDDER TRAIL
- - - ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- ▨ DWA
- ▨ IWWH
- - - Town Boundary
- Mile Post Marker
- Streams
- ▨ Wetlands
- ▭ Proposed Transmission Line

Notes: Base Map 24k Topo by Maine OGIS;  
Aerial photography courtesy of AMEC and J.W. Sewall

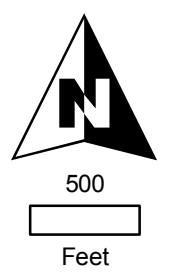
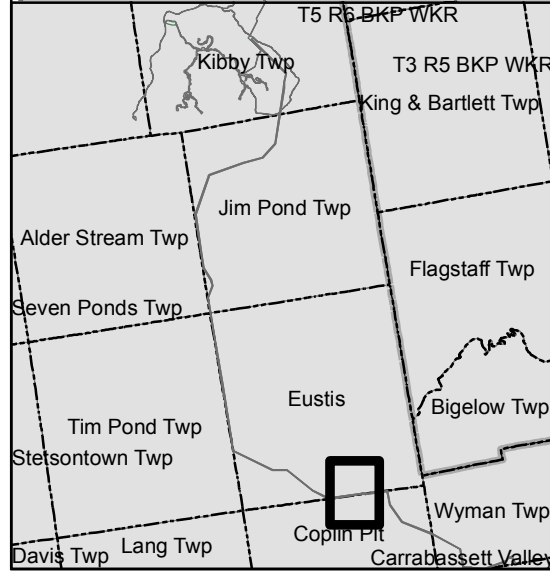
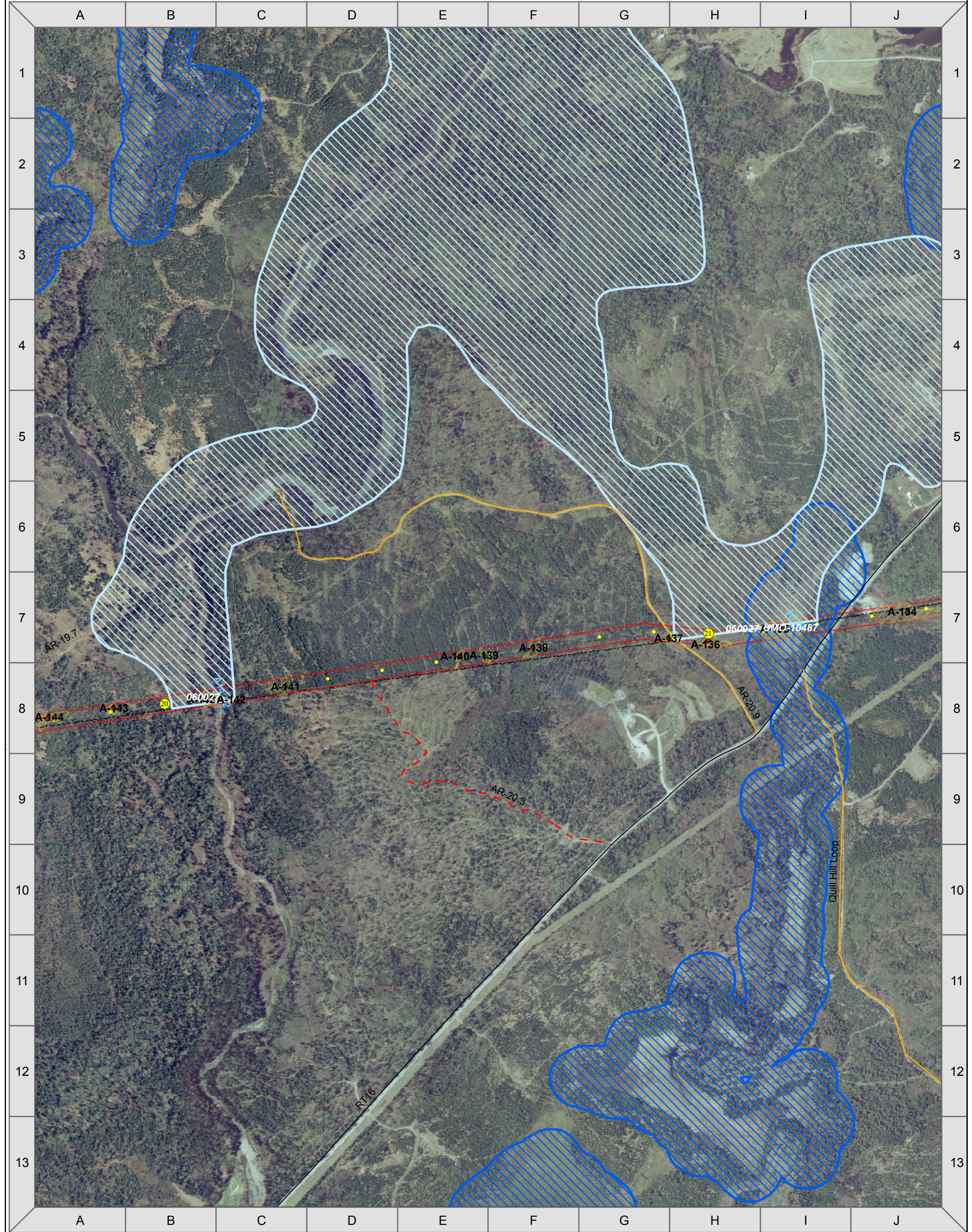


Figure V-5-17

**Kibby Wind Power Project**  
*Significant Wildlife Habitat*





**Legend**

- Road
- CONFIRMED ACCESS
- UNCONFIRMED ACCESS
- - - SKIDDER TRAIL
- - - ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- ▨ DWA
- ▨ IWWH
- - - Town Boundary
- Mile Post Marker
- Streams
- ▨ Wetlands
- ▭ Proposed Transmission Line

Notes: Base Map 24k Topo by Maine OGIS;  
Aerial photography courtesy of AMEC and J.W. Sewall

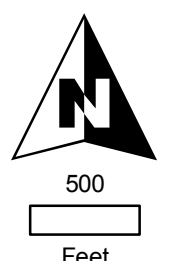


Figure V-5-18

**Kibby Wind Power Project**  
*Significant Wildlife Habitat*



the ROW is characterized by an old beaver pond located on Viles Stream, on the north side of the logging road. The area within the proposed ROW has low waterfowl and wading bird habitat potential. It does offer limited habitat for nesting waterfowl.

***MDIFW ID: UMO-9279***

This IWWH has been assigned a low value status. It is located in Jim Pond Township and is, therefore, subject to LURC jurisdiction. The total mapped area of this IWWH is 45 acres, 3.31 acres of which are within the 115 kV transmission line ROW. In the proposed ROW, this wetland is a densely forested area of mixed cedar and yellow birch with two small stream channels. It does not appear to provide potential waterfowl and/or wading bird habitat due to the dense forested cover. Downstream appears to be a shrub and open water wetland.

***MDIFW ID: UMO-8635***

This IWWH has been assigned a low value status. It is located in Jim Pond Township and is, therefore, subject to LURC jurisdiction. The total mapped area is 39 acres, 2.99 acres of which are within the 115 kV transmission line ROW. In the proposed ROW, this wetland is forested with some shrub community along Alder Stream, an oxbow, and a small secondary channel. This wetland does not appear to provide habitat for waterfowl and/or wading birds.

***MDIFW ID: UMO-9568***

This IWWH has been assigned a high value status. It is located in Jim Pond Township and is, therefore, subject to LURC jurisdiction. The total mapped area of this IWWH is 73 acres, 3.31 acres of which are within the 115 kV transmission line ROW. In the proposed ROW, this wetland is characterized by the upper reaches of a beaver pond. The fringes of this area are dense forested wetland communities. The lower portion of the impoundment, which is well outside of the ROW, is a mixture of open water, shrubs, and emergent vegetation. The portion of this wetland that is within the proposed ROW does not appear to provide potential waterfowl and/or wading bird habitat due to the tall and dense shrub cover (alder, cedar, and meadowsweet) and a lack of open water and emergent vegetation.

***MDIFW ID: UMO-10314***

This IWWH has been assigned a low value status. It is located in Eustis Township and is, therefore, subject to DEP jurisdiction. The total mapped area of this IWWH is 67 acres, 6.62 acres of which are within the 115 kV transmission line ROW. In the proposed ROW, this wetland is a large densely forested system traversed by seven small streams. This portion of this wetland that lies within the proposed ROW does not appear to provide habitat for waterfowl and/or wading birds.

**MDIFW ID: UMO-10487**

This IWWH has been assigned a high value status. It is located in Eustis Township (subject to DEP jurisdiction) and Coplin Plantation (subject to LURC jurisdiction). The total mapped area of this IWWH is 173 acres, 2.79 acres of which are within the 115 kV transmission line ROW. In the proposed ROW, this wetland is a dense shrub system (alder) with portions of forested areas (red maple and balsam fir). A shallow stream bisects it. This area does not appear to provide habitat for waterfowl and/or wading birds due to the tall dense shrub cover and hydrology that is mostly saturated soils.

**V-5.3.1.2 Deer Wintering Areas**

During winter, deer in northern climates often subsist on limited quantities of low quality foods, while simultaneously coping with low temperatures, chilling winds, and high energy requirements to stay warm (MDIFW 1990). In Maine, the preferred winter cover for deer is found in stands of red spruce and hemlock, which provide optimum cover and snow carrying capacity, leading to low wind speeds and a decreased snow depth in prime deer yards versus less than ideal forest. These areas are critical for the survival of deer during the snowy cold winters of western Maine.

MDIFW is responsible for identifying and protecting DWAs. DWAs are identified by MDIFW personnel by observation of deer congregation, deer tracks, current or past browsing, pellet piles, and bedding sites (Title 12 §10107). The DWAs assessed by MDIFW are ranked, similar to IWWH, as high, moderate, low, or indeterminate value based upon deer populations, shelter quality, browse availability, relationship to other DWAs, size, and access. Those DWAs that have been identified but have not been evaluated are classified as “unknown.”

There are three mapped deer yards in the vicinity of the 115 kV transmission line. Two of these are located approximately 0.6 mile (1 km) from the ROW: one lies in Kibby Township along Kibby Stream, and the other around the lower end of the Northwest Inlet. The third (DWA 060027) is located in Eustis, and portions of it border Coplin. The edge of DWA 060027 is crossed two times by the 115 kV transmission line ROW; it is currently assigned an indeterminate value status. DWAs that are classified as “indeterminate” in value are recognized as candidate significant wildlife habitat under the NRPA, and currently have no formal value rating. These areas may or may not be associated with formal ground surveys, but are afforded protection under Site Location of Development Law where they occur in organized towns (personal communication with Bob Cordes, MDIFW, Feb. 21, 2007). The 115 kV transmission line ROW is located generally along the edge of the DWA, with approximately 3.69 acres of this mapped DWA (which is more than 579 acres) included in the ROW area.

### ***V-5.3.2 Potential Impacts to Essential and Significant Wildlife Habitat***

#### ***V-5.3.2.1 Inland Waterfowl and Wading Bird Habitat***

MDIFW has mapped six IWWHs that are crossed by the 115 kV transmission line ROW. Four of these are ranked as low value, and two are ranked as being of high value. High value IWWHs are typically open water/floating leaved aquatic and emergent habitats; such areas would not change as a result of construction or operation of the 115 kV transmission line. Through consultation with MDIFW, it has been determined that MDIFW will survey each of these potential IWWH areas during the spring of 2007 and perform a formal assessment to determine the value they provide for waterfowl habitat more accurately. For any of these IWWH areas that are assigned a moderate or high value as a result of the formal MDIFW survey, TransCanada would prohibit clearing and construction activity, as well as follow-up routine vegetation maintenance, in these IWWH areas between April 15 and July 15 of each year. The restriction on activity within the mapped IWWHs, should it be necessary, will minimize the potential disruption of avian breeding and nesting activity.

In addition, because IWWH areas are typically located within wetland areas, the use of herbicides for vegetation maintenance will be prohibited within the areas mapped as IWWH (see Appendix V-B). The E&S Plan, provided in Appendix V-A, contains additional measures to prevent erosion and sedimentation within all wetland areas on or adjacent to the ROW.

#### ***V-5.3.2.2 Deer Wintering Areas***

The 115 kV transmission ROW line crosses the edge of one deer wintering area (DWA 060027) in two locations. This DWA is indeterminate in value, which means it is recognized as candidate significant wildlife habitat under the NRPA, but currently has no formal value rating.

TransCanada consulted with MDIFW on this issue during February 2007. MDIFW performed an aerial survey of the DWA the week of February 19, and noted several active trails in the DWA north of the transmission line corridor, and also observed several sets of tracks in the vicinity. Consideration of habitat status is ongoing. Given the location of the 115 kV transmission line ROW relative to the mapped habitat, any potential impact would be limited. TransCanada will continue to work with MDIFW to determine whether impact concerns exist and appropriate measures to address such concerns. The presence of a transmission line ROW through the area is not considered to be a significant change to the area, particularly given the active forest management practices ongoing in the vicinity.

## **V-5.4 Resident and Migratory Wildlife**

### ***V-5.4.1 Existing Resources***

For the purpose of this report, TransCanada has adapted a species matrix from Degraaf and Rudis (1986) and DeGraaf et al. (1992). This matrix lists species that potentially occur within the area of the 115 kV transmission line ROW (see Table 5-3). A description of these species, by order, follows.



### **V-5.4.1.1      *Reptiles and Amphibians***

Twenty-seven species of reptiles and amphibians (herpetiles) are expected to be seen in the vicinity of the 115 kV transmission line (see Table 5-3). Of these 27 species, 14 species, including the eastern newt, American toad, pickerel frog, and eastern garter snake are considered widespread or common in Maine, and all 14 were observed in this area. Of the remaining species, three are at the northern extent of their distribution. These species include the spring salamander, four-toed salamander, and redbelly snake. The spring salamander and four-toed salamanders are listed as a Species of Special Concern in the state of Maine, as described in Section V-5.3.1.3.

In fact, despite often severe weather conditions in the area, reptiles and amphibians are found throughout the area. Observations of reptiles and amphibians were made throughout the spring, summer and fall of 2005 and 2006 during various field activities. Eleven species of amphibians and three species of reptiles were observed during field surveys in the Kibby Wind Power Project area. These observations were consistent with those detailed in the Kenetech LURC application. The most common species observed were the American toad, red-backed salamander, wood frog, and garter snake, which were found throughout the area. Other species such as eastern newt, spotted salamander, blue-spotted salamander, spring peeper, green frog, bullfrog, wood turtle (Figure V-5-19), and two-lined salamander were also observed in the project vicinity.

In addition to the general observations made during ongoing field activities, a vernal pool survey was conducted during the spring of 2006 in areas where project elements are likely to occur, including the proposed 115 kV transmission line ROW. The vernal pool survey is discussed in detail in Section V-8.5.1. During the vernal pool survey, specific observations were made of wood frog egg masses, spotted salamander egg masses and blue-spotted salamander egg masses.

In addition, field crews were instructed to document specific federal- or state-listed rare, threatened, or endangered species that are used as indicators of significant vernal pools. These indicator species included:

- Ringed Boghaunter (dragonfly)      State-listed Endangered
- Spotted Turtle      State-listed Threatened
- Blanding's Turtle      State-listed Endangered
- Ribbon Snake      State-listed Special Concern
- Wood Turtle      State-listed Special Concern



**Figure V-5-19: Photo of wood turtle**

**Table 5-3: Habitat Matrix and List of Potential Wildlife Species – Habitat**

Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
<b>Amphibians</b>						
Blue-spotted salamander	<i>Ambystoma laterale</i>	Y	X	X		X
Spotted salamander	<i>Ambystoma maculatum</i>	Y	X	X	X	X
Red-spotted (Eastern) newt	<i>Notophthalmus viridescens</i>	N	X	X	X	X
Northern dusky salamander	<i>Desmognathus fuscus</i>	N	X	X	X	X
Northern redback salamander	<i>Plethodon cinereus</i>	Y	X	X	X	X
Four-toed salamander	<i>Hemidactylium scutatum</i>	N	X	X	X	X
Northern spring salamander	<i>Gyrinophilus p. porphyriticus</i>	N	X	X	X	X
Northern two-lined salamander	<i>Eurycea b. bislineata</i>	Y	X	X	X	X
American toad	<i>Bufo americanus</i>	Y	X	X	X	X
Spring peeper	<i>Pseudacris crucifer</i>	Y	X	X	X	X
Gray treefrog	<i>Hyla versicolor</i>	Y	X	X		X
Bullfrog	<i>Rana catesbiana</i>	Y	X	X	X	X
Green frog	<i>Rana clamitans</i>	Y				X
Mink frog	<i>Rana septentrionalis</i>	N				X
Wood frog	<i>Rana sylvatica</i>	Y	X	X	X	X
Northern leopard frog	<i>Rana pipiens</i>	N			X	X
Pickerel frog	<i>Rana palustris</i>	Y	X	X	X	X
<b>Reptiles</b>						
Snapping turtle	<i>Chelydra serpentina</i>	N				X
Wood turtle	<i>Clemmys insculpta</i>	Y	X	X	X	X
Eastern painted turtle	<i>Chrysemys picta</i>	N				X
Northern water snake	<i>Nerodia sipedon</i>	N				X
Brown snake	<i>Storeria dekayi</i>	N	X	X		
Redbelly snake	<i>Storeria occipitomaculata</i>	Y	X	X	X	
Eastern garter snake	<i>Thamnophis sirtalis</i>	Y	X	X	X	



Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Ringneck snake	<i>Diadophis punctatus</i>	N	X	X	X	
Smooth green snake	<i>Opheodrys vernalis</i>	N	X	X	X	
Milk snake	<i>Lampropeltis triangulum</i>	N	X	X		
<b>Birds</b>						
Common Loon	<i>Gavia immer</i>	Y				X
Pied-billed Grebe	<i>Podilymbus podiceps</i>	N				X
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Y				X
Great Blue Heron	<i>Ardea herodias</i>	Y				X
Green Heron	<i>Butorides virescens</i>	N				X
American Bittern	<i>Botaurus lentiginosus</i>	N				X
Canada Goose	<i>Branta canadensis</i>	Y				X
Wood Duck	<i>Aix sponsa</i>	N				X
Green-winged Teal	<i>Anas carolinensis</i>	N				X
Mallard	<i>Anas platyrhynchos</i>	N				X
American Black Duck	<i>Anas rubripes</i>	Y				X
Northern Pintail	<i>Anas acuta</i>	N				X
Blue-winged Teal	<i>Anas discors</i>	N				X
Ring-necked Duck	<i>Aythya collaris</i>	N				X
Common Goldeneye	<i>Bucephala clangula</i>	Y				X
Bufflehead	<i>Bucephala albeola</i>	N				X
Hooded Merganser	<i>Lophodytes cucullatus</i>	N				X
Red-breasted Merganser	<i>Mergus serrator</i>	N				X
Common Merganser	<i>Mergus merganser</i>	Y				X
Turkey Vulture	<i>Cathartes aura</i>	Y	X	X		
Osprey	<i>Pandion haliaetus</i>	Y				X
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Y				X
Northern Harrier	<i>Circus cyaneus</i>	Y				X
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Y	X	X	X	X
Cooper's Hawk	<i>Accipiter cooperii</i>	Y	X	X	X	X

Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Northern Goshawk	<i>Accipiter gentilis</i>	Y	X	X	X	
Red-shouldered Hawk	<i>Buteo lineatus</i>	N	X	X	X	X
Broad-winged Hawk	<i>Buteo platypterus</i>	Y	X	X	X	X
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Y	X	X	X	
Golden Eagle	<i>Aquila chrysaetos</i>	Y	X	X	X	X
American Kestrel	<i>Falco sparverius</i>	Y			X	X
Merlin	<i>Falco columbarius</i>	Y			X	X
Peregrine Falcon	<i>Falco peregrinus</i>	Y	X	X	X	X
Spruce Grouse	<i>Falcipennis canadensis</i>	Y			X	
Ruffed Grouse	<i>Bonasa umbellus</i>	Y	X	X	X	
Wild Turkey	<i>Meleagris gallopavo</i>	Y	X	X		
American Woodcock	<i>Scolopax minor</i>	Y	X	X	X	
Common Snipe	<i>Gallinago gallinago</i>	Y				X
Solitary Sandpiper	<i>Tringa solitaria</i>	Y				X
Spotted Sandpiper	<i>Actitis macularia</i>	Y				X
Ring-billed Gull	<i>Larus delawarensis</i>	Y				
Mourning Dove	<i>Zenaida macroura</i>	Y	X	X		
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	N	X	X	X	
Great Horned Owl	<i>Bubo virginianus</i>	Y	X	X	X	X
Northern Hawk Owl	<i>Surnia ulula</i>	N			X	
Barred Owl	<i>Strix varia</i>	Y	X	X	X	X
Great Gray Owl	<i>Strix nebulosa</i>	N	X	X	X	X
Long-eared Owl	<i>Asio otus</i>	N	X	X	X	X
Boreal Owl	<i>Aegolius funereus</i>	N			X	
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	N	X	X	X	X
Common Nighthawk	<i>Chordeiles minor</i>	N	X	X	X	X
Whip-poor-will	<i>Caprimulgus vociferus</i>	N	X	X		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Y	X	X	X	X
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Y	X	X	X	X

Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Downy Woodpecker	<i>Picoides pubescens</i>	Y	X	X	X	X
Hairy Woodpecker	<i>Picoides villosus</i>	Y	X	X	X	X
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	N			X	
Black-backed Woodpecker	<i>Picoides arcticus</i>	Y			X	
Northern Flicker	<i>Colaptes auratus</i>	Y	X	X	X	
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Y	X	X	X	
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Y			X	X
Eastern Wood-Pewee	<i>Contopus virens</i>	Y	X	X	X	
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	Y			X	X
Alder Flycatcher	<i>Empidonax alnorum</i>	Y	X	X	X	
Willow Flycatcher	<i>Empidonax traillii</i>	N	X	X		
Least Flycatcher	<i>Empidonax minimus</i>	Y	X	X	X	
Eastern Phoebe	<i>Sayornis phoebe</i>	Y	X	X	X	X
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	N	X	X	X	
Eastern Kingbird	<i>Tyrannus tyrannus</i>	N	X	X		X
Purple Martin	<i>Progne subis</i>	N	X	X	X	X
Tree Swallow	<i>Tachycineta bicolor</i>	Y	X	X	X	X
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	N	X	X	X	X
Bank Swallow	<i>Riparia riparia</i>	N	X	X	X	X
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	N	X	X	X	X
Barn Swallow	<i>Hirundo rustica</i>	N	X	X	X	X
Gray Jay	<i>Perisoreus canadensis</i>	Y	X	X	X	
Blue Jay	<i>Cyanocitta cristata</i>	Y	X	X	X	
American Crow	<i>Corvus brachyrhynchos</i>	Y	X	X	X	
Common Raven	<i>Corvus corax</i>	Y	X	X	X	
Black-capped Chickadee	<i>Poecile atricapilla</i>	Y	X	X	X	
Boreal Chickadee	<i>Poecile hudsonica</i>	Y	X	X	X	
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Y	X	X	X	
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Y	X	X		



Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Brown Creeper	<i>Certhia americana</i>	Y	X	X	X	
Winter Wren	<i>Troglodytes troglodytes</i>	Y	X	X	X	X
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Y	X	X	X	X
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Y			X	
Eastern Bluebird	<i>Sialia sialis</i>	N	X	X		
Veery	<i>Catharus fuscescens</i>	Y	X	X	X	X
Gray-cheeked Thrush	<i>Catharus minimus</i>	N			X	
Bicknell's Thrush	<i>Catharus bicknelli</i>	Y			X	
Swainson's Thrush	<i>Catharus ustulatus</i>	Y	X	X	X	
Hermit Thrush	<i>Catharus guttatus</i>	Y	X	X	X	
Wood Thrush	<i>Hylocichla mustelina</i>	Y	X	X	X	X
American Robin	<i>Turdus migratorius</i>	Y	X	X	X	
Gray Catbird	<i>Dumetella carolinensis</i>	Y	X	X	X	
Northern Mockingbird	<i>Mimus polyglottos</i>	N				
Brown Thrasher	<i>Toxostoma rufum</i>	N	X	X	X	
Bohemian Waxwing	<i>Bombycilla garrulus</i>	N	X	X	X	
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Y	X	X	X	
Northern Shrike	<i>Lanius excubitor</i>	N	X	X	X	
Loggerhead Shrike	<i>Lanius ludovicianus</i>	N				
European Starling	<i>Sturnus vulgaris</i>	Y	X	X		
Blue-headed (Solitary) Vireo	<i>Vireo solitarius</i>	Y	X	X	X	
Yellow-throated Vireo	<i>Vireo flavifrons</i>	N	X	X		
Warbling Vireo	<i>Vireo gilvus</i>	N	X	X		
Philadelphia Vireo	<i>Vireo philadelphicus</i>	Y	X	X		
Red-eyed Vireo	<i>Vireo olivaceus</i>	Y	X	X	X	
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Y	X	X		
Tennessee Warbler	<i>Vermivora peregrina</i>	Y	X	X	X	
Nashville Warbler	<i>Vermivora ruficapilla</i>	Y	X	X	X	
Northern Parula	<i>Parula americana</i>	Y	X	X	X	

Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Yellow Warbler	<i>Dendroica petechia</i>	Y	X	X	X	X
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Y	X	X	X	
Magnolia Warbler	<i>Dendroica magnolia</i>	Y			X	
Cape May Warbler	<i>Dendroica tigrina</i>	Y			X	
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	Y	X	X	X	
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Y	X	X	X	
Black-throated Green Warbler	<i>Dendroica virens</i>	Y	X	X	X	
Blackburnian Warbler	<i>Dendroica fusca</i>	Y	X	X	X	
Pine Warbler	<i>Dendroica pinus</i>	Y		X		
Palm Warbler	<i>Dendroica palmarum</i>	Y			X	X
Bay-breasted Warbler	<i>Dendroica castanea</i>	Y			X	
Blackpoll Warbler	<i>Dendroica striata</i>	Y	X	X	X	
Black-and-white Warbler	<i>Mniotilta varia</i>	Y	X	X	X	
American Redstart	<i>Setophaga ruticilla</i>	Y	X	X	X	
Ovenbird	<i>Seiurus aurocapilla</i>	Y	X	X	X	
Northern Waterthrush	<i>Seiurus noveboracensis</i>	Y	X	X	X	X
Mourning Warbler	<i>Oporornis philadelphia</i>	Y	X	X	X	
Connecticut Warbler	<i>Oporornis agilis</i>	Y			X	
Common Yellowthroat	<i>Geothlypis trichas</i>	Y	X	X	X	
Wilson's Warbler	<i>Wilsonia pusilla</i>	N	X	X	X	X
Canada Warbler	<i>Wilsonia canadensis</i>	Y	X	X	X	
Scarlet Tanager	<i>Piranga olivacea</i>	N	X	X		
Northern Cardinal	<i>Cardinalis cardinalis</i>	Y	X	X		
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	Y	X	X	X	
Indigo Bunting	<i>Passerina cyanea</i>	N	X	X	X	
Rufous-sided (Eastern) Towhee	<i>Pipilo erythrophthalmus</i>	N	X	X	X	
American Tree Sparrow	<i>Spizella arborea</i>	Y	X	X	X	
Chipping Sparrow	<i>Spizella passerina</i>	Y	X	X	X	
Field Sparrow	<i>Spizella pusilla</i>	N	X	X	X	

Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Fox Sparrow	<i>Passerella iliaca</i>	Y			X	
Song Sparrow	<i>Melospiza melodia</i>	Y	X	X	X	
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	Y	X	X	X	X
Swamp Sparrow	<i>Melospiza georgiana</i>	Y				X
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Y	X	X	X	
Dark-eyed Junco	<i>Junco hyemalis</i>	Y	X	X	X	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Y				X
Rusty Blackbird	<i>Euphagus carolinus</i>	Y			X	X
Common Grackle	<i>Quiscalus quiscula</i>	Y	X	X		X
Brown-headed Cowbird	<i>Molothrus ater</i>	Y	X	X	X	
Northern (Baltimore) Oriole	<i>Icterus galbula</i>	N	X	X		
Pine Grosbeak	<i>Pinicola enucleator</i>	Y	X	X	X	
Purple Finch	<i>Carpodacus purpureus</i>	Y	X	X	X	
House Finch	<i>Carpodacus mexicanus</i>	N				
Red Crossbill	<i>Loxia curvirostra</i>	Y	X	X	X	
White-winged Crossbill	<i>Loxia leucoptera</i>	Y	X	X	X	
Common Redpoll	<i>Carduelis flammea</i>	Y	X	X	X	
Hoary Redpoll	<i>Carduelis hornemanni</i>	N	X	X	X	
Pine Siskin	<i>Carduelis pinus</i>	Y	X	X	X	
American Goldfinch	<i>Carduelis tristis</i>	Y	X	X	X	
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Y	X	X	X	
<b>Mammals</b>						
Masked Shrew	<i>Sorex cinereus</i>	N	X	X	X	X
Water Shrew	<i>Sorex palustris</i>	N	X	X	X	X
Smoky Shrew	<i>Sorex fumeus</i>	N	X	X	X	X
Long-tailed Shrew	<i>Sorex dispar</i>	N	X	X	X	
Pygmy Shrew	<i>Sorex hoyi</i>	Y	X	X	X	X
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	N	X	X	X	X



Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Hairy-tailed Mole	<i>Parascalops breweri</i>	N	X	X	X	X
Star-nosed Mole	<i>Condylura cristata</i>	N				X
<i>Myotis Bats</i>		Y				
(Little Brown Bat)	<i>Myotis lucifugus</i>		X	X	X	X
(Eastern Small-footed Bat)	<i>Myotis leibii</i>				X	X
(Northern Long-eared Bat)	<i>Myotis septentrionalis</i>				X	X
<i>Big Brown Guild</i>		Y				
(Big Brown Bat)	<i>Eptesicus fuscus</i>		X	X	X	X
(Hoary Bat)	<i>Lasiurus cinereus</i>	Y	X	X	X	X
(Silver-haired Bat)	<i>Lasionycteris noctivagans</i>	Y	X	X	X	X
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	N	X	X		X
Eastern Red Bat	<i>Lasiurus borealis</i>	Y	X	X	X	X
Snowshoe Hare	<i>Lepus americanus</i>	Y	X	X	X	
Eastern Chipmunk	<i>Tamias striatus</i>	Y	X	X	X	
Woodchuck	<i>Marmota monax</i>	Y	X	X	X	
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>	Y	X	X		
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	Y	X	X	X	
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	N	X	X	X	
American Beaver	<i>Castor canadensis</i>	Y	X	X	X	X
Deer Mouse	<i>Peromyscus maniculatus</i>	Y	X	X	X	
White-footed Mouse	<i>Peromyscus leucopus</i>	N	X	X	X	
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>	Y	X	X	X	X
Meadow Vole	<i>Microtus pennsylvanicus</i>	Y	X	X	X	
Rock Vole	<i>Microtus chrotorrhinus</i>	N	X	X	X	X
Common Muskrat	<i>Ondatra zibethicus</i>	Y				X
Southern Bog Lemming	<i>Synaptomys cooperi</i>	N	X	X	X	X
Northern Bog Lemming	<i>Synaptomys borealis</i>	N			X	X
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	N	X	X	X	X
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	Y	X	X	X	

Species		Observed in Project Vicinity (Y/N)	Northern Hardwood			Wetlands and Waterbodies
Common Name	Binomial Nomenclature		Beech-Birch-Maple	Spruce-Northern hardwoods	Regenerating Forest	
Common Porcupine	<i>Erethizon dorsatum</i>	Y	X	X	X	
Coyote	<i>Canis latrans</i>	Y	X	X	X	
Red Fox	<i>Vulpes vulpes</i>	Y	X	X	X	
Black Bear	<i>Ursus americanus</i>	Y	X	X	X	X
Common Raccoon	<i>Procyon lotor</i>	Y	X	X	X	X
American Marten	<i>Martes americana</i>	Y	X	X	X	
Fisher	<i>Martes pennanti</i>	Y	X	X	X	
Ermine	<i>Mustela erminea</i>	Y	X	X	X	
Long-tailed Weasel	<i>Mustela frenata</i>	Y	X	X	X	
American Mink	<i>Mustela vison</i>	Y	X	X	X	X
Striped Skunk	<i>Mephitis mephitis</i>	Y	X	X	X	
Northern River Otter	<i>Lutra canadensis</i>	Y				X
Canada Lynx	<i>Lynx canadensis</i>	N	X	X	X	
Bobcat	<i>Lynx rufus</i>	Y	X	X	X	X
White-tailed Deer	<i>Odocoileus virginianus</i>	Y	X	X	X	X
Moose	<i>Alces alces</i>	Y	X	X	X	X

None of these indicator species were observed over the course of vernal pool identification studies. In fact, the proposed transmission line area is outside of the typical range of the dragon fly, the spotted turtle, Blanding's turtle, and ribbon snake, which are primarily found in southern coastal Maine. Wood turtles, however, are locally common in the Dead River valley. Wood turtles were documented on several occasions during field efforts. This species is further discussed in section 5.5.

#### **V-5.4.1.2 Birds**

A total of 162 bird species potentially occur within or migrate through the Kibby Wind Power Project area; these are listed in Table V-5-3. No formal breeding bird surveys were performed along the 115 kV transmission line ROW; however, 115 of 162 potential bird species were identified by incidental observations in the vicinity of the proposed transmission line at some point during related field efforts. Some of the bird species identified are listed as Threatened, Endangered, or Species of Special Concern. These species are discussed in greater detail in Section V-5.5.

#### **V-5.4.1.3 Terrestrial Mammals**

There are 49 mammal species that potentially occur in the vicinity of the 115 kV transmission line. Of these species, 30 were identified in the area by tracks, sign, calls, or direct observation (see Table V-5-3). Most of the potential species are relatively common, with the exception of Canada lynx, and several small mammals, as discussed in Section V-5.5. TransCanada performed track surveys (as described in Section V-5.5) and surveys for rare small mammal habitat. Additionally, while performing other natural resource surveys, incidental observations of wildlife and wildlife sign were noted. Similar observations were performed by Kenetech in 1992 and 1993, and TransCanada's findings are consistent with those observations.

The large mammals observed during summer field investigations are typical of the northwest mountain region of the state. Moose (*Alces alces*) were the most commonly seen large mammal. Some form of moose sign was observed throughout the study area. Habitats used by moose included roadways, regenerating forest, streams and ponds low in the valleys, mid-slope hardwood forests, and high-elevation softwood dominated ridgelines. Evidence of winter moose activity was seen on the ridgelines as intense browsing of balsam fir saplings and debarking of mountain ash. All other observations or sign of other mammals were much less abundant than that of moose. The 115 kV transmission line ROW is in Wildlife Management Zone 8, a sought-after zone in Maine's moose hunting lottery, known for good numbers of moose sightings. Many trophy-quality bulls are taken in this zone every season. Currently, harvest of moose in this zone is restricted to bulls only. In 2006, the harvest success rate was 88 percent in this zone, with 207 bulls harvested.

White-tailed deer (*Odocoileus virginianus*) are, in general, ubiquitous and fairly common to the area. In winter, when snowfall impedes travel, deer move to traditional winter yards (DWAs) lower in the valleys. As discussed in Section V-5.3, DWAs are mapped in the area, but none



are anticipated to be adversely impacted by the 115 kV transmission line. Deer populations in this area of the state are typically low density, with five or fewer deer found per square mile.

Black bears (*Ursus americanus*) are generally common in the western region of Maine. Several bear hunting guides frequent the vicinity of the 115 kV transmission line ROW. Local bear kill numbers in the vicinity of the transmission line for 2005 were as follows for each township (number killed parenthetically): Jim Pond TWP (11), Eustis (13), Coplin Plantation (4), Wyman Township (0), and Carrabassett Valley (2) (personal communication with Bob Cordes, MDIFW, Feb. 21, 2007). Black bear tracks and sign were occasionally observed in the vicinity of the proposed transmission line ROW during field efforts.

Beaver (*Castor canadensis*) activity, both recent and historic, was observed along all of the larger streams along the 115 kV transmission line ROW, and also along many of the smaller streams. Signs of activity tended to consist of former, dewatered or active flowages on streams low in the valleys, or signs of browse on shrubs, saplings, and trees along the stream banks.

Red squirrels (*Tamiasciurus hudsonicus*) were also a common species, and were observed in all areas. Eastern chipmunks (*Tamias striatus*) were common on side slopes and in the valleys. Snowshoe hare (*Lepus americanus*) sign was present in much of the vicinity of the 115 kV transmission line, but was patchy in distribution, with variable abundance. Coyote (*Canis latrans*), red fox (*Vulpes vulpes*), short-tailed weasel (*Mustela erminea*), and marten (*Martes americana*) also appear to be present and common throughout much of Kibby and Skinner Townships. Sightings or sign of bobcat (*Lynx rufus*), skunk (*Mephitis mephitis*), mink (*Mustela vison*), fisher (*Martes pennanti*), long-tailed weasel (*Mustela frenata*), river otter (*Lutra canadensis*), raccoon (*Procyon lotor*), and woodchuck (*Marmota monax*) occurred in the vicinity but were observed less frequently than other species. In some cases, sign of these species were observed only once over the course of studies in the transmission line area.

Meadow voles (*Microtus pennsylvanica*), Southern red-backed voles (*Clethrionomys gapperi*), woodland jumping mice (*Napaeozapus insignis*), and pygmy shrew (*Sorex hoyi*) were observed in the area by field personnel during 2005 and 2006. A small mammal trapping study performed for Kenetech in 1992 indicated that common small mammal species present include the Southern red-backed vole and deer mice (*Peromyscus maniculatus*), with several shrew species also being common.

#### **V-5.4.1.4     Bats**

The 115 kV transmission line ROW is within the published range of seven bat species, including the silver-haired bat, eastern red bat, hoary bat, northern longeared bat, eastern pipistrelle, big brown bat, and little brown bat. An eighth species, the eastern small-footed bat, may also occur (DeGraaf et al. 1992). These bats are all considered state Species of Special Concern in Maine; they are further discussed in Section V-5.5.

Acoustic bat-monitoring surveys were conducted in ridge locations on Kibby Mountain and Kibby Range during spring 2006 and summer/fall 2006. Although these surveys were

associated with the ridge geography of the proposed turbine arrays, they do function to indicate what bat species may actually occur in the vicinity of the proposed transmission line. As a result of this study, species within the big brown bat guild were most commonly identified, followed by species within the *Myotis* guild. Bats within the red bat/eastern pipistrelle guild were also identified.

#### ***V-5.4.2 Potential Impacts to Resident and Migratory Wildlife***

The introduction of a transmission line into a landscape brings with it several potential impacts to local wildlife. Wildlife responses to transmission lines and corridors have received much attention and study. Corridors present many potential direct impacts, as they may affect species movement, dispersal, density, nesting success and/or survival (Batary and Baldi 2004; Confer 2000; Confer and Pascoe 2003; Henson et al. 2005; Manitoba Hydro 1995; Marklevitz 2003, Willyard et al. 2004).

The vegetation inherent to a transmission corridor requires permanent habitat conversion where the corridor traverses areas that differ in character from a maintained ROW. This habitat conversion, in turn, incurs the dissection (a form of fragmentation) of forested areas where the ROW traverses mature forests. Where the ROW vegetation differs markedly from surrounding vegetation, linear edges are created which may incur various edge effects. These potential impacts may affect several members of wildlife communities in the ROW vicinity. The potential ubiquitous impacts of habitat conversion, forest fragmentation, and edge effects on wildlife communities are discussed in Section V-5.4.2.1. Species-specific transmission line impacts are further discussed in Section V-5.4.2.2.

##### ***V-5.4.2.1 Ubiquitous Impacts***

###### ***Habitat Conversion***

The 115 kV transmission line ROW will permanently alter habitat in areas where surrounding habitat differs from that of the maintained ROW. The proposed transmission line corridor will be maintained as shrub-dominated habitat, creating a permanent linear corridor of mainly scrub-shrub vegetation. This will occur within a landscape that already contains a high occurrence of perpetually young, regenerating forest and clearcuts: these cover types constitute approximately 67 percent of the area of the proposed transmission corridor.

Habitat conversion along ROWs incurs a loss of original habitat types which, in turn, may adversely impact species which are reliant on the lost habitat. Conversely, such alteration may provide benefits to some species. It has been documented that linear ROWs may provide beneficial connectivity between habitat patches in disturbed landscapes (Willyard et al. 2004). Vegetation on a maintained ROW may provide important foraging opportunities for several species; in particular, more winter browse for ungulates is available on ROWs than in adjacent forests (Manitoba Hydro 1995). Geier (1992) showed that small mammals, deer and moose fed more often in ROWs than in adjacent forests. Maintained ROWs may also provide important

habitat for some declining bird species which rely on scrub-shrub habitats (Confer 2000, Confer and Pascoe 2003).

Habitat conversion will be most pronounced in those areas where the proposed ROW traverses mature forest stands. This habitat type currently accounts for roughly 18 percent (87 acres) of total acreage of the 115 kV transmission line ROW.

In general, given the existing landscape characteristics of the area, construction and maintenance of the 115 kV transmission line ROW is not expected to impose habitat conversions that are not already common to the area. It is fully anticipated that local wildlife populations will adapt and respond to these alterations much as they already do to ongoing forest management activities that are already inherent to local landscape. Therefore, impacts of habitat conversion along the proposed transmission ROW (both positive and negative) are expected to be minimal to non-extant.

### ***Fragmentation***

Much research has been focused on determining the responses of wildlife assemblages to the size and degree of isolation of forest fragments. Forest fragmentation, however, must be looked at from a landscape scale. Most studies examine bird communities in fragments in agricultural areas, where forest stands are isolated and there has been a marked decrease in the regions' total forest area. Studies which have focused on the effects of fragmentation in forested landscapes suggest that known effects (such as increased nest predation and isolation) are suppressed in a forested versus an agricultural or developed landscape (Sabine et al. 1996, Flatebo et al. 1999, Small and Hunter 1988, Rudnicky and Hunter 1993). Notably, the 115 kV transmission line ROW is located in a region which, though heavily altered by forestry, still possesses the characteristics of a forested landscape.

Some bird species observed in the area that may be sensitive to forest fragmentation are the long-distance, neotropical migrants which rely on forest interior habitats. However, plentiful suitable habitat is available in the area for these interior forest species. Most of the potential breeding birds that are likely to be found in the vicinity of the 115 kV transmission line ROW are not dependent on mature forest stands. Such species are typically found in forest settings that have a variety of timber size classes from young regenerating forest areas to larger mature trees (DeGraaf et al. 1992).

Most of the terrestrial mammal species that are likely to be found in the vicinity of the 115 kV transmission line ROW are not dependent on mature forest. Most mammal species observed are typically found in forests that have a variety of size classes (DeGraaf et al. 1992). Forest fragments have been found to be important to species which do not require forest interior and rely more on the interior of edges (Blake and Karr 1987; Freemark and Collins 1992). Although the current landscape in the vicinity of the 115 kV transmission line ROW is heavily altered by forestry, ample forested tracts remain intact for those species which rely on large ranges of interior forest.



Despite the lack of clear understanding of the impacts of fragmentation on wildlife in a forested landscape (Flatebo 1999), it is expected that the area will continue to respond to fragmentation as it does currently. The natural landscape in the vicinity of the 115 kV transmission line ROW is currently perforated by clearcuts in various stages of regeneration, and dissected by logging roads. Given the fact that forestry practices are common and ongoing in the vicinity, the existing landscape is in constant flux. Clearcuts and new logging roads regularly appear, while previously harvested areas regenerate. The 115 kV transmission line will not result in fragmentation beyond that which is already extant, occurring, or impending in this dynamic landscape. Local wildlife species are fully expected to respond to the 115 kV transmission line much as they already do to current logging impacts.

### ***Edge Effects***

Abrupt linear edges are inherent to transmission line corridors; this edge is most dramatic where the ROW traverses mature forested areas. In such areas, the abrupt edge can create a transitional zone which is characterized by species, habitat and microclimate that differs from both the forest and the ROW (Willyard et al. 2004). Corridors can also, depending on width and structure, form distinct species groups associated with the forest interior, corridor interior, or edge habitats (Anderson et al. 1977, Chasko and Gates 1982, Gates 1991). The transitional zone between forest and ROW is often associated with increased species density and diversity; however, this trend may favor habitat generalists (Willyard et al 2004).

Overall, edge effects may be multiple and complex (Reis et al. 2004). Examples of complex interactions that may occur include alteration of predator/prey relationships, and ecological traps. Predator/prey interactions may be affected by increased densities of either party in edge habitats (Willyard et al. 2004), or by facilitation of predator movement along the forest edge (Marklevitz 2003). Ecological traps (or sinks) occur along forest edges when mortality exceeds production (Willyard et al. 2004). For example, Flaspohler et al. (2001) found that nest density for two ground-nesting species (hermit thrush and ovenbird) in a forested landscape increased in the forested zone near an opening; meanwhile, nesting success decreased.

Cut areas (in various stages of regeneration) and logging roads are common to the landscape surrounding the 115 kV transmission line. These areas already present a high degree of edge habitat that is similar to that which will result from the proposed transmission line. Additionally, approximately 5.9 miles (9.5 km) of the 115 kV transmission line will parallel an existing transmission line ROW. Given these existing conditions, the 115 kV transmission line will contribute little edge habitat to that which is created by ongoing uses throughout the area. Local wildlife species are fully expected to respond to the resulting edge effects much as they already do to current logging impacts.

#### ***V-5.4.2.2 Species-Specific Impacts***

Similar to the ubiquitous effects discussed above, the proposed transmission line structures, lines and ROW may potentially incur effects on certain specific species groups. These are discussed below.

## ***Reptiles and Amphibians***

Proposed transmission line construction and maintenance may incur some impacts that are specific to reptiles and amphibians. While protected resources have been avoided to a great degree, the proposed transmission ROW will traverse some wetlands and streams that provide habitat to several of the amphibians that potentially occur in the area. Where stream crossings are unavoidable, BMPs will be employed to minimize impacts. Wetland and waterbodies are further discussed in Section V-6.0, Appendix V-A, and Appendix V-B.

With regard to vernal pools, which are also important to these species, TransCanada will continue to work with LURC, DEP and USACE to ensure that appropriate protections for vernal pools and associated habitat are incorporated into the transmission line design. The 115 kV transmission line will not adversely impact any significant vernal pools, including the associated critical habitat surrounding significant vernal pools. No direct impacts to vernal pools will result from construction of the transmission line. Equipment crossings and filling vernal pools will be avoided completely and no structures will be located within any vernal pools. Some vernal pools will be spanned by electric conductors and there is the potential for indirect impacts through conversion of adjacent forested uplands and wetlands. The potential for these indirect impacts is minimal since the ROW will be maintained in a well-vegetated state, and only a small proportion of the forested area around any of these pools will be removed for the proposed transmission line ROW. TransCanada will also maintain a 100-foot (30.5-m) “no herbicide” buffer around the one significant vernal pool in the area (as discussed further in Section V-6.0 and Appendix 8-A).

The 115 kV transmission line ROW will cross some verified wood turtle (a Species of Special Concern in Maine) habitat as well as some potential habitat for other state amphibian Species of Special Concern. These species and potential impacts are further discussed in Section V-5.5.

As discussed above, impacts associated with the 115 kV transmission line are expected to resemble the effects of ongoing forestry practices that are already inherent to the area. Furthermore, given the patchy condition of the existing landscape in the vicinity, the proposed transmission line will contribute little, if any, additional impact to the area’s current character. Reptile and amphibian species within the vicinity are expected to react and adapt to the proposed transmission line much as they already do to ongoing forestry practices in the immediate region.

## ***Birds***

Proposed transmission line construction and maintenance may incur some impacts that are specific to birds. The proposed transmission line route will traverse six MIDFW-mapped IWWHs. These are discussed in detail in Section V-5.3. It should also be noted that several of the habitat conversion, fragmentation and edge effects discussed above are particularly applicable to birds.

Potential adverse avian interactions with transmission lines include electrocution and collisions (Avian Power Line Interaction Committee [APLIC] 2006). Electrocution usually does not occur often on high voltage transmission lines such as the proposed 115 kV electric conductors, due to the wide spacing of conductors. Collisions with wires can occur more often, particularly on transmission lines spanning waterways (Olendorff et al. 1981). Consequently, large migratory water birds are the most common victims of wire strikes (Thompson 1978, Manitoba Hydro 1995). APLIC states (1994) that, while waterfowl and large water birds may to be more susceptible to collision in wetland areas, raptors and passerines appear to be more susceptible in upland habitats. Thompson (1978) concludes that “raptors, however, due to their great visual acuity, are rarely victims of wire strikes.” Bridges and Anderson (2002) point out that most bird collisions occur with the overhead ground wire when birds veer upward to avoid conductors. The California Energy Commission, in its Assessment of Avian Mortality from Collisions and Electrocutions (2005) states that most collisions with power lines occur during flights within a daily use area.

The 115 kV transmission line will not cross any significant waterways that are major travel corridors for significant numbers of these birds that are most at risk, therefore, impacts to large migratory water birds are not expected. Due to the design and spacing of electric conductors on the proposed transmission line, electrocution is not expected, even for large raptors. Collisions with lines may occur, but are expected to be random and rare.

As discussed above, impacts associated with the 115 kV transmission line ROW are expected to resemble the effects of ongoing forestry practices that are already inherent to the area. Furthermore, given the patchy condition of the existing landscape in the vicinity, the transmission line will contribute little, if any, impact to the area's current character. Avian species within the vicinity are expected to react and adapt to the proposed transmission line much as they already do to ongoing forestry practices in the immediate region.

### ***Terrestrial Mammals***

Proposed transmission line construction and maintenance have the potential to incur some impacts that are specific to deer. The 115 kV transmission line ROW will traverse the edge of a mapped deer wintering area, DWA 060027. TransCanada will mitigate any potential impacts to this area by allowing vegetative buffers in the area where the DWA is located along Nash Stream to grow to greater heights than typical buffers. This is possible due to topography that creates a greater conductor height than is typical. This buffer will also be maintained over a wider area adjacent to the stream, creating a wide riparian zone of taller than typical vegetation. Since much of the vegetation currently in this area is softwood, the favored winter cover for deer, these two factors will help dampen snow depths and promote the buffer's use as a travel corridor. Management in the buffer will include no herbicide usage, with only cutting allowed. This will allow sprouting of hardwood stumps, which provide good winter forage for deer. The regular cutting of these sprouts on typical maintenance schedules of every 4 to 5 years will promote the abundance of sprouts and also maintain this browse at appropriate ages and heights for use by deer.



As discussed above, impacts associated with the 115 kV transmission line are expected to resemble the effects of ongoing forestry practices that are already inherent to the area. Furthermore, given the patchy condition of the existing landscape in the vicinity of the proposed transmission line, the proposed transmission line will contribute little affect to the area's current character. Terrestrial mammal species within the vicinity are expected to react and adapt to the proposed transmission line much as they already do to ongoing forestry practices in the immediate region.

### **Bats**

The bat species that are likely to occur in the vicinity of the 115 kV transmission line are all listed as Species of Special Concern in Maine. Bats are discussed in detail in Section V-5.5.

## **V-5.5 Rare, Threatened and Endangered Wildlife Species**

### **V-5.5.1 Existing Resources**

Several rare species of wildlife may occur in suitable habitats within the general vicinity of the Kibby Wind Power Project (see Volume 1, Section 7), however, little or no suitable habitat for these species has been identified with the 115 kV transmission line ROW. Federal- and state-listed species that potentially occur in the area of the proposed transmission line include the golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), bald eagle (*Haliaeetus leucocephalus*) and Canada lynx (*Lynx canadensis*). There are also several species of wildlife that may be rare to locally common in the area that are on the state and federal lists of special concern. Potential impacts are discussed in Section V-5.5.2.

Species are federally listed under the Endangered Species Act (ESA), 16 USC §460 et seq., and state-listed as under the Maine Endangered Species Act (Maine ESA), 12 MRSA Ch. 713 subchapter 5, which is administered by MDIFW. The designation of "Essential Habitat" through the provisions of the Maine ESA is the legislation that defines the Essential Habitat of listed species in Maine. Specifically, the protection of this habitat is also pursuant to state law, since Significant Wildlife Habitat (e.g., Essential Habitat) in Maine is protected under NRPA, 38 MRSA § 480-A, et seq.

The USFWS defines an endangered species as an animal or plant species in danger of extinction throughout all or a significant portion of its range. The state of Maine ESA reiterates this in its definition, which states that an Endangered species is: "any species of fish or wildlife which has been determined to be in danger of extinction throughout all or a significant portion of its range by the Secretary of the Interior of the United States pursuant to the United States Endangered Species Act of 1973, Public Law 93-205, as amended, or by the Maine Legislature pursuant to the Maine Endangered Species Act, 12 MRSA, Chapter 925, subchapter 3". While Endangered species have been identified in the general vicinity, none have been recorded in close proximity to the 115 kV transmission line ROW.

A Threatened species is defined (at both state and federal levels) as any species of fish or wildlife which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. While Threatened species have been identified within the general vicinity, none have been recorded in close proximity to the 115 kV transmission line ROW.

In Maine, a Special Concern species is defined as “any species of fish or wildlife that does not meet the criteria as endangered or threatened but is particularly vulnerable and could easily become a threatened, endangered, or extirpated species due to restricted distribution, low or declining numbers, specialized habitat needs or limits, or other factors, or is a species suspected to be endangered or threatened or likely to become so but for which insufficient data are available”. At the federal level, the term “species of concern” is “an informal term referring to a species that might be in need of conservation action. This may range from a need for periodic monitoring of populations and threats to the species and its habitat, to the necessity for listing as threatened or endangered. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing” (USFWS at <http://www.fws.gov/endangered/glossary.pdf>).

Essential Habitats are defined by MDIFW as “areas that are currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine, and which may require special management considerations” (MDIFW at <http://www.state.me.us/ifw/wildlife/etweb/habitat/introduction.htm>). The 115 kV transmission line ROW does not traverse any areas that have been identified as Essential Habitat.

Table V-5-4 shows federal- and state-listed species of wildlife, as well as Species of Special Concern that may be found in the area. More detailed discussion of these species follows.

**TABLE V-5-4: RTE and Special Concern Wildlife Species Potentially Occurring in the Project Area**

<b>Species:</b>		<b>Listing Status: (T)hreatened, (E)ndangered, (S)pecial concern</b>	
<b>Common Name</b>	<b>Scientific Name</b>	<b>State</b>	<b>Federal</b>
Creeper	<i>Strophitus undulatus</i>	S	
Spring Salamander	<i>Gyrinophilus porphyriticus</i>	S	-
Four-Toed Salamander	<i>Hemidactylum scutatum</i>	S	-
Northern Leopard Frog	<i>Rana pipiens</i>	S	-
Wood Turtle	<i>Clemmys insculpta</i>	S	-
Golden Eagle	<i>Aquila chrysaetos</i>	E	-
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T
Peregrine Falcon	<i>Falco peregrinus</i> <sup>1</sup>	E	-
Cooper's Hawk	<i>Accipiter cooperii</i>	S	-
Northern Goshawk	<i>Accipiter gentilis</i>	S	S
Three-Toed Woodpecker	<i>Picoides tridactylus</i>	S	-
Olive-Sided Flycatcher	<i>Contopus cooperi</i>	S	-
Rusty Blackbird	<i>Euphagus carolinus</i>	S	-
Long-Tailed (Rock) Shrew	<i>Sorex dispar</i>	S	-
Yellow-Nosed (Rock) Vole	<i>Microtus chrotorrhinus</i>	S	-
Canada Lynx	<i>Felis lynx canadensis</i>	S	T
Little Brown Bat	<i>Myotis lucifugus</i>	S	-
Eastern Small-Footed Myotis	<i>Myotis leibii</i>	S	S
Northern Myotis	<i>Myotis septentrionalis</i>	S	-
Silver-Haired Bat	<i>Lasionycteris noctivagans</i>	S	-
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	S	-
Big Brown Bat	<i>Eptesicus fuscus</i>	S	-
Eastern Red Bat	<i>Lasiurus borealis</i>	S	-
Hoary Bat	<i>Lasiurus cinereus</i>	S	-

<sup>1</sup> Breeding Population Only

### **V-5.5.1.1      *Endangered Species***

Two state-listed Endangered species have the potential to occur in the vicinity of the 115 kV transmission line ROW, the golden eagle and the peregrine falcon. Neither of these species is listed at the federal level.

In the spring of 2005 and again in the spring of 2006, surveys for peregrine falcon and golden eagle were performed at three different cliff sites in Coburn Gore and Chain of Ponds Township, in Franklin County, Maine. These sites are each known historic golden eagle nesting sites, but they also have potential as sites for peregrine falcon nesting activities. The purpose of eagle and falcon nest surveys was to monitor the project area and surrounding vicinity for golden eagle and peregrine falcon nesting activity. Both state and federal biologists were consulted in order to develop and refine the survey protocols utilized. Agency personnel were consulted and invited to participate throughout the survey effort. No peregrine falcons or golden eagles were observed during these surveys and no evidence of raptor nesting was observed on the cliffs. However, golden eagles and peregrine falcons were observed migrating through the vicinity during fall migration surveys for both the Kenetech project (in 1992 and 1993) and for the Kibby Wind Power Project in 2005.

#### ***Golden Eagle***

The golden eagle is not federally listed but is state-listed as “endangered” under the Maine ESA. In addition to the regulatory protections of listing status, the eagles and their nests are also protected by the Bald and Golden Eagle Protection Act, 16 United States Code (USC) §§668-668d. Golden eagles are not known to currently breed in Maine, but MDIFW has identified three historic nest sites within roughly a 10-mile (16.1 km) radius (and within potential foraging range) of the Kibby Wind Power Project (personal communication with Charlie Todd, March 14, 2006). Each of these locations was monitored for nesting activity in spring of 2005 and spring 2006: no nesting activity was observed. As the historic nest sites are no longer occupied by golden eagles, MDIFW has not designated Essential Habitat for golden eagles.

Two golden eagles were observed migrating through the Kibby Wind Power Project vicinity during fall 2005 daytime migration surveys. Golden eagles have not been recorded in the vicinity during the breeding season.

#### ***Peregrine Falcon***

At one time federally listed as an endangered species under the ESA, the peregrine falcon was officially declared recovered and was removed from the endangered species list in 1999. The breeding population of this species in Maine, however, remains listed as an endangered species under the Maine ESA.

Currently, the nesting population of peregrine falcons in Maine is low and widely scattered in various cliff locations around the state. Peregrine falcons have nested on at least two cliff sites in northwestern Maine; however, these sites are greater than 10 miles (16.1 km) from the Kibby



Wind Power Project location. The historic golden eagle sites in the vicinity of the Kibby Wind Power Project can be considered generally suitable for peregrine falcon nesting, though peregrine falcons have not been documented using these sites. Essential Habitat has not been designated for peregrine falcons in Maine.

Three peregrine falcons were recorded migrating through the Kibby Wind Power Project vicinity during fall 2005 daytime migration surveys. Peregrine falcons have not been recorded in the vicinity during the breeding season.

#### **V-5.5.1.2 Threatened Species**

Two federally-listed threatened species may potentially occur in the project vicinity; these include the bald eagle and the Canada lynx. In the state of Maine, the bald eagle is listed as threatened, and the Canada lynx is a Species of Special Concern.

##### ***Bald Eagle***

The bald eagle is currently federally listed as “threatened” under the ESA, 16 USC §460 et seq., and state listed as “threatened” under the Maine ESA, 12 M.R.S.A Ch. 713 subchapter 5, which is administered by MDIFW. In addition to the regulatory protections of listing status, the eagles and their nests are also protected by the Bald and Golden Eagle Protection Act, 16 USC §§668-668d. Correspondence with the USFWS and MDIFW (Appendix V-D and Appendix V-E) identified the potential presence of occasional transient bald eagles in the area, however, there is no Essential Habitat for bald eagles located in the vicinity of the 115 kV transmission line.

Breeding bald eagles are present in northwestern Maine, and there are known recent nest sites on nearby Flagstaff and Spencer Lakes (documented nest sites are greater than 5 miles [8 km] from the 115 kV transmission line). Although the vicinity of the 115 kV transmission line is possibly within these nesting eagles’ home range (note that bald eagle home ranges can vary significantly in area, depending on habitat and forage availability), they typically focus their time around larger waterbodies, and it is unlikely they would frequent other areas distant from such waterbodies (personal communication with Charlie Todd, MDIFW).

The USFWS and MDIFW recommended that eagle nest surveys be conducted prior to construction of the 115 kV transmission line to ensure that construction activities do not adversely impact nesting eagles. In response, an aerial survey of the potential transmission line route was conducted, with participation from MDIFW, via helicopter on May 5, 2006. The area survey included areas extending from Moscow, Maine, to just west of the Chain of Ponds in Chain of Ponds Township. An area that extended 1 mile (1.6 km) on each side of the potential transmission line corridor (that is, a corridor 2 miles wide) was surveyed for bald eagles or their nests. No bald eagle nests were observed within the proposed transmission line ROW, however, one previously undocumented bald eagle nest was discovered during this survey. The nest was located in Concord Township, over 20 miles (32.2 km) from the terminus of the 115 kV transmission line at Bigelow Substation. This nest has been designated bald eagle nest

BE 509A by MDIFW. For additional information regarding rare raptor surveys, see Appendix 7-F.

Three bald eagles were observed in the vicinity of the Kibby Wind Power Project during fall 2005 daytime migration surveys. Bald eagles have not been recorded in the area during the breeding season.

### ***Canada Lynx***

In 2000, the USFWS declared Canada lynx a threatened species under the ESA. In Maine, the lynx is considered a Species of Special Concern by the MDIFW. Several studies have been conducted, or are underway, to assess the abundance and distribution of lynx in Maine. This effort includes radio-telemetry studies, and a multi-year winter snow track survey initiated by MDIFW in 1999 and 2003, respectively (Ray et al. 2002).

Initial correspondence with USFWS, dated August 30, 2005 (Appendix V-E), identified the potential for the presence of Canada lynx in Kibby Township. The 115 kV transmission line ROW originates in and traversed about 3 miles (4.8 km) of Kibby Township.

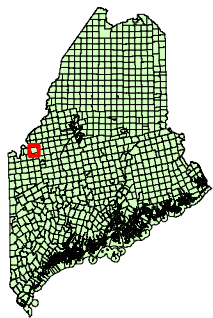
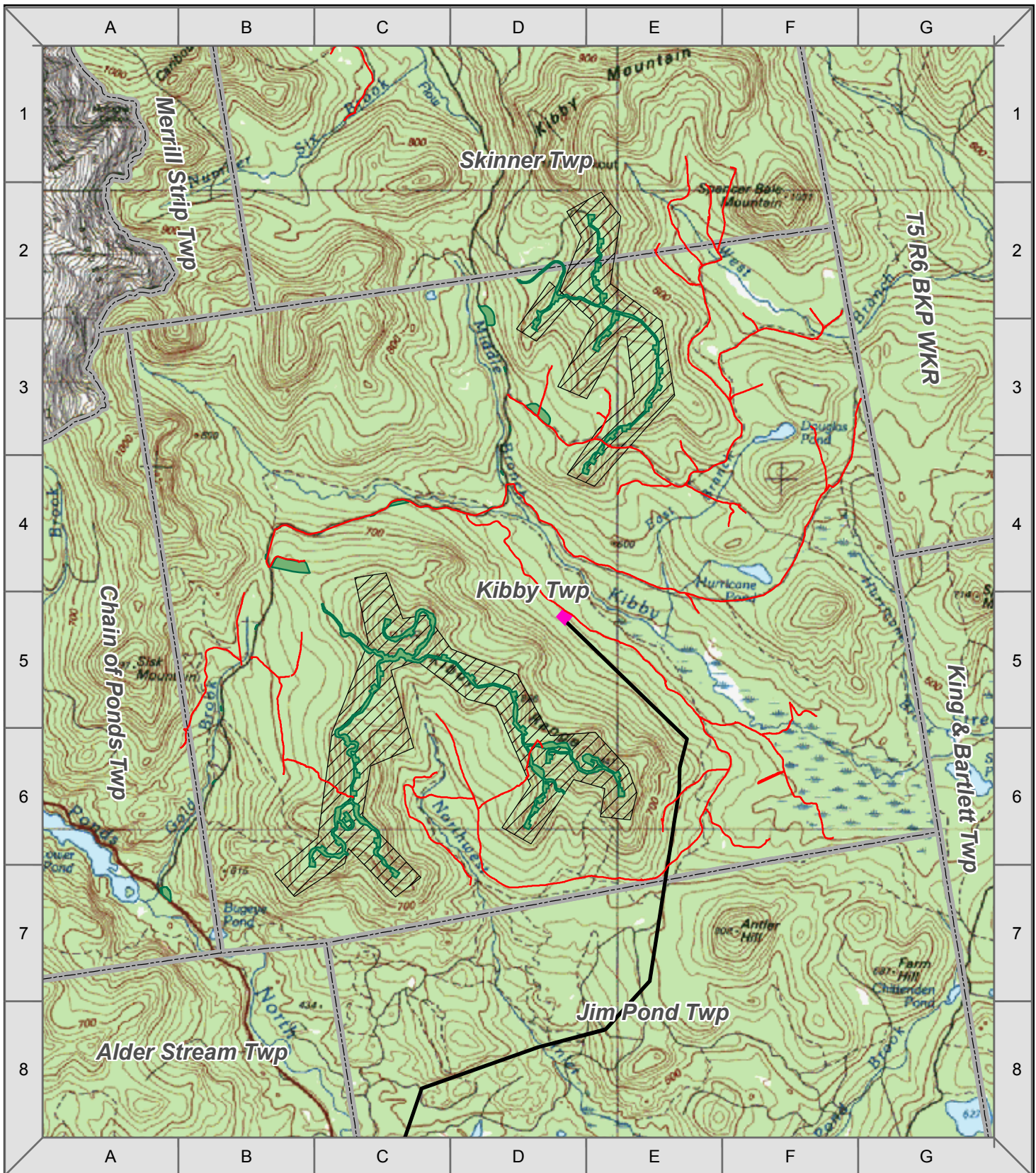
Canada lynx are medium-sized, elusive cats common to boreal forests throughout Canada and Alaska. The southern portion of their range extends into some areas of the northern United States, including Maine. Populations in Maine have been historically variable, and are largely dependant on suitable habitat and associated snowshoe hare populations (which comprise their primary prey). Ideal habitat for lynx in Maine consists of softwood dominated or mixed regenerating forests, about 10 to 30 years in progress (MDIFW 2003). All 3 miles (4.8 km) of the 115 kV transmission line ROW in Kibby Township is in hardwood-dominated forest, with limited value as lynx habitat.

Based on recommendations from the USFWS, TransCanada performed presence/absence surveys for Canada lynx in an area that included Kibby Township (see Figure V-5-20). Methods for these surveys were developed in consultation with MDIFW and the USFWS, and MDIFW provided training for survey participants in order to ensure optimal consistency with state-wide survey efforts.

Two complete surveys were completed in Kibby Township, February 16, 2006, and March 24, 2006. No evidence of Canada lynx were observed during either survey. Survey methods and results for 2005-2006 survey efforts are detailed in Appendix 7-E. Conditions have not been suitable to date for tracking surveys during winter 2006 – 2007. It is not, however, anticipated that the Kibby Wind Power Project area is a significant habitat for the Canada lynx.

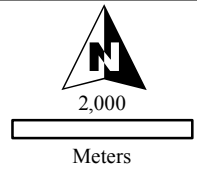
#### ***V-5.5.1.3 Species of Special Concern***

Several species designated by the state of Maine as Species of Special Concern potentially exist within the general vicinity of the 115 kV transmission line. As discussion in Section V-



**Legend**

- Surveyed Roads
- Proposed Transmission Line Corridor
- Proposed Substation
- Proposed Transmission Line
- Turbine Construction Area
- Area to be Rezoned
- Municipal Boundary



**Notes:** Base Map: 100k MapTech Topographic Map

Figure V-5-20  
**Kibby Wind Power Project**  
*Kibby Township:*  
**Track Survey Roads**



5.5.1.2, these include the Canada lynx, which is federally listed as a threatened species. The remaining state Species of Special Concern are discussed below.

### ***Mollusks***

The ***creeper*** is one of the most widely distributed freshwater mussel species in North America. In Maine, it is found only in streams and rivers where it prefers sand and gravel substrates. The creeper exists in most major watersheds in Maine, but it is typically sparse (Nedeau et al. 2000). Consultation with MDIFW has indicated a known occurrence of the creeper in Stratton Brook, within 1 mile (1.6 km) of the 115 kV transmission line ROW.

### ***Reptiles and Amphibians***

Maine Aquatic Biodiversity Project distribution maps were consulted in regards to the distribution of amphibian Species of Special Concern that may occur in the general vicinity. These maps were generated from records compiled in the Maine Aquatic Biodiversity Project database. Most data were provided by MDIFW, and include records from the Maine Amphibian and Reptile Atlas Project (MARAP) (PEARL 2007).

The ***spring salamander*** is typically found in cold, clean, undisturbed, high-relief mountain streams (Hunter et al. 1992). They can also be found in less steep, cool seeps and springs in forested areas (Hunter et al. 1999). The species ranges from southern Quebec and central Maine to northern Alabama. Spring salamanders are the least common of Maine's streamside salamanders (Hunter et al. 1992). According to Maine Aquatic Biodiversity Project distribution maps, there are records of this species in the vicinity of the southern end of the 115 kV transmission line. Its status in the area is uncertain. None were observed in area streams during field efforts.

The ***four-toed salamander*** is strongly associated with habitats that include wet moss, particularly sphagnum moss. Adults are terrestrial and are associated with forests that are in or adjacent to sphagnum bogs, or forests that are characterized by sphagnum-dominant depressions (Hunter et al. 1999). This highly disjunct species has clumped distribution mostly in southern coastal Maine, with populations along the Penobscot River, Mt. Desert Island and the southern part of Lincoln and Sagadahoc Counties. The four-toed salamander is Maine's smallest terrestrial vertebrate, and tends to be secretive in nature (Hunter et al. 1999). For this reason, there is some debate whether this species is rare or just hard to find in the various parts of Maine (Hunter et al. 1992). Based on Maine Aquatic Biodiversity Project distribution maps, there are no records of four-toed salamanders in or near the vicinity of the 115 kV transmission line ROW, and none were observed in area streams during field efforts. Its status in the area is uncertain.

The ***Northern Leopard Frog*** is common throughout the northern United States and Canada. Its range covers the entire state of Maine, but it is patchily distributed and seemingly absent in some areas. They are apparently absent in northwestern Maine, but this observation may be attributable to the lack of surveys in that area. Northern leopard frogs are associated with

various wet habitats including ponds, lakes, marshes, rivers, and streams. In the summer, they may use upland habitats for foraging opportunities. (Hunter et al. 1999). According to Maine Aquatic Biodiversity Project distribution maps, there are records of this species in the vicinity of the southern end of the 115 kV transmission line ROW. No northern leopard frogs were observed during field efforts.

According to a 2004 report by MDIFW, the **wood turtle**, which is primarily a northeastern species, is declining throughout its range with Maine hosting some of the largest and most viable remaining populations in the United States (MDIFW 2004). Wood turtles are largely terrestrial, but spend most of their time in or near streams or rivers. They may hibernate during colder months in undercut banks and root masses along slow-moving rivers. Wood turtles often use vernal pools in the spring for foraging opportunities. Nesting habitat consists of bare, sandy gravel in sunny locations near water (Hunter et al. 1999). Wood turtles were documented on several occasions during field efforts related to the 115 kV transmission line ROW. All of these records occurred in the Dead River valley near Alder Stream.

### **Birds**

**Cooper's hawks** breed in deciduous, mixed and coniferous forests across southern Canada southward to southern United States and into central Mexico (Cornell 2003). This species is a likely summer resident within the boreal forests of the vicinity. Several Cooper's hawks were recorded during raptor migration studies performed in Kibby and Skinner Townships in fall 2005 and spring 2006.

The **northern goshawk** is a widespread species in North America and is a potential year-round resident in the vicinity. Preferred habitat includes various forest types, particularly mature forests (Cornell 2003). Occasional northern goshawks were recorded during raptor migration studies performed in Kibby and Skinner Townships in fall 2005 and spring 2006.

The **three-toed woodpecker** is resident in Alaska, Canada, Newfoundland, and the northern United States. This species, however, is considered rare in Maine. During the breeding season, this species is associated with boreal and montane coniferous forests, especially areas with burned trees, or logged areas with dead standing conifers. It nests in tree cavities, particularly in coniferous trees (Cornell 2003). No three-toed woodpeckers were documented in the vicinity during field studies associated with the Kibby Wind Power Project.

The **olive-sided flycatcher** is a neotropical migrant species which breeds in Alaska, Canada, Newfoundland and the northern United States in the East. In the west, it breeds as far south as western Texas and Baja California. There are isolated populations of this species in the Appalachians. This species, which breeds in montane and boreal coniferous forests at forest edges and openings, has declined seriously throughout much of its range (Cornell 2003). Olive-sided flycatchers were documented on an occasional basis during field studies associated with the Kibby Wind Power Project. These observations were associated with shrub or forested wetlands with open components. In general, they appear to be uncommon, but present in the area.

The **rusty blackbird** is a boreal species that breeds within forested wetland, scrub-shrub wetland and peat lands (MDIFW 2005). The rusty blackbird has declined more than 50 percent in the past 30 years (Rich et al. 2004). According to Maine's Comprehensive Wildlife Strategy, the rusty blackbird population is estimated at 1,907 ± 793 individuals in Maine. Some objectives for Maine include increasing the population by 100 percent, conserving breeding habitat, clarifying population trends and implementing long-term monitoring procedures (MDIFW 2005). The rusty blackbird has been observed during both migration and breeding season along access roads associated with the Kibby Wind Power Project (Gold Brook Road, Wahl Road, etc.). It has also been observed at several wetlands in the vicinity of the 115 kV transmission line ROW (a beaver flowage near Milepost 19.7, but not traversed by the 115 kV transmission line ROW).

### ***Terrestrial Mammals***

Consultation with MDIFW and USFWS identified two recent occurrences of **rock voles** (also known as the yellow-nosed vole), a state special concern species, in two different locations on the side slopes of Kibby Range (see Figure V-5-21). The 115 kV transmission line ROW traverses the lower slopes of Kibby Range, and passes within approximately 1,700 feet (518 m) of one of these mapped occurrences. This species is typically found in areas with rocky outcrops and/or talus slopes.

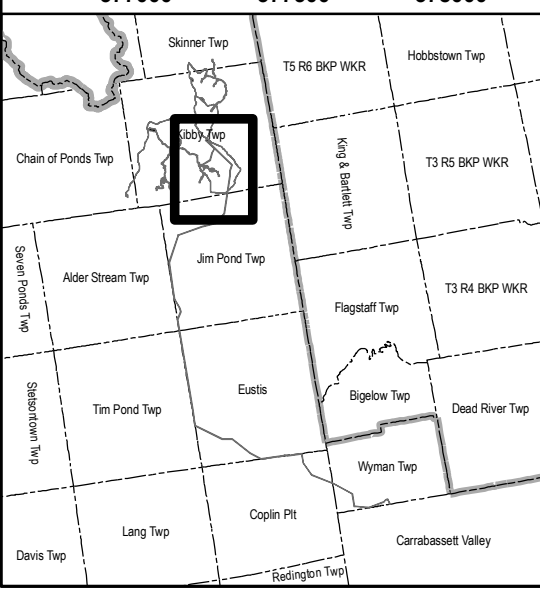
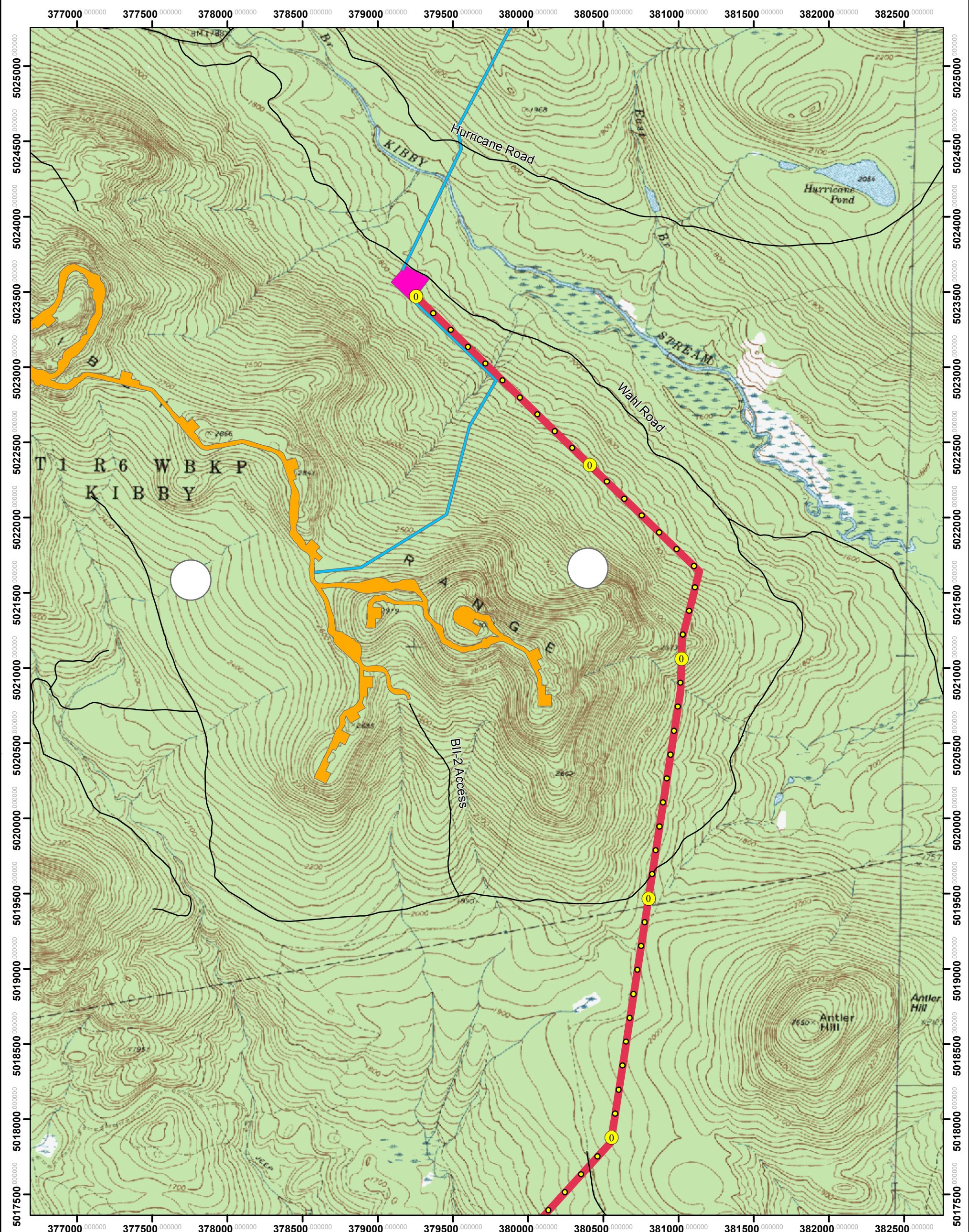
Consultation with MDIFW also indicated the potential for **rock shrews** to be found in the area. Rock shrews are found in similar habitat as rock voles. Due to the sensitivity of these species to trapping activities, a determination was made, in consultation with MDIFW and USFWS, to conduct field surveys for habitat rather than trapping individuals. Where appropriate high-quality habitat is identified, TransCanada will work to avoid impacts to such habitat, thereby avoiding potential impacts to the species. Habitat surveys were conducted during the spring, summer and fall of 2006.

In determining the potential presence of appropriate field conditions for these species, talus slopes, rocky outcrops, and boulder strewn areas of coniferous, deciduous, and mixed deciduous-coniferous forests near flowing or subsurface water.

In addition to focused habitat surveys, field personnel were responsible for noting specific areas of such habitat within proposed work areas during the course of detailed surveys of the Kibby Wind Power Project area for vernal pools, wetlands and during other activities.

Based upon the surveys completed, no characteristic habitat areas for the rock vole or rock shrew were noted within the 115 kV transmission line ROW.






**Legend**


- Mile Markers
- Rock Vole
- A Series Turbine
- B Series Turbine
- Collector Line
- Proposed Substation
- Transmission Line Corridor

**Notes:** Base map: USGS 24k Topographic Map.

INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES. TRC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.



0.5



Miles

Figure: V-5-21

**Kibby Wind Power Project**

*Rock Vole Locations*



## **Bats**

Several Maine Special Concern Species of bats have the potential to occur in the project area. These include the silver-haired bat (*Lasiorycteris noctiuagans*), eastern red bat (*Lasiurus borealis*), hoary bat (*L. cinereus*), big brown bat (*Eptesicus fuscus*), northern long-eared bat (*Myotis septentrionalis*), eastern pipistrelle (*Pipistrellus subflavus*), little brown myotis (*M. lucifugus*). In addition, the eastern small-footed myotis (*M. leibii*) may potentially occur but is highly unlikely to inhabit the Kibby Wind Power Project area.

In general, the bats that are likely to occur within the vicinity of the 115 kV transmission line may roost in trees, but tend to be solitary. Only the little brown myotis and eastern small-footed myotis are colonial, but the former does not colonize trees, and the latter is highly unlikely to exist in the area. All of the species that are likely to occur tend to forage over open water; therefore, roost sites are typically associated with forest stands that are adjacent to open water.

Bat surveys were conducted on the Kibby Wind Power Project area ridges from May 4 to June 7 and June 20 to October 25, 2006. Survey results indicated the presence of myotids and bats of the “big brown guild” (which includes both big brown, silver-haired, and hoary bats) during the spring and myotids, big brown guild bats, and red bat/eastern pipistrelle guild bats during the fall period (Appendix 7-H and Appendix 7-I).

### **V-5.5.2 Potential Impacts to Rare, Threatened and Endangered Wildlife Species**

TransCanada has determined, through extensive agency consultation with MDIFW and USFWS, that no federally listed or proposed threatened or endangered species or their critical habitats are likely to be affected by the proposed Kibby Wind Power Project. Federally listed species that may occur in the vicinity of the 115 kV transmission line include the bald eagle and Canada lynx. Habitats found along the proposed transmission line ROW are not favored by either species. A letter from USFWS, dated May 30, 2006, indicates that “no further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.”

TransCanada will perform pre-construction surveys for nesting eagles along the 115 kV transmission line ROW, and will also perform additional winter lynx track surveys, as conditions permit.

#### **V-5.5.2.1 Potential Impacts to Threatened and Endangered Species**

##### **RTE Raptor Species**

There is no Essential Habitat for golden eagles, peregrine falcons or bald eagles located in the vicinity of the 115 kV transmission line ROW. Currently, there are no golden eagles nesting in Maine. There are no known peregrine falcon nests in or near the vicinity, nor does the 115 kV

transmission line ROW traverse any areas that are considered high quality nesting habitat for these species. Therefore, the transmission line will not impact these species or their potential habitat.

The general area is possibly within the home range of a small number of nesting bald eagles, however, no nests are located on or near the 115 kV transmission line ROW. Furthermore, bald eagles typically focus their time around larger waterbodies, and it is unlikely they would frequent other areas distant from such waterbodies (personal communication with Charlie Todd, MDIFW). The 115 kV transmission line is not expected to result in any impacts bald eagles or their habitat.

### ***Canada Lynx***

The 115 kV transmission line ROW does not contain essential habitat for Canada lynx, and no Canada lynx have been documented in the area. For these reasons, the transmission line is not expected to impact this species.

## ***V-5.5.2 Potential Impacts to Species of Special Concern***

### ***Mollusks***

The 115 kV transmission line ROW does not cross Stratton Brook, which is the only documented location within the vicinity where ***creepers*** are known to occur. It should also be noted that, where stream crossings are necessary to transmission line installation, BMPs will be employed to protect the long-term integrity of affected streams. These practices are detailed in Appendix V-A. No impacts are anticipated to the creeper in association with the 115 kV transmission line.

### ***Reptiles and Amphibians***

No ***spring salamanders***, ***four-toed salamanders*** or ***northern leopard frogs*** were observed in the area. It is possible that these species could occur, but were not observed.

***Wood turtles*** were observed within the vicinity of the 115 kV transmission line ROW (see Figure V-5-19). The 115 kV transmission line will span several streams within the Dead River valley that are considered likely wood turtle habitat. While the transmission corridor will traverse these streams, no access or equipment will cross the larger streams (such as Alder Stream, the North Branch of the Dead River, the South Branch of the Dead River and Tim Brook) during construction. All stream crossings will be executed according to BMPs as described in Section V-1.0 and Appendix V-A and V-B.

Impacts to vernal pools, which are important habitat for many amphibian species as well as wood turtles, will be minimized during final design and construction. Measures to protect vernal pools are detailed in Section V-6.5.2.1.



Habitat conversion along the proposed transmission corridor may impact some upland habitat areas that are utilized by wood turtles and Special Concern amphibian species. As discussed in previous sections, impacts associated with the 115 kV transmission line are expected to resemble the effects of ongoing forestry practices that are already inherent to the area. Furthermore, given the patchy condition of the existing landscape in the vicinity, the transmission line will contribute little, if any, impact to the area's current character. Species using upland habitats within the vicinity are expected to react and adapt to the 115 kV transmission line much as they already do to ongoing forestry practices in the immediate region.

### ***Birds***

***Cooper's hawks*** and ***northern goshawks*** are highly mobile, and may use several components of the project vicinity's mature and regenerating forest habitats for foraging. Despite the area's patchy, forested landscape, ample mature forest is available for nesting. This stands true for the ***three-toed woodpecker***, as well; however, this species was not documented in the vicinity of the 115 kV transmission line ROW. In general, these forest-associated species are expected to react to the proposed transmission line much as they do the logging operations already inherent to the vicinity.

The 115 kV transmission line will impact only small areas of individual wetlands that are appropriate habitat for ***rusty blackbirds*** and/or ***olive-sided flycatchers*** (see Section V-6.5 for additional information on wetlands). In general, due to minimization of wetland impacts, impacts to these species are expected to be minimal to non-existent.

### ***Terrestrial Mammals***

Based upon the surveys completed, no characteristic habitat areas for the ***rock vole*** or ***rock shrew*** were noted within the 115 kV transmission line ROW. The transmission line route traverses the lower slopes of Kibby Range, and passes 1,700 feet (518 m) from a mapped occurrence. This species is typically found in areas with rocky outcrops and/or talus slopes. Where appropriate high-quality habitat is identified, TransCanada will avoid impacts to such habitat, thereby avoiding potential impacts to the species.

### ***Bats***

The 115 kV transmission line will necessitate the clearing of some forested areas which could potentially provide roosting habitat for bat species within the area. As discussed above, the bat species that are likely to occur in the vicinity tend to be solitary tree-roosters. Therefore, no impacts to nesting colonies are expected.

As discussed above, impacts associated with the 115 kV transmission line are expected to resemble the effects of ongoing forestry practices that are already inherent to the area. Furthermore, given the patchy condition of the existing landscape in the vicinity, little effect on the area's current character will result. Bat species within the vicinity are expected to react and

adapt to the proposed transmission line much as they already do to ongoing forestry practices in the immediate region.

## **V-5.6 Fisheries**

### ***V-5.6.1 Existing Resources***

All streams encountered in the field during wetland surveys were characterized and mapped, with several parameters recorded. The majority of the streams found within the 115 kV transmission line ROW are small intermittent or perennial coldwater streams with a gravel/cobble/boulder substrate. The larger named streams in the area include Northwest Inlet, North Branch of the Dead River, Alder Stream, Tim Brook, South Branch of the Dead River, Nash Stream, Stratton Brook, and Stoney Brook. Many other small unnamed streams occur in the general area, most of which are tributaries to one of the above streams. The 115 kV transmission line ROW also crosses streams that are tributaries to great ponds, including Northwest Inlet (tributary to Jim Pond), North Branch and South Branch of the Dead River (tributaries to Flagstaff Lake), and Barnard Brook (tributary to Barnard Pond). The identification and location of stream crossings associated with the 115 kV transmission line ROW are provided in Table V-8-5.

Brook trout are the predominant fish species found in these streams. Landlocked salmon are present in both branches of the Dead River. Sculpin, black-nosed dace, common shiners, and white suckers are probably also present in many area streams. Ponds in the area are also predominantly brook trout fisheries, though Jim Pond also has populations of landlocked salmon, togue, and smelt.

The brook trout populations in the most of these streams are natural and self-supporting and, according to state resource agencies, only limited stocking of hatchery-raised trout occurs or is contemplated. Brook trout are currently stocked in both the North Branch and South Branch of the Dead River.

### ***V-5.6.2 Potential Fisheries Impacts***

Water quality in all streams within the area is of paramount concern. Any existing stream crossings that are reconstructed will meet the most stringent standards for the control of erosion and minimization of sedimentation. These erosion control BMPs are an integral part of the development plan and are described in Appendix V-A. utmost care will be taken in all phases of the construction of this project to protect streams from erosion and sedimentation.

Buffer zones of taller vegetation will be maintained along the streams, which will serve to prevent the erosion of stream banks and provide shade to streams. To minimize the potential for adverse impacts to stream habitats and fisheries, TransCanada has incorporated a minimum 100-foot (30.5-m) buffer, as measured from the top of the banks, for all perennial streams crossed by new portions of the 115 kV transmission line ROW. Herbicide application will also be restricted, and will not be allowed within 100 feet (30.5 m) of the streams. These buffers are described in Appendix V-B.

In summary, the practices described in this application, including erosion and sedimentation control measures, buffer strips, and minimization and careful location of stream crossings, will assure that fish populations in the area will not be adversely affected by the proposed 115 kV transmission line.

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