

# **BHE NORTHEAST RELIABILITY INTERCONNECT VISUAL IMPACT ASSESSMENT**

## **1.0 INTRODUCTION**

Bangor Hydro Electric's proposed Northeast Reliability Interconnect (NRI) (the project) is an 84.25-mile 345 kV Transmission Line that will be built between Orrington, Maine and a point on the Canadian border near Baileyville, Maine. This report evaluates the potential visual impacts of the project on the scenic resources along the proposed route.

The project starts at the Orrington Substation. The characteristic landscape of the first 7.5± miles is composed of undeveloped forestland, open fields, and rural residential, largely clustered at road crossings. The remaining portion of the route, the 76.7± miles on the east side of Route 9, is primarily unpopulated commercial forestland. The regional landscape is characterized by rolling topography, extensive tracts of managed woodlands, and numerous wetlands, streams, lakes, and ponds.

One of the major considerations in selecting this route was the ability to consolidate the visual impacts of the transmission line with existing man-made linear elements. As proposed, approximately 14% of the line will run parallel to existing transmission lines and the buried Maritimes & Northeast (Maritimes) natural gas pipeline. Approximately 70% of the line that follows existing rights-of-way will parallel the Maritimes pipeline and/or the Stud Mill Road, an extensively-used timber haul road. The remaining 26% of the line is located outside of developed corridors to avoid visual impacts to Sunhaze Meadows National Wildlife Refuge, the Maine Youth Fish & Game Association clubhouse at Pickerel Pond, and residential neighborhoods in Milford.

The methodology used in the visual impact assessment (VIA) of the project is based upon a thorough understanding of the existing visual environment, the types of activity that occur along the proposed route, and the sensitivity level of people who use the area. Many of the concepts developed by the USDA Forest Service, the Bureau of Land Management, the State

of New York, and visual impact specialists at the State University of New York School of Landscape Architecture, College of Environmental Science and Forestry, have been incorporated in the evaluation methodology.

The methodology for assessing the visual impacts of the project employs a professional approach that relies upon the judgment of experienced landscape architects in the selection of factors chosen to evaluate scenic quality and to determine the magnitude of visual impact. This approach, widely used in permitting work in Maine and elsewhere throughout the country, is based upon current studies of what constitutes scenic landscapes and visual impacts.

This VIA has been prepared by Terrence J. DeWan & Associates (TJD&A), landscape architects and planners in Yarmouth, Maine with input and peer review from Dr. James Palmer, State University of New York School of Landscape Architecture. TJD&A has extensive experience in the field of visual assessment and was involved in the evaluation of the earlier “Permitted Route” for Bangor Hydro. Dr. Palmer is a recognized expert in visual impact assessment, having co-authored Foundations for Visual Project Analysis with Richard Smardon and John Felleman, one of the classic texts in the field. Dr. Palmer was also previously involved in evaluating the visual impacts associated with a route consolidated with the Stud Mill Road and the Maritimes pipeline.

## 2.0 REGULATORY CONTEXT

Bangor Hydro is applying for Site Location of Development Law (“Site Law”) and Natural Resources Protection Act (“NRPA”) permit for the construction of the project. The VIA has been prepared in accordance with and to demonstrate compliance with the statutory and regulatory requirements of those two regulatory schemes. Specifically, the Site Law requires an applicant to demonstrate that the project will not have an adverse effect on the natural environment, which in turn requires a demonstration that “the developer has made adequate provisions for fitting the development harmoniously into the existing natural environment and that the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or neighboring municipalities.” 38 MRSA Section 484.3. As part of the Site Law application, Section 6 - Visual Quality and Scenic Character requires a narrative describing “the provisions to be made in designing the development to minimize the development’s visual impact to the surrounding area.” The application requires a statement of “what efforts will be made to preserve any existing elements of the site that contribute to the maintenance of scenic character.” This VIA has been prepared to meet these requirements.

The NRPA also requires a demonstration that “the activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses.” 38 MRSA Section 480.D.1.

The Maine Department of Environmental Protection’s NRPA Chapter 315 Regulations require an applicant to demonstrate that the proposed activity will not unreasonably interfere with existing scenic and aesthetic uses of a scenic resource. A *scenic resource* is defined as “public natural resources or public lands visited by the general public, in part for the use, observation, enjoyment, and appreciation of natural or cultural visual qualities.” Under this rule, a scenic resource is the typical point from which an activity in, on, over, or adjacent to a protected natural resource is viewed.

The Maine Department of Environmental Protection (DEP) may require a visual impact assessment if a proposed activity appears to be located within the viewshed of, and has the potential to have an unreasonable adverse impact on, a scenic resource. Due to the number and scenic quality of the lakes, ponds, and rivers that could be affected by a project of this magnitude, a visual impact assessment of the proposed transmission line is being provided.

A *viewshed* is defined as “the geographic area as viewed from a scenic resource, which includes the proposed activity.” For purposes of this VIA, the study area used to define the limits of the project viewshed extended out approximately 3-5 miles from the proposed transmission line. This distance is generally accepted as the limits of the midground viewing distance. This distance was confirmed through field evaluation.

The majority of the land along the project route can be classified as flat to gently rolling to hilly, which limits the viewshed in many areas. In the more hilly areas (“mountains” generally rising in excess of 200 feet above the surrounding landscape) the viewshed can extend out to five miles, and in a few instances slightly beyond.

As part of the VIA, the applicant must describe the location of the activity and provide an inventory of scenic resources within the viewshed of the proposed activity by completing the MDEP Visual Evaluation Field Survey Checklist (included in Chapter 5). This list of scenic resources includes, but is not limited to, locations of national, state, or local scenic significance. The following scenic resources are found within five miles of the Project (lettering is taken from the Checklist):

- A. Outstanding Natural Feature
- B. National Wildlife Refuge
- C. State or Federal Trail
- F. Public natural resources (Great Ponds and navigable rivers)

Chapter 5, Scenic Resources within the Viewshed, describes all known scenic resources within 3-5 miles. Chapter 9, Visual Impact Assessment, describes how *the proposed project*

*will not unreasonably interfere with existing scenic and aesthetic uses of these scenic resources.* Chapter 10, Mitigation Measures, describes the siting and design strategies that have been developed to minimize potential visual impacts.

A listing of references used in the preparation of this report is provided in Chapter 11. Because the terminology used in the report is specific to VIAs, a Glossary is provided in Chapter 12.

### 3.0 DATA COLLECTION

Field data for the VIA were collected along the project route during several visits:

- August 24–26, 2004. TJD&A staff and Dr. James Palmer drove the length of the Stud Mill Road to photograph the project area and start a photographic record of the proposed route. Specific investigations targeted the residential areas between the Orrington Substation and the Stud Mill Road; several of the major river crossings; and several of the Great Ponds within a mile of the route.
- September 28–October 1, 2004. TJD&A visited the study area to evaluate specific sites and potential visual impacts. Digital photographs were taken throughout the site visit, often with one person holding a surveyors rod for scale reference. Specific areas of concentration included Pickerel Pond, The Horseback, Myra Camps (on Stud Mill Road), Main Stream, Eagle Mountain, Jimmies Mountain, the Oxbow, Burnt Land Lake, Alligator Lake, Narraguagus River, and the Machias River. Weather balloons were flown at Burnt Land Lake, Machias River, and First Machias Lake to assess project visibility from various points on the water and the Stud Mill Road.
- October 18–20, 2004. With Richard Boothby, Devine Tarbell & Associates, Inc., TJD&A visited the study area to collect additional data on key scenic resources. Specific areas included St. Croix River and Woodland Flowage, Pocomoonshine Lake, Pocomoonshine Mountain, Burnt Land Lake, Machias River, and the Oxbow. A light boat was used to gain access to the proposed St. Croix River crossing at the Woodland Flowage and Pocomoonshine Lake. Weather balloons were flown at Pocomoonshine Mountain, Burnt Land Lake, and the Oxbow to assess project visibility from scenic resources.
- A Spring 2005 site visit is anticipated to verify earlier work and collect additional data on the visibility from surrounding mountains and other scenic resources.

The photographic documentation of the project area is extensive. Representative samples are included in Appendix A as well as in the photosimulations found in Appendix B. Digital copies of all photographs are available upon request.

Most of the sites visited during these trips had been examined by TJD&A during the 2000-2001 field season and a decade earlier between 1989 and 1991. The data collected in these earlier visits (both on the ground and from a helicopter) served as a reference point to compare changes to the landscape brought about by timber harvesting, road construction, installation of the pipeline, and natural successional growth.

## 4.0 PROJECT STUDY AREA

### 4.1 Introduction

The scenery along the 84.25-mile length of the proposed route is characterized by several distinctive landscapes. For purposes of this assessment, the area is described in terms of the regions identified in The Natural Regions of Maine by Paul Adamus for the Critical Areas Program of the Maine State Planning Office. The Adamus report divides the state into five distinct physiographic regions and 17 subregions that are relatively homogeneous in nature, based primarily on their land form (relief, elevation, surficial geology, wetlands) and major plant and animal communities (see Figure 1).

The proposed project traverses three regions as defined by Adamus:

- 2d. Uplands Region (Foothills Subregion)
- 3. Norumbega Hills Region
- 4d. Northern Forest Region (Eastern Bog Subregion)

### 4.2 Regional Description

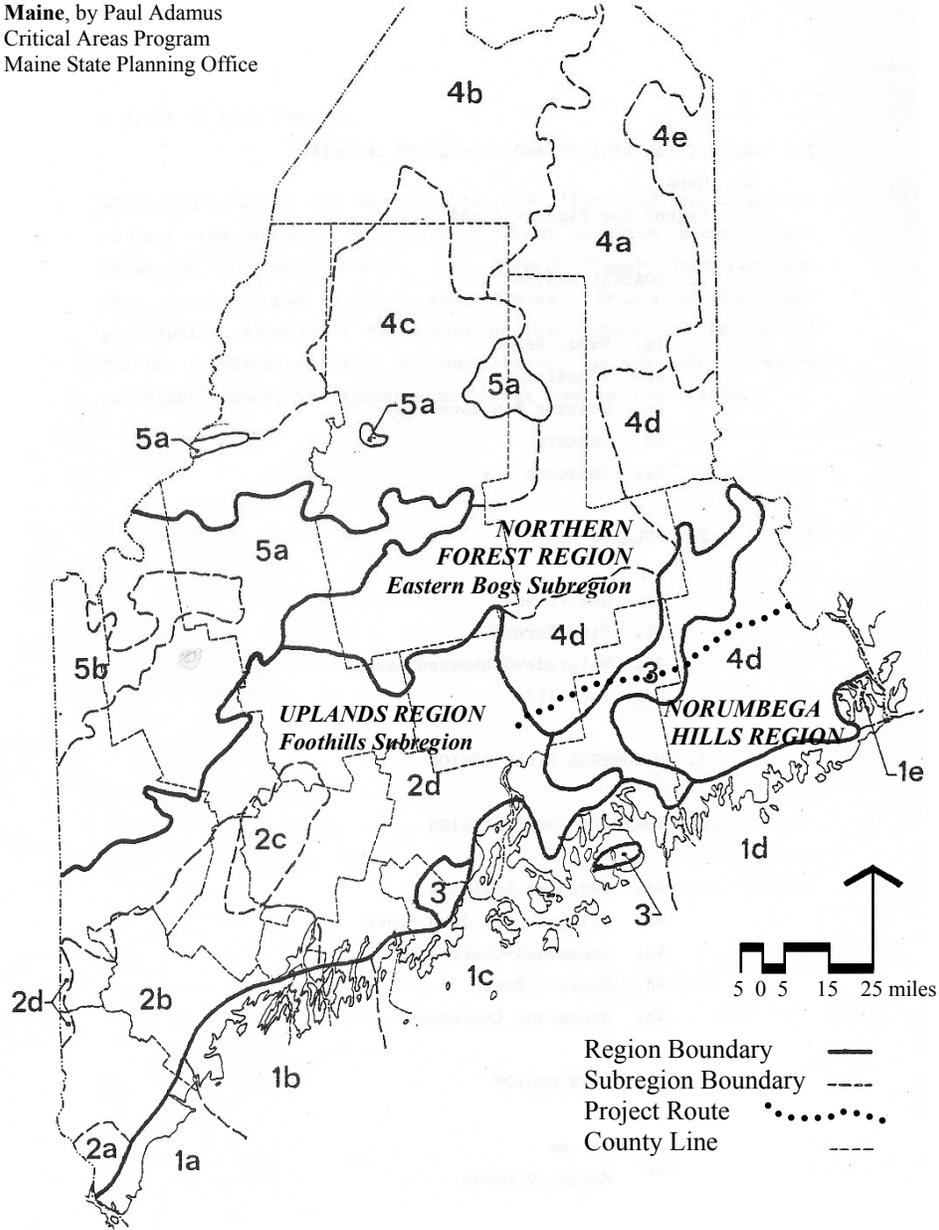
Foothills Subregion of the Uplands Region is found at the western end of the line in the Orrington area. This subregion is the eastern end of the southern coastal plain that extends to the New Hampshire border and inland for 40-50 miles. The subregion is marked by hilly topography, moderate elevation, and general lack of wetlands. The cultural landscape within this part of the project route is composed of rural residential, farmland, and other transitional land uses between the more urbanized center of Bangor and the Norumbega Hills to the east. See photographs on pages A-1 through A-8 in Appendix A for representative views of this subregion.

The Norumbega Hills Region between Eagle Mountain and Fifth Machias Lake is the most visually diverse landscape found in the study area. The topography is very hilly, characterized by landforms in the 500-1,000 foot range. Many lakes are found in the area, usually in conjunction with the mountains or low hills. Valleys between the mountains

contain pockets of wetlands and bogs. Spruce-fir is the dominant forest type with northern hardwoods found at higher elevations. See photographs between pages A-23 and A-49 in Appendix A for representative views of this region.

The Eastern Bog Subregion of the Northern Forest Region, between Fifth Machias Lake and the St. Croix River, is composed of relatively low elevations, sphagnum bogs and freshwater wetlands, low to moderate topographic relief, and spruce-fir forest mixed with northern hardwoods in cutover areas. Timber harvesting has altered the landscape in many areas with an extensive network of gravel haul roads and regenerating clearcuts. See photographs between pages A-50 and A-56 in Appendix A for representative views of this subregion.

From **The Natural Regions of  
Maine**, by Paul Adamus  
Critical Areas Program  
Maine State Planning Office



**Figure 1:**  
**Natural Regions of Maine**

## 5.0 SCENIC RESOURCES WITHIN THE VIEWSHED

Scenic resources are places that are usually visited by the general public, in part with the purpose of enjoying their visual quality. Under Chapter 315 regulations, MDEP considers a scenic resource as the typical point from which an activity in, on, over, or adjacent to a protected natural resource is viewed. Scenic resources include, but are not limited to, locations of national, state, or local scenic significance. The following narrative supplements the information provided on the MDEP Visual Evaluation Field Survey Checklist (doc. #DEPLW0540) that has been reproduced and completed on the following pages.

### 5.1 Would The Activity Be Visible From:

#### 5.1.A *National Natural Landmarks and other outstanding natural and cultural features.*

There are no designated National Natural Landmarks (NNL) within 5 miles of the proposed project according to the NNL website:

[www.nature.nps.gov/nnl/Registry/USA\\_Map/States/Maine/maine.htm](http://www.nature.nps.gov/nnl/Registry/USA_Map/States/Maine/maine.htm)

The Maine Atlas and Gazetteer lists one unique natural area within a 5-mile radius of the project, i.e., The Horseback. This is a well-defined esker running NW/SE, starting south of Pickerel Pond on the Stud Mill Road. This is the largest of several eskers in the project area and has been mined extensively for sand and gravel deposits. In addition, a rough access road runs along the top of the esker for much of its length. The Horseback does not appear to be a feature that is visited by the general public for its visual quality. See photographs on page 19 for views of the Horseback.

#### 5.1.B *State or National Wildlife Refuges, Sanctuaries, or Preserves and State Game Refuges*

Sunkhaze Meadows National Wildlife Refuge, in the town of Milford, is located approximately 0.7 miles to the northwest of the transmission line at its closest point. According to the Friends of Sunkhaze Meadows' website, [www.sunkhaze.org](http://www.sunkhaze.org), the NWR receives approximately 2,800 visits per year, with the majority for interpretation and wildlife observation. Recreational visits account for 850 visits per year, primarily for hunting and

**Figure 2: MDEP Visual Evaluation Field Survey Checklist**

**APPENDIX B: MDEP VISUAL EVALUATION  
FIELD SURVEY CHECKLIST**

(Natural Resources Protection Act, 38 M.R.S.A. §§ 480 A - Z)

Name of applicant: **Bangor Hydro Electric** Phone: **207-973-2525 (Rob Bennett)**  
 Application Type: **NRPA, Site Location of Development**  
 Activity Type: (brief activity description) **345 kV Electric Transmission Line**  
 Activity Location: Town: **Orrington to Woodland (see Location Map)**  
 Counties: **Penobscot, Hancock, Washington**  
 GIS Coordinates, if known: **N/A, see project location maps**  
 Date of Survey: **August/Sept./Oct. 2004** Observer: **Terrence J. DeWan**  
 Phone: **207-846-0757**

**Distance Between the Proposed Activity and Resource (in Miles)  
Visibility**

1. Would the activity be visible from:	0-1/4	1/4 -1	1+
A. <i>A National Natural Landmark or other outstanding natural feature?</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B. <i>A State or <u>National Wildlife Refuge</u>, Sanctuary, or Preserve or a State Game Refuge?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
C. <i>A state or federal trail?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. <i>A public site or structure listed on the National Register of Historic Places?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
E. <i>A National or State Park?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. 1) <i>A municipal park or public open space?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) <i>A publicly owned land visited, in part, for the use, observation, enjoyment and appreciation of natural or man-made visual qualities?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3) <i>A public resource, such as the Atlantic Ocean, a great pond or a navigable river?</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Figure 2: MDEP Visual Evaluation Field Survey Checklist (Continued)**

	0-1/4 mi.	1/4 –1 mi.	1+ mi.
2. What is the closest estimated distance to a similar activity?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. What is the closest distance to a public facility intended for a similar use?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. Is the visibility of the activity seasonal? (i.e., screened by summer foliage, but visible during other seasons)		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5. Are any of the resources checked in question 1 used by the public during the time of year during which the activity will be visible?		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

fishing. The 10,400-acre refuge was established in 1988 to:

- conserve, protect, and enhance the raised dome peatland ecosystem
- manage habitat for upland wildlife species
- provide wildlife-dependent recreation and environmental education programs and facilities.

The project has been purposely sited to avoid any visual contact with the National Wildlife Refuge. There are no other State or National Wildlife Refuges, Sanctuaries, or State Game Refuges within 5 miles of the project.

**5.1.C A state or federal trail**

Hiking Trails

There are no state or federally designated hiking trails within five miles of the project corridor.

Snowmobile Trails

The project intersects the Interstate Trail System (ITS), a comprehensive system of snowmobile trails in Maine, at several points:

- ITS 84: south of the Horseback in T32
- ITS 84: north of Great Pond on the Stud Mill Road in Great Pond township.
- ITS 81: east of the Oxbow on the Stud Mill Road in T35
- ITS 84: follows the Stud Mill Road for approximately 21 miles between T43 (southeast of Third Machias Lake) and Route 1 in Princeton. For 5 of those miles the proposed route will be located in a cross-country route and not adjacent to the Stud Mill Road.

#### ATV Trails

The 21-mile section of the Stud Mill Road between T43 and Route 1 in Princeton is also a designated ATV route, according to the Sunrise ATV Trail Map. Several of the numbered side roads that cross the Stud Mill Road are also designated routes.

#### ***5.1.D A property on or eligible for inclusion in the National Register of Historic Places pursuant to the National Historic Preservation Act of 1966, as amended.***

There are no properties listed on the National Register properties within the viewshed of the project.

Myra is a small collection of seven camps in Township 32 on the north side of the Stud Mill Road. According to the Ellsworth American, there had been a small town in this location with a population that never exceeded 60. The route of the transmission line has been moved to the north to maintain a 100-250 foot buffer between the remaining camps, a nearby archaeological site, and the clearing.

#### ***5.1.E National or State Parks***

There are no National or State Parks within the viewshed of the proposed project. Acadia National Park will not be affected by the project, which is 38 miles to the north of the Park. The closest State Park is Cobbscook Bay State Park in Edmunds Township south of Dennysville. Likewise, at a distance of 30 miles to the south, there will be no visual impact.

**5.1.F Public natural resources or public lands** visited by the general public, in part for the use, observation, enjoyment and appreciation of natural or cultural visual qualities.

**5.1.F.1 Municipal park or public open space**

There are no municipal parks or public open spaces within the viewshed of the project. There are several campsites and campgrounds on private property that are open to the public within the study area (see Figure 3 on the following page). Some are shown on the Maine Atlas and Gazetteer and have been confirmed by field evaluation.

In addition to these recognized sites, there is evidence of some camping activity in roadside gravel pits and along gravel haul roads in several places throughout the study area. These appear to be locations of convenience and not related to scenic resources.

**5.1.F.2 A publicly owned land** visited, in part, for the use, observation, enjoyment and appreciation of natural or man-made qualities.

Pickerel Pond in T32 just east of Sunkhaze Meadows National Wildlife Refuge is the site of the Maine Youth Fish and Game Association clubhouse. The pond and the land surrounding is owned by Penobscot Forest LLC and managed by International Paper.

Pickerel Pond is stocked with fish and only open to children under 16 years of age. The Association was established for the purpose of promoting the love and respect of the outdoors in Maine for the youth of Maine and extending to these youth the treasures of experience in the outdoors. Their mission is to “share with our children in the beauty and bounty of nature in all it's works; to learn the ways of wildlife, to promote conservation, the importance of habitat, and the joys of discovery to be found in the woods, waters, and the skies of Maine.” ([www.maine-youth-fish-and-game.org](http://www.maine-youth-fish-and-game.org).) The Association is sponsored by a number of organizations, including Maine Department of Inland Fisheries and Wildlife, International Paper, Georgia Pacific Community Outreach, Maine Warden Service, and Old Town Canoe.

**Figure 3: Campgrounds and Campsites within the Study Area**

SITE/PHOTO	LOCATION	DESCRIPTION	COMMENT
Bracey Pond	T34	Campground on Bracey Pond. Facilities include 10± drive-in sites, several shelters, fire rings, and a pit toilet.	Campground is 0.6 miles south of the project and will have no visual contact with it. See photographs on page A-17.
Lower Sabao Lake	T35	Approved campsite on southern end of the lake.	Campsite is 0.4 miles south of the project and should have no visual contact.
Second Machias Lake	T37	Informal campsite and carry-in boat launch on the southeastern shore of the lake near the Machias River.	Campsite is 1.3 miles north of the project and will not have any visual contact with it.
First Machias Lake	T37	Two informal campsites on the southwest shore of First Machias Lake at the end of a gravel road. Facilities include picnic tables, fire rings, and a put-in for small boats.	Sites are heavily wooded and oriented to the east. The top of one of the structures will be visible from the lake at a distance of 1.1 miles. See photographs on page A-49.
Pocomoonshine Mountain	Princeton	Informal campsite above the Pocomoonshine overlook. No facilities.	Site is oriented to Pocomoonshine Lake to the east. View clearings to the lake are largely overgrown. Project is below the site and will not be visible, given the current level of vegetation management. See photograph on page A-52.
Pocomoonshine Lake	Princeton	Informal waterfront campsite at the end of a gravel access road. No facilities.	Site is oriented to Pocomoonshine Lake to the east. There will be no views of the project from this location.

The project route was aligned to avoid any visual impacts on Pickerel Pond or the Association clubhouse. The project will be located approximately 0.5 miles to the southeast of the pond. See photographs of the pond and clubhouse on page A-18.

The Maine Atlas and Gazetteer lists two tracts of Maine Public Reserved Lands (PRL) within five miles of the project:

- Number 26 Swamp PRL in the northeast corner of the town of Bradley, south of Sunkhaze Meadow NWR. The transmission line was relocated to a point just within the northern boundary of this land to avoid impacts on Sunkhaze National Wildlife Refuge.
- Duck Lake PRL, a 25,000-acre unit four miles north of Stud Mill Road at Sabao Mountain. According to Wildernet.com, an internet database of outdoor recreation information, there are no trails in the reserve. A few informal campsites are found on Duck Lake, Lower Unknown Lake, and Middle Unknown Lake. At its closest point the project will be over four miles south of the boundary of this PRL. Sabao Mountain and other low hills will screen the project from any views.

The Maine Department of Conservation owns two tracts of land on the Stud Mill Road in Township 21. These lands were acquired for public lots and are currently being used for forest management. The Department has no plans to use them for any expanded purposes.

The Maine Department of Conservation recently acquired a 1,000-foot corridor on both sides of the Machias River as part of the Machias River Project through the combined efforts of State and Federal agencies and a number of conservation groups. Phase One of the project will protect a 1000 foot corridor on both sides of 121 miles of the Machias River, plus portions of West Branch Machias River and Third Lake Stream, as well as portions of major tributaries, including Mopang Stream and Pembroke Stream. The protection corridor will also include lands surrounding First and Second Machias Lakes.

In the area north of Route 9 the Maine Department of Conservation will hold fee ownership in the corridor. International Paper will continue to manage the land under sustainable forestry practices. The lands will be open to recreational use by the general public, consistent with the remote nature of the property.

The Land for Maine's Future program contributed \$2.8 million for Phase One, the largest grant that the program made in its history. The U.S. Fish and Wildlife Service contributed \$2

million for this phase. The Nature Conservancy has raised nearly \$3 million from private donations to support the purchase and establish an endowment fund. Phase Two funds will be dependent upon the future public approval of monies for the Land for Maine's Future.

There are no other publicly owned lands (e.g., other parkland, scenic byways, scenic overlooks, public picnic areas, etc.) within the viewshed of the project.

### **5.1.F.3 Public resources, such as the Atlantic Ocean, a great pond, or a navigable river**

As noted above, the landscape within 3-5 miles of the proposed route is characterized by a number of scenic resources: lakes and ponds, rivers and streams, and small mountains. The charts on the following pages summarize these resources and provide an overview of their respective resource values. In most instances these scenic resources will not be affected by the project.

Representative photographs of these resources are included in Appendix A. Photosimulations are also included in Appendix B to illustrate the impact that the project may have on these scenic resources.

#### **5.1.F.3.a Rivers and Streams**

The proposed route intersects a number of navigable rivers and streams along its 84.25-mile length. Figure 4 summarizes the conditions at the four river crossings.

The Maine Rivers Study, a joint project in 1982 between the Maine Department of Conservation and the National Park Service, evaluated the major river systems in the state. The result was a comprehensive evaluation of the following features: geologic-hydrologic, critical-ecologic, undeveloped, scenic, anadromous fisheries, inland fisheries, whitewater boating, backcountry excursion, canoe touring, and historic.

**Figure 4: Project River Crossings**

<b>WATERBODY</b>	<b>LOCATION</b>	<b>CROSSING</b>	<b>WIDTH</b>	<b>COMMENTS</b>
Main Stream	Great Pond	Adjacent to Stud Mill Road	70' at point of crossing	
Narraguagus River	T34	Adjacent to Stud Mill Road; structures may be visible from the Oxbow	30-50' at point of crossing	"A" River as per Maine Rivers Study. Outstanding River Segment, as per Title 12 §403. Narraguagus River Canoe Trip.
Machias River	T37	Adjacent to Stud Mill Road	60' at point of crossing	"A" River as per Maine Rivers Study. Outstanding River Segment, as per Title 12 §403. Machias River Canoe Trip.
St. Croix River	Baileyville	Crosses Woodland Flowage into New Brunswick, Canada	400' at point of crossing	"A" River as per Maine Rivers Study.

Based upon this evaluation, the rivers were ranked "A" through "D." The "A" rivers possess "six resource values with regional, statewide or greater than statewide significance in a specific resource category." They also possess "two or more resource values which are recognized to be some of the state's most significant in a given resource category." Three of the rivers within the study area are classified as "A" Rivers: the Narraguagus, Machias, and St. Croix.

Two Outstanding River Segments, as defined by Title 12 §403, will be crossed by the project: the Narraguagus River and the Machias River. In both instances the crossing will be seen in conjunction with the steel and timber bridges that carry Stud Mill Road traffic over the rivers and the Maritimes pipeline.

The Maine Rivers Study (Study) describes the Narraguagus River as one of Washington County's highest quality trout fisheries. The river offers "a rare combination of natural setting and numerous access points." Its primary resource values are critical/ecologic, undeveloped, inland fisheries, and whitewater boating. Anadromous fisheries were

recognized as being of some of the state's most significant. According to the Study, the Narraguagus is not known for its scenic resource values.

The Machias River is described in the Study as “one of the longest freeflowing wild rivers in the state.” Its scenery is described as “a unique density and diversity of spatial enclosures, topographic features, hydrologic and vegetative elements including waterfalls, rapids and wetlands.” Its primary resource values are geologic/hydrologic, critical/ecologic, and inland fisheries. In addition, the Machias River possesses some of the state's most significant resources in the following area: undeveloped, scenic, anadromous fisheries, whitewater boating, and backcountry excursions.

The St. Croix River forms the boundary between Maine and New Brunswick, Canada. The Study notes that the segment between Woodland north to Kellyland is a popular and ecologically significant native smallmouth bass fishery. Its scenery is described as “a unique and diverse range of views related to a variety of spatial enclosures, topographic diversity and land uses.” Its primary resource values are critical/ecologic, scenic, anadromous fisheries, inland fisheries, and whitewater boating. In addition, the St. Croix River possesses some of the state's most significant resources in undeveloped and backcountry excursions.

#### **5.1.F.3.b Lakes and Ponds**

As noted above, most of the study area is characterized by a dense concentration of lakes and ponds. Figure 5 provides an overview of the waterbodies within 3 miles of the proposed route that were evaluated for potential visual impact from the project. There are additional lakes and ponds within this distance; however, map analysis indicated that there would be no visual contact, primarily due to topography and intervening landforms.

The information in this chart is derived from the Land Use Regulation Commission's Maine Wildlands Lake Assessment, Amendment of the Comprehensive Land Use Plan, and field observation by TJD&A.

**Figure 5: Major Lakes and Ponds within 3 miles of the Project**

WATERBODY	LOCAT'N	VIS	DIST (Mi)	SIZE (Ac)	NATURAL RESOURCES					RESCL	LAND USE	
					FSH	WL	SC	SH	CLT		ACC	DEV
Fields Pond	Orrington		0.6	182								
Brewer Lake	Orrington		1.3									
Crocker Pond	T32		1.5	<10								
Pickereel Pond	T32		0.5	11					3	AC	UN	
Dollar Pond	T32		0.3									
Great Pond	Great Pond		1.1									
Dud's Pond	T32	X	0.2	<10								
Alligator Lake	T34	X	0.6	1159	O		O	S		1B	AC	UN
Eagle Lake	T34		1.1	260	M				S	2	AC	DE
Jimmies Pond	T34		0.2	26	M					3	AC	UN
Upper Allen Pond	T34		0.7	44	M					3	AC	UN
Middle Allen Pond	T34		0.9	32	M					3	AC	UN
Lovejoy Pond	T34		0.7	40	S					2	AC	DE
Bracey Pond	T34		0.4	14	S					2	AC	UN
Deer Lake	T34		1.4	38	S					2	AC	DE
Allen Pond	T35		0.7	83	M	S	(S-)			2	IN	DE
Horseshoe Lake	T35		1.5	202						3	AC	UN
Green Lake	T35		0.9	64			S			2	AC	DE
Campbell Lake	T35		0.2	35	M				S	2	AC	DE
Lower Sabao Lake	T35		0.1	755	O				S	1B	AC	UN
<i>Burnt Land Lake</i>	T35	X	0.1	80	S	S				2	AC	UN
Fifth Machias Lake	T36		0.2	1069	S				S	2	AC	UN
Knox Lake	T36		0.3	51	M					3	AC	UN
<i>First Machias Lake</i>	T37	XX	<0.1	109	M	S				2	AC	DE
Second Machias Lake	T37		1.1	192	S				S	2	AC	DE
Fourth Lake	T37		0.6	32	M	S				2	AC	UN
Third Lake	T37		1.3	141	S					2	AC	UN
Little Musquash Lake	T37		0.2	26	M					3	AC	UN
Clifford Lake	T27		1.3	954	O	O+	S+			1A	AC	UN
Big Lake	T27		2.1	10305	O	O	+		O	1A	AC	DE
<i>Pocomoonshine Lake</i>	Princeton	XX	0.2	2464								

Visibility (VIS)      XXX – Highly visible; XX – Moderately visible; X – Slightly visible

Natural Resource Categories: FSH – fisheries; WL – wildlife; SC – scenic; SH – shoreline character; CLT – cultural;

Resource Ratings      O – Outstanding (clearly of statewide significance); S – Significant (met a predetermined standard); + Resource needs further evaluation; M – Missing information

Resource Class (RESCL): 1A – Statewide significance with >1 outstanding natural resource value; 1B – Statewide significance with 1 outstanding natural value; 2 – Regional significance (no outstanding values but at least one significant resource value); 3 – Local or unknown significance

Land Use:              AC – Relatively accessible; IN – Relatively inaccessible (no roads within 1/4 mile of lake shore; DE – Relatively developed; UN – < one development unit / shore mile

Photosimulations have been prepared for lakes *shown in italics*.

The VIS column provides an indication of the relative visibility that the project will have on the lake. One X indicates that the line will be slightly visible. In most cases this means that the upper portion of the structures would be visible, usually above the forest crown. The conductors would not generally be visible. “XX” indicates that the project would be moderately visible. In this case approximately 1/4 of the structure (i.e., 20± feet) of the upper portion of the structure would be visible, along with a portion of the conductors and insulators. “XXX” indicates that the project would be highly visible to an observer on the lake or pond (i.e., the majority of the structures and the conductors would be visible).

The project route was laid out to avoid or minimize contact with scenic and natural resources. The VIS column shows the outcome of this approach. The project will be slightly visible from two lakes (Burnt Land Lake and Alligator Lake) and moderately visible from First Machias Lake and Pocomoonshine Lake.

#### **5.1.F.3.c Mountains**

The term “mountain” may be somewhat of a misnomer. Even though there are many landforms within five miles of the project that are labeled mountains, they rarely exceed 700 feet above their surroundings. Most of the mountains are or were completely wooded, with active logging operations at the lower elevations. The only exception is a bald spot on the north side of Eagle Mountain that affords dramatic views to the north toward Eagle Lake and Nictaus Lake. The only other overlook that was encountered was on the east face of Pocomoonshine Mountain, and that was partially overgrown.

Figure 6 on the following page summarizes the physical characteristics of the mountains that were evaluated as part of the VIA.

#### **5.2 What is the closest estimated distance to a similar activity?**

There are two similar linear utility corridors in close proximity to the project. The project parallels the existing MEPCO transmission line from the Orrington Substation to Bradley. It also is adjacent to the existing Maritimes pipeline that parallels the Stud Mill Road throughout much of the project area.

**Figure 6: Mountains within 5 Miles of the Project**

MOUNTAIN / Photo	LOC	VIS	DIST (mi)	EL (ft)	SIZE (ht)	COVER	ACCESS	FEATURES
Bald Bluff Mountain	Amherst		5.0	1030'	600'	Wooded	May be a hiking trail at the top.	One of a series of low mountains on the south side of the project route.
Springy Brook Mountain	T32		4.5	1040'	650'	Wooded	Unknown	
Turner Mountain	T32		2.5	710'	350'	Wooded	Unknown	
Little Turner Mountain	Great Pond		2.3	550'	200'	Wooded	Unknown	
Morrison Pond Mountain	Great Pond		4.5	930'	650'	Wooded	Unknown	
Black Cap Mountain	Great Pond		4.0	920'	650'	Wooded	Unknown	0.4 miles north of Little Black Cap
Baker Ridge	Great Pond		0.3	740'	200'	Wooded	Unknown	Ridge runs 0.8 miles n/s
Bamfords Ridge	Great Pond		1.5	800'	340'	Wooded	Unknown	Just west of Alligator Lake
Eagle Mountain	T34	X	1.2	1090'	600'	Wooded with small opening at summit	Rough gravel road extends partly up mountain. Trail leads to an overlook oriented to the north.	Project slightly visible from end of hiking trail, 2 miles northwest of the Stud Mill Road.
Jimmies Mountain	T34		0.4	789'	375'	Wooded	None	
Oxbow Mountain	T35		0.1	530'	100'	Wooded	None	Adjacent to Stud Mill Road; overlooks Oxbow
Oak Mountain	T35		1.3	762'	350'	Wooded	Haul road on north side	Recently cut from el 650 to 700±
Quillpig Mountain	T35		2.1	688'	315'	Wooded	Haul road on west side	Recently cut from el 600 to 650±
Woodchopping Ridge	T35		0.8	680'	250'	Wooded	Unknown	
Horseshoe Mountain	T35		2.3	730'	280'	Wooded	Unknown	
Sabao Mountain	T41		2.0	1,115'	710'	Wooded	4WD trail on NE side	South side recently logged
Fifth Lake Mountain	T41		2.8	910'	400'	Wooded	Unknown	
Elwell Ridge	T36		0.9	882'	440'	Wooded	Unknown	
Fletcher Peak	T36		0.6	828'	400'	Wooded	Unknown	
Knox Mountain	T36		0.8	810'	350'	Wooded	Unknown	
Pocomoonshine Mountain	Princeton		0.4	613'	365'	Wooded with some thinning	Rough gravel road on the south side	Informal overlook and campsite, oriented toward lake, at the end of the road. Overlook mostly overgrown.

**5.3 What is the closest distance to a public facility intended for a similar use?**

Generally not applicable. The closest public facility for transmission of electricity is the MEPCO line that runs from the Orrington substation north. The project is parallel and co-located within this line for several miles from Orrington to Bradley.

**5.4 Is the visibility of the activity seasonal?**

The transmission line will be visible throughout the year.

**5.5 Are any of the resources checked in Question 1 used by the public during the time of year during which the activity will be visible?**

The public uses all the resources checked in Question 1 and will continue to use them year-round.

## **6.0 PROJECT DESCRIPTION**

### **6.1 Transmission Structures**

The majority of the transmission line will be supported by two-pole wooden H-frame structures. Poles will average 85 feet in height and will be spaced 800± feet apart. Individual structures have been designed to fit specific topographic and other site conditions.

This design is commonly used for power transmission in this part of Maine and seems to be a generally accepted part of the rural landscape. See photographs on pages A-2, A-4, and A-7 for examples of existing transmission structures on the western end of the project.

### **6.2 Clearing / Buffer**

Transmission rights-of-way will be cleared of larger vegetation to prevent trees and large shrubs from reaching the safety zone under the conductors. Low-growing scrub/shrub and grass vegetation will be maintained within the right-of-way, as illustrated on Photosimulations 3 and 4. Riparian vegetation will be preserved to minimize impacts on streamside habitats and to minimize view corridors. See Post-Construction Vegetation Maintenance Plan by TRC Environmental Corporation for further information.

### **6.3 River Crossings (Marker Balls and Avian Flappers)**

A series of orange warning balls will be installed on the shield wires where the project crosses Great Works Stream, Narraguagus River, Machias River, and St. Croix River to minimize potential effects on the eagle population, which favors the river valley for fishing and breeding. The marker balls will also make the line more visible for light planes that navigate using the river. At the St. Croix crossing, bird flappers will also be installed on the shield wires to increase their visibility to the avian population.

## 7.0 PHOTOSIMULATIONS

Photosimulations (or computer-altered photographs) are provided in Appendix B to illustrate the anticipated change to publicly visible landscapes resulting from the construction of the 345 kV transmission line.

The following section describes the methodology used to develop the photosimulations:

1. Photographs of each site were taken by TJD&A during the field trips noted earlier. The position of the camera was recorded by TJD&A staff using GPS equipment or measured from known observation points (e.g., road intersections). Most photographs were taken with a Nikon Coolpix 5700 digital camera, set to shoot at a focal length equivalent to a 52 mm (“normal”) lens. Photographs on the St. Croix River were taken with a Nikon Coolpix 950 digital camera, also set to approximate a 35mm camera with a normal lens.
2. Where possible, a 25-foot surveyors rod was included to provide a reference point and to help scale the photographs. The location of the rod was also recorded with GPS equipment or located relative to known points. The average height of the trees in the photographs was established by field measurement, using the surveying rod where appropriate.
3. Helium-filled weather balloons were used in several locations (Machias River, Burnt Land Lake, and Pocomoonshine Lake) to provide reference points for the photosimulations. Balloons were tethered at the end of an 85 foot cord to approximate the average height above ground of the typical wooden H-frame structure. The location of each balloon was recorded by GPS or by ground measurement to established reference points. Three balloons of different colors were used at the Machias River crossing and Pocomoonshine Lake where it was apparent that more than one structure might be visible from the water.

4. Positions of the photographs were located by TJD&A on Plan/Profile drawings prepared by Bangor-Hydro or USGS topographic quad sheets.
5. Locations of the weather balloons were added to the plan views where appropriate as reference points. Using reference points verified by the ortho photos on the Plan/Profile drawings, TJD&A determined the location and height of each structure within the viewshed. Cross sections were developed in some instances to determine whether the structure would be visible above the treeline. Heights for the specific structures were derived from the Plan/Profile drawings.
6. Photographs were selected to provide the reviewers with characteristic views of the existing landscape and the scenic resources adjacent to the project. For several of the simulations, pairs of photographs were merged into a panorama to provide a more realistic view of the landscape.
7. The existing conditions photographs were imported into Photoshop and modified to show anticipated changes to the visible landscape. These include the removal of vegetation and the introduction of wooden H-frame structures, conductors, and orange warning balls and flappers (St. Croix River crossing only). Where ground level vegetation would be visible, it was shown with a few years growth. Adjustments were made to the images to account for the effects of atmospheric perspective and to correct uneven lighting conditions. Photographs of similar H-frame structures from existing transmission lines in central Maine were used as the source imagery.
8. For the Burnt Land Lake simulation where the transmission structures would not be visible, a white line was added to the photosimulation to show the relative position and height of the poles in order to demonstrate the effectiveness of existing vegetation to screen the project.

Figure 7 describes the views presented in each of the photosimulations (See Appendix B).

**Figure 7: Project Photosimulations (Located in Appendix B)**

#	LOCATION	COMMENT
1	Eastern Avenue	View from residential neighborhood in Holden looking toward existing transmission line crossing a cornfield.
2	Eagle Mountain	View from the end of the trail atop Eagle Mountain, one of the few hiking trails in the study area. The project will be barely visible at a distance of two miles.
3	Stud Mill Road near Jimmies Mountain	Representative view from the Stud Mill Road showing the effect of clearing the vegetation from the opposite side of the road.
4	Stud Mill Road at Narraguagus River	View from the carry-in path leading to the Narraguagus River.
5	Narraguagus River	View from a paddler's perspective looking downstream on the river approaching the Stud Mill Road bridge. Structures will not be visible at this location.
6	Narraguagus River	View from a paddler's perspective looking upstream (against the current) approaching the Stud Mill Road bridge.
7	Burnt Land Lake	View from the middle of the lake looking south. The top of one or two structures may be visible above the mature pines that line the shore. Ghosted image shows the screening effect of existing trees.
8	Machias River	View from the paddler's viewpoint looking downstream at the project crossing, approximately 800' from the Stud Mill Road bridge and 200' from the project centerline.
9	First Machias Lake: north end	View from northern end of the lake, approximately 0.5 miles from the project.
10	First Machias Lake: southerly end	View from the southerly end of the lake opposite an informal campsite, approximately one mile from the project.
11	Pocomoonshine Lake	View from the northeastern end of the lake, approximately one mile from the project.
12	Pocomoonshine Lake and Mountain: South Princeton Road	View from South Princeton Road looking north northwest toward Pocomoonshine Lake and Pocomoonshine Mountain, approximately 5.5 miles from the project.
13	Woodland Flowage	View on the St. Croix River (Woodland Flowage) looking south (downstream) approximately 0.5 miles from the project crossing.
14	Woodland Flowage	View on the St. Croix River (Woodland Flowage) looking north (upstream) approximately 0.5 miles from the project crossing.

## 8.0 AFFECTED POPULATION

### 8.1 Residential Population

#### 8.1.1 Year-Round Population

The first 7.5 miles of the project passes through a landscape that is largely rural residential and forestland. What little development there is has been concentrated at road crossings. Agricultural fields provide open views. Figure 8 summarizes the settlement patterns adjacent to the project. In all cases the transmission line will be located in an existing right of way adjacent to an existing transmission line and the existing Maritimes pipeline. Photographs of these areas are found in Appendix A.

**Figure 8: Rural Residential Areas Near Project**

COMMUNITY	LOCATION	DESCRIPTION
Orrington	Fields Pond Road	One home across Fields Pond Road from the Orrington Substation. Two homes in the woods to the east of the S/S are well screened.
Brewer	Wiswell Road	One home on the south side of the transmission line with a direct view of the project.
Brewer	Route 1A	Mixed highway commercial / residential district.
Holden	Eastern Avenue	One home on the east side of the line will lose the wooded buffer that now screens the existing line. Farmhouse in the field on north side of road will see the second line. Other nearby homes are screened by existing vegetation.
Brewer/Holden	Lambert Road	A mobile home adjacent to the line looks directly into the ROW. Several other homes in the area are set back into the woods and screened from the project.
Eddington	Cleweyville Road	The project will cross at Cleweyville Corner, a small hamlet consisting of a dozen ± homes and a few commercial and agricultural structures.
Eddington	Route 9 / Hill Street	Hill Street is a small neighborhood of five homes on the north side of Route 9.

#### 8.1.2 Seasonal Population

Figure 9 describes the seasonal camps that are within one mile of the project. In general there are few camps located within the viewshed of the project.

**Figure 9: Seasonal Camps near Project Area**

LOCATION	SETTING	DESCRIPTION
T32: Myra	Set into the woods on the north side of the Stud Mill Road	Seven camps set back from the road. Project is being designed to leave a minimum 100' buffer at the rear of the camp lots to minimize disturbance. Six of the camps will have a 200-250' buffer.
Great Pond Main Stream	Set into the woods to take advantage of Main Stream.	One camp located 500'± from the Stud Mill Road. Will not be affected by the project.
T34 Alligator Lake	Near the lakeshore. Access by gravel roads off haul roads.	A few isolated cottages at the northwestern end of the lake. At the closest point the transmission line will be 0.6 miles from the lake and 0.9 miles to the nearest camp.
T35 Green Pond	Near the lakeshore. Access by gravel roads off haul roads.	A few isolated camps 1.4 miles from the Stud Mill Road. The project will be screened from the camps by topography and vegetation.
T35 Burnt Land Lake	On the eastern shore of Burnt Land Lake, accessed by a haul road off Stud Mill Road.	One rustic camp near the edge of the water, oriented to the west. Structures will probably not be visible from the camp.
T35 Lower Sabao Lake	Small hunting camp set deep into the woods at the end of a long dirt road.	Very rustic camp approximately 0.4 miles from the Stud Mill Road with no direct view of the project.
T37 Machias River	On the south side of the Stud Mill Road where the Machias River enters First Machias Lake.	A well-kept seasonal dwelling oriented south toward the lake. Screened from the Stud Mill Road by dense pines and understory vegetation.
Princeton Pocomoonshine Lake	On islands and near the shoreline of the lake	Several rustic camps are scattered throughout the NE part of the lake where a few structures may be visible at 1-2 miles.
Canada Woodland Flowage	Seasonal camp: appears to be located in a low marshland or island. RV Park: On top of a steep bank adjacent to the river.	One seasonal camp on the Canadian side 0.6 miles upstream from the crossing. A new recreational vehicle park in Canada approximately 0.3 miles downstream from the crossing.

## 8.2 Worker Population

A significant portion of the people on the Stud Mill Road are employed in the commercial forestland in management, timber harvesting, hauling of logs, pulp, and chips. Their level of sensitivity to the visual changes that may result from the construction of the project is expected to be minimal.

### 8.3 Recreating Population

While the project area has a number of recreation resources, it is generally not heavily used for recreational pursuits. Figure 10 summarizes the recreation users who may come in contact with the project.

**Figure 10: Recreational Users**

USERS	GENERAL LOCATION	RELATIVE USE	VIEWER EXPECTATION
ATV Riders	Eastern end of Stud Mill Road; marked woods roads.	Low to moderate	Low for users of existing logging roads and Stud Mill Road
Snowmobilers	Eastern end of the project; primarily along ITS routes.	Low to moderate Seasonal	Low for users of ITS where it follows the Stud Mill Road, gas pipeline, and other haul roads.
Campers	Designated campsites (See Figure 3)	Moderate to high, depending upon the site Seasonal	High: most of the sites are oriented to lakes and ponds and situated away from major roads and utility corridor.
Canoers / Kayakers	Main Stream, Narraguagus River, Machias River, St. Croix River, Burnt Land Lake, First Machias Lake, and Pocomoonshine Lake	Moderate: variable with the season and water levels.	High where the route passes through forestland. Moderate-low at road crossings where users come in contact with roads, utility corridors, bridges, and other site modifications.
Fishermen	All rivers and larger streams; lakes and ponds	Low Seasonal	High: fisherman can easily find spots that are located away from the utility corridor in relatively undisturbed surroundings.
Hunters	Throughout the Project area	Low to moderate Seasonal	Low to moderate: hunters are attracted to the edge conditions found along utility / road corridors and cutting operations.
Hikers	Eagle Mountain; on woods roads on other mountains	Very low	Moderate: this area is not known for its hiking trails or scenic overlooks. Most elevated views would include evidence of recent cutting operations.
Motorist Driving for Pleasure	Throughout the Stud Mill Road	Low	Low to moderate: drivers along the Stud Mill Road are in constant visual contact with the ROW clearing and gas pipeline throughout much of the length. Logging trucks and the resultant dust clouds are common. Evidence of wood harvesting is found throughout the project, especially in the mid-section.

## 9.0 VISUAL IMPACT ASSESSMENT

Figure 11 summarizes the visual impacts of the project on the known scenic resources of the study area. Further descriptions are provided on a site-by-site basis after the chart. Photosimulations of selected areas that illustrate anticipated changes are provided in Appendix B.

**Figure 11: Summary of Potential Visual Impacts on Scenic Resources**

Location	Town/Township	Summary of Impacts
Fields Pond	Orrington	No impact.
Sunkhaze Meadow NWR	Milford	Line has been relocated to avoid potential impacts.
Pickereel Pond	T32	No impact on pond or camp at southern end.
Dollar Pond	T32	No impact.
The Horseback	T32	Line will be visible from 4WD trails on the Horseback. This is a geologic feature but not a highly scenic one.
Myra	T32	Line has been relocated to preserve a buffer on the back side of the cottages at Myra.
Main Stream	Great Pond	345 kV line will be seen in the context of Stud Mill Road and the clearing for the gas line.
Dud's Pond	Great Pond	Unknown: Very small pond on north side of Stud Mill Road.
Alligator Lake	T34	Not visible from carry-in boat launch (4 miles to the SE). See Fig. 12 (cross section from boat launch).
Eagle Mountain	T34	Almost imperceptible view of 345 kV line from the very end of a hiking trail on mountaintop; access is very limited. Trail appears to be very lightly used.
Jimmies Pond	T34	Does not appear to have any impact.
Jimmies Mountain	T34	No obvious access road.
Upper Allen Pond	T34	No impact.
Middle Allen Pond	T34	No impact.
Lovejoy Pond	T34	No impact.
Bracey Pond	T34	Established campground; no impact.
Narraguagus River	T34	Project will be seen in the context of Stud Mill Road, the bridge, and the gas line clearing. The near edge of the ROW clearing will be 150'± upstream from the bridge.
The Oxbow	T35	Seems to be minimal impact based upon initial balloon flight.

**Figure 11: Summary of Potential Visual Impacts (Continued)**

Location	Town/Township	Summary of Impacts
Allen Pond	T35	No impact.
Green Lake	T35	No impact.
Campbell Lake	T35	No impact.
Lower Sabao Lake	T35	No impact.
Burnt Land Lake	T35	Very top of several structures may be visible from portions of the lake, based upon initial balloon flight. ROW clearing will impact informal campsite adjacent to Stud Mill Road.
Sabao Mountain	T41	No impact.
Fifth Machias Lake	T36	No impact.
Knox Lake	T36	No impact.
Machias River	T37	The cleared ROW and conductors will come into view 500'± from the edge of the clearing. The project will be seen in the context of Stud Mill Road, the bridge, and the gas line clearing.
First Machias Lake	T37	The tops of several of the structures and some of the conductors will be visible on portions of the lake.
Second Machias Lake	T37	No impact.
Fourth Lake	T37	No impact.
Little Musquash Lake	T37	No impact.
Clifford Lake	T27	No impact.
Pocomoonshine Mountain	Princeton	No impact with current lack of viewshed clearing from Pocomoonshine Mountain overlook (See Figure 13, cross section from overlook to lake).
Pocomoonshine Lake	Princeton	The tops of a few of the structures and the conductors will be visible over the northerly part of the lake.
St. Croix River / Woodland Flowage	Baileyville	Structures, conductors, warning balls, and flappers will be visible throughout a portion of Woodland Flowage.

The visual impact assessment that was performed for this project relied upon a methodology that examined:

- Relative contrasts in Color, Form, Line, and Texture.
- Whether the objects seen would dominate the visible landscape from the particular viewpoint.
- Whether the objects would be in scale with the surrounding landscape.

A project or structure would have a significant visual impact if it:

- blocks the view of a scenic resource, or
- presents a major contrast in color, form, line, or texture, and dominates the landscape.

This methodology is described in detail in Foundations for Visual Project Analysis, 1986, edited by Richard Smardon, James Palmer, and John Felleman. It is the core of many of the assessment techniques that have been developed by Federal agencies such as the USDA Forest Service and are used throughout the United States on similar projects.

#### **Fields Pond Road, Orrington**

One single family home is located across Fields Pond Road opposite the Orrington Substation. If the project is visible at all, it will be seen in the context of a landscape that is dominated by the existing substation and major transmission lines. Two homes in the woods to the east of the substation are well screened and will not be affected. The project will not be visible from Fields Pond, which is located on the south side of Fields Pond Road approximately one mile to the east of the substation. See photographs on page A-1 for representative views in the vicinity of the substation.

#### **Wiswell Road, Brewer**

One home on the south side of the transmission line will have a direct view of the project. The closest structure (#11) will be 110± feet west of the home. The landscape is dominated by four transmission lines with several different types of structures in a very wide cleared ROW. See photographs on page A-2.

#### **Route 1A, Brewer**

The existing landscape is characterized by small-scaled commercial establishments, several types of transmission and distribution structures, high-mast light structures, Route 1A, the I-395 on-ramp, directional signs, and other utility structures. Visual impact will be relatively minor. See photographs on page A-3.

### **Eastern Avenue, Holden**

The proposed line will parallel the existing transmission line as it crosses a large cornfield (See Photosimulation 1). One home on the east side of the line will lose the wooded buffer that now screens the existing line. Structure #29 will be 175± feet west of the home. Three homes, including a large farmhouse in the field, will have direct views of the additional line. Several other nearby homes are screened by existing vegetation and will not be affected. See photographs on page A-4 and A-6.

### **Lambert Road, Brewer and Holden**

The existing transmission line is well screened from Lambert Road by existing vegetation and planted evergreens that have been topped at 18-20± feet. A mobile home adjacent to the line looks directly into the ROW. From their perspective, the new line will be on the far side of the existing transmission line. Several other homes in the area are set back into the woods and screened from the project. See photographs on page A-5.

### **Cleweyville Road, Eddington**

The project will cross Cleweyville Road next to the existing transmission line at Cleweyville Corner, a small hamlet consisting of a dozen ± homes and a few commercial and agricultural structures. See photographs on page A-7.

### **Route 9 and Hill Street, Eddington**

Hill Street is a small neighborhood of five homes on the north side of Route 9. The landscape is dominated by the existing H-frame structures and the ROW clearing for the transmission line and the pipeline. Route 9 is highly visible because of this clearing. The project will introduce another large-scale structure into the neighborhood. Structure #54 will be approximately 180 feet from the closest residence. See photographs on page A-8.

### **Stud Mill Road, from T32 to Princeton**

The Stud Mill Road is a private road designed and maintained primarily as a haul road, a functional way to transport timber and wood products out of the commercial forestland that surrounds it. Users include people associated with the wood products industry – truckers,

loggers, and maintenance crews – as well as those using the road as a convenient access way to seasonal camps and the recreational resources surrounding the study area. With very few exceptions, the Stud Mill Road is not visible from the lakes and ponds that it passes.

The construction of the Maritimes pipeline had a profound effect on the visual character of the Stud Mill Road. The roadway was once located within a 35-foot cleared right-of-way. The pipeline was installed in a 75-foot cleared strip adjacent to the Stud Mill Road, which brought the cleared width up to 110 feet. In places up to 25 feet of the gas line right-of-way has been allowed to revegetate. Periodic yellow markers and several valve stations along the route are visible signs of its presence. Large boulders that were unearthed during construction have been set to one side of the clearing, defining the edge of the forest much the way farmers throughout New England marked the boundaries of their fields with stone walls.

Photosimulations 3 and 4 in Appendix B illustrate the effect that the project will have on the road's visual character. In most places the Stud Mill Road will be located within a 280± foot cleared right-of-way. The new structures will average approximately 85 feet in height and be spaced 800± feet apart. The structures and conductors will be highly visible from the Stud Mill Road where the project is adjacent to the road right-of-way. Photographs on pages A-9 through A-16 in Appendix A provide characteristic views along the Stud Mill Road.

Visual Impact. The construction of the project will result in another significant change to the visual character of the landscape and the scale of the space surrounding the road. Stud Mill Road, however, is not a scenic resource, as defined by Chapter 315. It is a private road and the majority of the people on the road are using it for work-related reasons and do not attach a high level of significance to its appearance. However, there is also significant use of the road for recreational access. It is assumed that the level of expectation for the recreational users may be higher, and that they may be more sensitive to the visual impact of the transmission line. However, their expectations should be tempered by the knowledge that the Stud Mill Road is a commercial logging road passing through an actively managed forest, reinforced by the common encounters with dusty truck traffic.

### **The Horseback, T32**

The Horseback is a well-defined esker running NW/SE, starting south of Pickerel Pond on the Stud Mill Road. This is the largest of several eskers in the project area and has been mined extensively for sand and gravel deposits. A rough access road runs roughly perpendicular to the Stud Mill Road along the top of the esker for much of its length. The road has also been a designated ATV route, according to the 2003 Public Use Map published by International Paper.

Visual Impact. As a geologic feature the Horseback has been used for commercial and recreational purposes. However, it does not appear to be a feature that is visited by the general public for its visual quality. The transmission line will be seen as another in a series of cultural interventions that has shaped the landscape in the vicinity of the esker.

### **Myra, T32**

Structures 193 through 198 have been relocated in the final design to preserve a 100–250-foot buffer at the rear of the seven remaining camps at the old village of Myra. The line should not be visible from any of these properties or homes.

### **Main Stream, Great Pond**

Main Stream is a 70 foot wide river that flows from Brandy Pond, 3 miles north of the project, to Great Pond, a mile to the south. As noted in Figure 4, this is the first of four rivers that the project will cross over its 84.25± mile length. In all of these crossings, the project will result in a localized visual impact from the loss of vegetation and the introduction of the structures and conductors. However, by locating the project in close proximity or immediately adjacent to the Stud Mill Road and the gas pipeline, the impacts are concentrated to an already-disturbed landscape. Impacts at some river crossings have been minimized by siting the structures as far from the water as possible, maintaining existing riparian vegetation, and adjusting the alignment where possible to utilize existing topographic features.

Main Stream merges with Alligator Brook just north of the Stud Mill Road Bridge. Several summer camps are located on the Stream off a gravel road on the north side of the bridge. Existing conditions at the point where the project intersects Main Stream are illustrated with photographs on page A-21.

Visual Impact. The construction of the transmission line will remove vegetation on both sides of the stream for approximately 150 feet immediately upstream from the Stud Mill Road bridge. At this point the stream is in a series of meanders, which will limit the view of the clearing to someone on the water. The conductors will be a minimum of 36 feet above the river. The western structure (#235) will be 180 feet from the river. The structure on the east side (#236) will be 370 feet from the river. Riparian vegetation will be preserved on both sides of the river to minimize the view of the cleared corridor.

Although the transmission line will change the appearance of the existing landscape here, the impact represents a cumulative addition to the other alterations to the landscape at this point, i.e., the Stud Mill Road, the bridge, the gas pipeline clearing, and the gravel haul road. The transmission line will have no visual impact on a series of camps upstream from the crossing, Brandy Pond, or Great Pond, due to the dense streamside vegetation and the distance from these features.

#### **Duds Pond, Great Pond**

Duds Pond is a small (<10 acre) waterbody approximately 500 feet north of the Stud Mill Road just west of Eagle Mountain. It does not appear to have any formal means of access or signs of development. The transmission corridor will remove approximately 150 feet of the buffer that now separates it from the Stud Mill Road. The remaining vegetation should provide enough cover to avoid a major visual impact to users of the pond. The tops of one or two structures might be visible from the northern end of the pond.

#### **Alligator Lake, T34**

Alligator Lake is a three-mile long water-body on the south side of Stud Mill Road, just south of Eagle Mountain. Several seasonal camps are located on its shoreline at the northerly

end. A relatively new carry-in boat launch at the southeastern end of the lake provides the only point of public access.

The Stud Mill Road passes within 0.7 miles of the lake at its northern end. There are currently no views of the lake from the Stud Mill Road). Cross sectional analysis indicates that there will be no views of the project from the lake or the boat launch upon completion. (See Figure 12, Cross Section Through Alligator Lake.) The photographs from the boat launch indicate the presence of mature evergreen trees at the water's edge that should prevent any visual contact with the project from this end of the lake. See photographs on page A-22.

### **Eagle Mountain, T3**

Eagle Mountain, elevation 1,090 feet above sea level, is one of the most prominent landforms in western part of the project area, rising over 500 feet above the Stud Mill Road. However, due to the dense vegetation adjacent to most of the roads in the immediate vicinity, there are relatively few places where the mountain is visible. One notable exception is the view from the Alligator Lake Road (Road 27-00-0), where the broad flank of the mountain is seen rising over recently harvested timberland. Much of the mountain has been cut over in recent years and is now in young regeneration as seen in the photographs on page A-23.

Eagle Mountain does not appear to be a major scenic destination, judging by the relative lack of facilities and the inherent appearance of a commercial timberland. A woods road ascends the western and northern sides of the mountain providing the only apparent means of access from the Stud Mill Road. See photographs on page A-24.

A rough hiking trail winds its way to the top, terminating at a bald spot on the north side of Eagle Mountain. This overlook affords dramatic views to the north toward Eagle Lake and Nicatorous Lake. At the very end of the trail, there is a view of the Stud Mill Road to the south of Jimmies Mountain at a distance of two miles. This is the only place on the mountain where the new transmission line will be visible. Photosimulation 2 illustrates the change to the view that will be seen from this vantage point. See photographs on page A-25.

INSERT FIGURE 12

Visual Impact. The visual impact to the view from Eagle Mountain will be negligible. The viewpoint is in a very out of the way location. The major view from the mountain is to the north. The transmission line will exhibit a slight contrast in color and texture, but at that distance it will scarcely be noticed.

#### **Narraguagus River, T34**

The Narraguagus River is regarded as a sensitive scenic resource, because canoeists use it for a 25-mile canoe trip starting at the Stud Mill Road (described in the Delorme Atlas and Gazetteer). The river has been designated as an “A” river by the Maine Rivers Study and an Outstanding River Segment by Title 12 §403. The Study notes its “rare combination of natural setting and numerous access points.”

The project will intersect the Narraguagus River at one of the access points, i.e., the Stud Mill Road. Canoeists are able to paddle both up and downstream from this point, but must portage around the bridge due to a beaver dam under the structure. The carry-in access consists of a very narrow dirt path leading from the Stud Mill Road to the river. There are no signs or provisions for parking. People stopped at this point must park their vehicles well off the road to avoid conflicts with the frequent logging and chip trucks. Photographs of Narraguagus River are provided on pages A-27 through A-33.

Visual Impact. The project will result in a 150-foot cleared right of way that will run perpendicular to the river on the north side of the Stud Mill Road. At the point of crossing the conductors will be a minimum of 33 feet above the river. Orange marker balls will be installed on the shield wires to make the project more visible to raptors and other avian species. The structure on the west side of the crossing (#299) will be set back 300 feet from the edge of the river. The structure on the east side (#300) will be located 485 feet from the river. Alder and other streamside vegetation will partially screen the lower portions of the structures.

Due to the meandering alignment of the river and the dense riparian vegetation, a person in a canoe/kayak paddling downstream would see the conductors above the road for 1.5-2

minutes. Since the structures are placed so far back from the edge of the river, they would not be visible until the paddler was at the edge of the right of way, approximately 150 feet upstream from the bridge.

The project would not be visible to a party heading downstream once they were in the water. A person heading back upstream toward the bridge would see the conductors and one or two of the structures for several minutes, depending upon where they were in the meandering river, the speed of the current, and their paddling ability.

The conductors, structures, marker balls, and right-of-way clearing will be seen from the surface of the Narraguagus River. These changes to the existing landscape will result in a contrast in form, line, color, and texture. However, careful siting of the structures, the relatively short viewing time, and the Stud Mill Road / gas line context will minimize the visual impacts of the project on the river.

#### **The Oxbow, T35**

The Oxbow is meandering section of the Narraguagus River that passes through a shrubby bog on the north side of the Stud Mill Road and Oxbow Mountain. At its closest point, the Narraguagus River will be 0.6 miles from the project. It may be possible to see the transmission structures on the base of Oxbow Mountain from portions of the Oxbow. However, visibility should be restricted by dense vegetation on either side of the river that generally limits visibility to the immediate foreground. The project should have a slight impact on the Oxbow. See photographs on page A-35.

#### **Burnt Land Lake, T35**

Burnt Land Lake is one of the more accessible waterbodies along the Stud Mill Road, with the southerly shore between 300 and 500 feet from the edge of the roadway. The lake appears to be one of the more popular recreation areas within the study area, used by picnickers and day hikers. Most of the activity seems to occur at the point where the lake is 500 feet from the road. One summer camp is located on the northern shore near the mid point of the lake.

Burnt Land Lake is separated from the Stud Mill Road by landforms and a stand of mature and young red pines that provide an effective visual screen. The construction of the transmission line will require the removal of approximately 150 feet of this vegetation between the road and the lake. The majority of the mature red pines, which average 75 feet in height, will remain. See photographs on pages A-37 and A-38.

A weather balloon (shown in the “before” view in Photosimulation 7A) flown in the approximate location of structure #341 was used to gauge the visibility of the project from the lake. The balloon, which was tethered at 85 feet above the ground, also served as a known reference point in the development of the simulation.

Photosimulation 7B shows a representative view from a midpoint on the lake looking in an easterly direction. The upper portion of structure #342, which will be 80 feet in height, will be seen above the pines along with some of the conductors. Structure #341, which will be 72 feet in height, will be screened by the red pines. A white line on the simulation shows the approximate location of this structure. The next structure to the west (#340, not shown in the photograph) will be 67 feet in height and located on a small hill. The top 20± feet will be visible.

Visual Impact. The upper portions of two structures, approximately 1,500 feet apart, will be visible from portions of the lake. The degree of impact will vary with distance: to an observer at the northwestern end of the lake (a distance of over a half mile) it will be scarcely visible. The closer the observer is to the shoreline, the less visible the structures will be. Where they will be visible, they will present a noticeable contrast in line and form to the surrounding forestland, resulting in a low-moderate visual impact.

### **Lower Sabao Lake, T35**

Drainage from Burnt Land Lake flows south under the Stud Mill Road to feed Lower Sabao Lake. The lake is undeveloped with only two points of access. An informal canoe launch 0.5 miles south of the Stud Mill Road provides the only access in proximity to the project. Mature vegetation, primarily white pines, along the shoreline will screen the transmission

structures from the lake. There should be no visual impact on Lower Sabao Lake. See photographs on pages A-3 and A-40.

### **Machias River, T37**

The Machias River is regarded as one of the most sensitive scenic resources along the project route. It has been designated as an “A” river by the Maine Rivers Study and an Outstanding River Segment by Title 12 §403. This segment of the Machias is part of the Machias River Canoe Trip described in the Delorme Atlas and Gazetteer.

The crossing point was selected based on a number of factors related to visual impacts:

- Consolidation of impacts: a desire to restrict visual impacts to a designated utility and road corridor.
- Relative proximity to the Stud Mill Road, the Machias River Bridge, and the gas pipeline and associated ROW where changes to the natural landscape have already occurred.
- Flexibility to make siting adjustments to minimize impacts on First Machias Lake.

The proposed alignment of the route across the Machias River was carefully studied to minimize visual impacts on both the river and First Machias Lake immediately to the south, while also avoiding wetland impacts and interference with the gas pipeline. The alignment was complicated by the fact that the gas transmission line moves from the south side of the road west of the river to the north side of the road on the east side of the river. Photographs A-41 through A-44 provide views of the Machias River and the surrounding area, including a sequence taken from a kayak floating downstream.

Several siting alternatives were examined, including putting the line under the river. (See Review of Underground Options for Crossing the Narraguagus and Machias Rivers by Commonwealth Associates, Inc., January 12, 2005 in Section 1 of the application). While the underground option would have reduced the width of the corridor from 170 feet to 60 feet and eliminated the conductors directly over the river, it would have required the construction of large transition stations (resembling electrical substations) on both sides of the river.

These would have had severe visual impacts on the setting by introducing two structures that would be out of scale with the surrounding landscape, with highly contrasting forms, colors, lines, and textures. These large industrial-scaled structures would interfere with the aesthetic experience of people putting in and/or taking out of the river at this point.

A series of three weather balloons were floated by TJD&A to test project visibility and to serve as a reference point for the photosimulations included in the VIA. The tie-down points for each of the balloons were set by earlier plans for the project on both sides of the river. Photographs were taken from points on the river, First Machias Lake, and the surrounding area to document the balloon flight and serve as the basis for the simulations.

A number of alignments (micro-sitings) were examined by BHE to determine the optimum route, working around the existing topography, the gas line clearing, the mature stands of evergreen trees, the screening value of existing riparian vegetation, and other site features. One of the earlier alignments placed structure #400 on a 16-foot hill on the west side of the river. While this may be suitable from an engineering standpoint, it would have resulted in a highly visible structure 100 feet from the river. The structure was repositioned to a point 330 feet west of the river in a location with a substantial amount of riparian vegetation.

Visual Impact. The construction of the project will result in a cleared right of way crossing the river diagonally approximately 600 feet upstream from the Machias River Bridge. The conductors will be as low as 29 feet above the surface of the water. The westerly structure (#400) will be 210 feet from the edge of the river. The structure on the east side (#401) will be set back 410 feet from the river's edge. Fifty feet of riparian vegetation will be preserved on both sides of the river to minimize the view of the cleared corridor. Orange marker balls will be installed on the shield wires to make the line more visible to raptors and other birds.

A person paddling downstream would first see the cleared ROW approximately 500 feet upstream from the northerly edge of the clearing. The average paddler would see the clearing and the conductors for up to 1-2 minutes, depending upon their speed and the river flow. The top of structure #401 would come into view approximately 200 feet from the edge

of the ROW, as shown on Photosimulation 8, which is approximately 800 feet north of the Stud Mill Road bridge.

When a person was directly under the conductor heading downstream, the view would include the cleared ROW on the east side of the river and structure #401, located on the back side of a low hill approximately 500 feet from the center of the river. At the southerly edge of the clearing, the view would open up to include the Stud Mill Road bridge and the riprapped clearing for the gas pipeline crossing. At this point paddlers would be focused on negotiating their way around the obstructions in the river and under the bridge, and would be less likely to be gazing at the scenery.

The project's visual impact will be seen in the context of other linear alterations to the landscape, i.e., the Stud Mill Road, the Machias River bridge, the gas pipeline clearing, and the secondary roads that parallel the river. Visual impacts have been minimized by consolidating the project within the established utility / transportation corridor.

#### **First Machias Lake, T37**

The Machias River flows into First Machias Lake just south of the Stud Mill Road. A solitary camp marks the entrance to the lake, which also features a few other camps along its shore and a campsite at the southerly end. The lake is part of the Machias River Canoe Trip described above for the Machias River. The shoreline is heavily wooded with a highly configured shoreline. See photographs on pages A-47 through A-49 for representative images of the lake.

Although the Stud Mill Road is within 60 feet of the lake (the closest lake or pond within the project area), the lake is mostly screened by dense mixed vegetation on the south side of the road. (See photographs on page A-45).

Instead of paralleling the Stud Mill Road and the gas transmission line, the project alignment has adjusted to the north away from the road to minimize visibility from the lake. The

proposed line will be between 330 feet from the lake at structure #401, and 230 feet from the lake at structure #402.

Weather balloons were used to test the visibility of the line from various positions on the lake and to serve as known reference points for the series of photosimulations that have been prepared.

Photosimulation 9 shows a representative view from approximately 700 feet southeast of the red cottage in the northern part of the lake, looking in a northeasterly direction. The upper 20-25 feet of structure #401, which will be 90 feet in height, will be seen at the level of the mature pines along with shoreline along with some of the conductors. The upper 25-30 feet of structure #402, which will be 67 feet in height, will also be seen in the corner of the lake. The existing vegetation will screen most of the conductors.

Photosimulation 10 illustrates the view from the southern tip of the lake where it reforms into the Machias River. This viewpoint is just offshore from the campsite on the southwestern shore of the lake. The view from the campsite is oriented to the river and does not extend to the north where the project will be visible.

Visual Impact. The upper portions of two structures, approximately 900 feet apart, will be visible from portions of the lake. The degree of impact will vary with distance. They will not be visible to an observer near the shoreline at the far northern end of the lake. Several hundred feet into the lake the tops of the structures will be visible. At the southern end of the lake (a distance of one mile) one structure will be visible above the treeline. Where visible, the structures will present a noticeable contrast in line and form to the surrounding forestland, resulting in a moderate visual impact to a relatively undisturbed landscape.

### **Pocomoonshine Mountain, Princeton**

Pocomoonshine Mountain is the most prominent landform at the eastern end of the proposed route. An informal scenic overlook and campsite at the end of a rough gravel road on the southerly side of the mountain looks out toward Pocomoonshine Lake. However, the

openings in the canopy are overgrown and the extent of the view is diminished. There is also evidence (worn path and blazes on trees) that there may have been a scenic overlook on the north side of the mountain at one point. The proposed route would continue to follow the Stud Mill Road at the base of the mountain.

Visual Impact. The proposed route will have no impact on the overlooks on the sides of Pocoomoonshine Mountain. Even if the views were to be re-opened, the transmission line is well below the line of sight needed to see the lake and would not be visible from the overlook. Figure 13 presents a cross section from Pocoomoonshine Mountain that illustrates the relationship between the overlook, the proposed project, the Stud Mill Road, and the lake. It is evident from this section that none of the project elements will be visible from the overlook, due to topography and intervening vegetation.

### **Pocomoonshine Lake, Princeton**

The mass of Pocoomoonshine Mountain dominates the view from most parts of Pocoomoonshine Lake and the surrounding landscape in Princeton (see photographs on pages A-50 and A-51). A series of three weather balloons were launched (800 feet apart at a height of 85 feet) from the high point in the road to test project visibility from the water, the boat launch, the land surrounding the lake, and the mountain. TJD&A and DTA personnel traveled throughout the northern half of the lake to observe where the balloons were visible.

The balloons were used to create Photosimulation 11 that shows the visual impact of the project on the upper portion of the lake. This view appeared to be characteristic of the open water views when all three balloons were visible (i.e., this is representative of the most severe impact).

Visual Impact. The visual impacts of the project on Pocoomoonshine Lake will vary greatly with the observer position:

- The northern tip of the lake will have a view of several of the structures as the project crosses a low ridge on the southern side of the mountain. Most of the views will be in

INSERT FIGURE 13

the midground viewing distance (greater than 1/2 mile). Some of the structures will be seen in silhouette against the sky and will present a contrast in line, form, and texture. Where the structures are visible within the near midground, they will result in a low to moderate visual impact.

- Where the structures are visible, they will always be subordinate to the mass of the Pocomoonshine Mountain, which is the dominant element in the landscape.
- Numerous wooded islands help block the view of the transmission line throughout the northern half of the lake.
- The project is not visible from the boat launch in South Princeton (3 miles to the east) or on Lake Road (4-6 miles to the south).
- It appeared that none of the cottages on the northern half of the lake would have direct views of the project.

### **St. Croix River / Woodland Flowage, Baileyville**

The crossing of the St. Croix River is one of the most visually sensitive areas along the project route. The location of the crossing was selected based on a number of considerations:

- The conductors and structures will be seen in conjunction with the Woodland Mill in the background;
- The shoreline topography allows the use of shorter structures to elevate the conductors above the river;
- The relative narrowness of the river minimizes the crossing width; and
- The site is in close proximity to other cultural alterations to the landscape: the boat launch in Baileyville, the access road on the west side of the St. Croix River, a power line that parallels the road, a sludge landfill on the west side of the river, and other wood-processing facilities. See photographs on pages A-53 through A-56.

The visible portion of the project will consist of H-frame structures on opposite shorelines, the conductors/shield wires, and a series of orange warning balls, and flappers. The warning balls and flappers will be used to minimize potential impacts on the eagle population, which use the river for feeding and breeding activities. Photosimulation 12 provides a view of the

flowage looking downstream toward Woodland. The plume from the Woodland mill is visible in the center of the photograph. Photosimulation 13 is a view looking upstream.

Visual Impact. The transmission line will have a moderate visual impact on the river. Mitigation measures that were used to minimize the impact include:

- siting the structures as far from the river as possible (the 3-pole 70-foot± structure on the US shoreline will be 390± feet from the edge of the water)
- locating the crossing where there are other major man-made elements visible from the water
- preserving vegetation along the shoreline to the maximum extent possible through selective clearing and ROW maintenance measures.

### **Conclusion**

Because much of the project is co-located with the Stud Mill Road and the gas pipeline, the primary visual impact is the view from the road itself. The combined impact of the road, pipeline clearing, and new transmission line will create a significant opening in the forest landscape. In addition, the presence of the pole structures and conductors will introduce new vertical and horizontal elements. However, given the industrial nature of this road, the lack of major impacts to any scenic resources, and the desire to consolidate impacts within the existing corridor, the visual impact of locating the project along the Stud Mill Road are determined to be acceptable. Although the change to the forest landscape within the Stud Mill Road viewshed will be significant, most public users should find it consistent with the nature of the road and appreciate the consolidation of impacts.

Although there will be visual impacts on scenic and recreational resources along the project route, those impacts have been minimized to the maximum extent possible. Portions of the transmission line will be seen from a few of the lakes, rivers, and streams. While the line extends over a considerable distance, there are only four scenic and recreational resources that will be noticeably affected: the St. Croix River, Machias River, Narraguagus River, and Burnt Land Lake. On the St. Croix River, First Machias Lake, and Burnt Land Lake the

impacts will vary depending upon the viewer's position in the landscape. Even then the intrusion of the conductors into the view will not constitute a significant visual impact.

In most instances where the structures might be seen from the lakes, they will be barely visible. In no instances will views be blocked by the transmission structures. The conductors would most likely not be seen, nor would access roads or any other project elements. A person would have to consciously search to see them. There will be no unreasonable interference with existing scenic or aesthetic uses.

The proposed route has been selected to minimize visual impacts to scenic resources within the study area. BHE has made adequate provisions for fitting the transmission line harmoniously into the existing natural environment.

The presence of the transmission line will not have an unreasonable adverse effect on the existing uses.

## 10.0 MITIGATION MEASURES

### 10.1 Siting and Design

BHE had previously proposed siting the project in commercial forestland some distance from Stud Mill Road where it would generally not be visible from the road. Based on the input that BHE received from regulators, stakeholders, and the general public during the last permitting effort, it became clear that consolidating the transmission line with other linear corridors was considered to be an important way to minimize overall visual impacts. The proposed route was selected to consolidate environmental and visual impacts within an established utility corridor that currently contains the Stud Mill Road and a major gas transmission line.

While this shift in location will change the character of the Stud Mill Road, it consolidates visual impacts to identified scenic resources, such as the Machias and Narraguagus Rivers, consistent with regulatory and stakeholder preferences. As noted throughout this assessment, the proposed route avoids major adverse impacts on the region's lakes, ponds, camps, activity areas, and other scenic and recreational resources.

The initial design for the project followed the Stud Mill Road and the gas pipeline throughout nearly all of the shared corridor. However, after further evaluation the alignment was adjusted to avoid potential visual impacts to specific resources. This approach resulted in the following adjustments to the route:

- Sunkhaze Meadows National Wildlife Refuge. The route was adjusted to avoid County Road on the eastern boundary of the Refuge. In its current alignment, the project will be a minimum of 0.7 miles from the Refuge and not visible from any point within its boundary.
- Pickerel Pond. The route was moved 0.5 miles to the southeast to avoid any impacts on the 11-acre Pickerel Pond, the site of the Maine Youth Fish and Game Association Clubhouse. (See photographs on page A-18.)

- Myra. The alignment was moved to the north to provide additional buffer between a series of camps and the edge of the transmission line.
- First Machias Lake. At First Machias Lake the road is located within 60 feet of the edge of the water. The project alignment was moved to the north into an existing gravel pit to minimize visibility of the structures over this mile-long lake.

At the site level the individual structures were located as far from the edge of the river as possible to minimize visual impacts to people on the scenic resource. At the Narraguagus River crossing the structures are 300 and 485 feet from the edge of the water. At the Machias River the structures are set back 210 and 410 feet from the edge of the water. Riparian vegetation within the right-of-way will provide additional screening of the structures from the river. The conductors will be seen in conjunction with the Stud Mill Road, the clearing for the gas pipeline, rip-rap along the shoreline, bridges, and other man-made changes.

## **10.2 Structure Type**

The characteristic landscape throughout most of the project area is composed of working forestland. The wooden H-frame structures that BHE has selected are similar in color, form, and texture to the mature trees that line the existing cleared right-of-way. Wooden structures are more visually compatible than other options – e.g., steel lattice structures or cor-ten steel poles – that could have been used for the project. Their relatively simple form and reduced height minimizes the contrast in scale and spatial dominance that may have resulted from the use of other type of structures. The selection of the wooden H-Frame structure should be considered a significant mitigation measure since they will reduce the project visibility and minimize contrast with the surrounding forestland.

## **10.3 Supplemental Planting**

Site specific landscape installations may be done in selected areas if necessary to provide screening for abutting year-round residents.

#### **10.4 Vegetation Management**

Riparian vegetation will be preserved to minimize impacts on streamside habitats and to minimize view corridors from rivers. See Northeast Reliability Interconnect Post-Construction Vegetation Maintenance Plan in Section 10 of the application.

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## 12.0 GLOSSARY OF TERMS

The discipline of visual impact assessment has evolved over the past three decades as agencies recognized the need to describe and evaluate impacts to the natural environment. Several federal agencies have instituted Visual Resource Management (VRM) systems, utilizing their own procedures and terminology, many of which have applicability to Maine.

A unique vocabulary has evolved which has been used to describe the landscape and to evaluate changes to it. Some of the terms used are everyday words employed in the usual way. In other cases, technical meanings have been applied to very specific functions. Terminology has also been drawn from specialized areas like aesthetics and human physiology.

Definitions taken from Chapter 315 are included and are *shown in italics*.

***ADVERSE VISUAL IMPACT.*** *The negative effect of a regulated activity on the visual quality of a landscape*

**AESTHETICS:** The science or philosophy concerned with the quality of sensory experience; the use here is limited to visual experience.

**ANGLE OF OBSERVATION:** The vertical angle between a viewer's line of sight and the slope being viewed. The visual magnitude of a slope or object being viewed increases as the angle of observation approaches 90 degrees.

**ASPECT:** The side of a surface of a landscape element facing a given direction. Visual impacts decrease as the viewer aspect, or lateral viewing angle, increases and as the aspect of the main surface of a landscape element is oblique to the viewer.

**ATMOSPHERIC PERSPECTIVE:** The effect of distance from the viewer on the color and distinctness of objects. Typically, as distance increases, objects become bluer, greyer, lighter, less contrasting and less distinct.

**CHARACTER TYPE:** A relatively large area of land that has common distinguishing visual characteristics of landform, rock formations, water forms, and vegetative patterns. Paul Adamus, in The Natural Regions of Maine, describes the state in terms of five major physiographic regions: 1. Coastal Region, 2. Uplands Region, 3. Norumbega Hills Region, 4. Northern Forest Region, and 5. Mountain Region. Each of these is further subdivided into several subregions, or character types.

**CHARACTERISTIC LANDSCAPE:** The naturally and culturally established landscape in a region. It is described visually by the basic vegetative patterns, landforms, rock formations, water forms, and structures which are repeated throughout the area.

**COGNITIVE FACTORS:** The largely quantifiable characteristics of visual impact assessment: the number and location of viewers; distances, angles, duration, and conditions of viewing; the characteristic landscape types; and the size, character, and location of the proposed changes. In addition to these, visual assessment involves compositional and connotative factors.

**COLOR:** The portion of the electromagnetic spectrum visible to the human eye that causes activity in the retina of the eye and its associated nerve systems, enabling one to distinguish between identical objects. Color consists of the three components of saturation, hue and brightness.

**COMPOSITION.** *The arrangement of the component parts of a landscape. Component parts are objects or activities usually described in terms of color, texture, line, form, dominance, and scale.*

**COMPOSITIONAL FACTORS:** Those visual aspects of the landscape usually considered in aesthetics, namely, color, texture, line, form, dominance, and scale. In addition to composition, visual assessment involves cognitive and connotational factors

**CONNOTATIONAL FACTORS:** Observers' mental connections, bonds, or associations between a viewed landscape and sensations, perceptions, ideas, feelings, or memories. Associative values also cause nuclear cooling towers, for example, to receive extreme negative visual ratings despite their handsome, hyperbolic shapes. Together with cognitive and compositional factors these form the basis for visual assessment.

**CONE OF VISION:** The horizontal and vertical angle of the landscape that is visible from a viewpoint. Constrictions to the viewer's eye may include buildings, street trees, forest edges, or foreground landforms. Travel speed and the design of the automobile are additional constrictions to the viewer's eye.

**CONFIGURATION:** The amount of irregularity and/or enclosure in the shoreline. Shorelines with coves, points, bays, islands, and other features are considered highly configured, and are usually thought to be highly scenic.

**CONGRUITY:** The conformity of one landscape element to its surroundings. The opposite of contrast.

**CONTRAST:** *Comparing the component parts of a landscape in terms of form, line, color, texture, dominance, or scale.*

**DISTANCE ZONES:** Horizontal divisions of the landscape being viewed. The delineations correspond to the most recent draft of the Scenic Character Regulations of the Maine Department of Environmental Protection. Alternatively, the three zones can be defined as being any distance that conforms to the major divisions created by prominent edges or significant lines in the landscape, the only requirement being that the foreground is nearest and the background farthest from the observer.

**Foreground** - The visible landscape within 400-800 meters (one-quarter to one-half mile) from the observer. At this range surface textures and gross details are easily discernible. Trees, for example, may be appreciated for their individual characteristics.

**Midground** - Extends from the edge of the foreground to 5 to 8 kilometers (3 to 5 miles) from the observer. Texture is normally characterized by the masses of trees in stands of uniform tree cover.

**Background** - Extends from the midground to infinity.

**DOMINANCE:** The extent to which an object is noticeable when compared to the surrounding context. An object(s) may be:

**Dominant** - The element is visually prominent and occupies a visually sensitive position within a landscape, usually at an upper elevation. A dominant object will greatly influence the visual perception of the landscape from a particular viewpoint

**Co-Dominant** - Two or more elements have relatively equal visual importance in the landscape

**Subordinate** - The object is visually inferior to the rest of the landscape as a result of its relative size, brightness, distance, color, or mass.

**DURATION:** Relative measure of the time available to experience a view. The actual elapsed time will be a function of many factors: mode of transportation, speed of movement, obstacles in the foreground, intention of the viewer, amount of clearing between viewer and view, and opportunities for pull-offs along a road.

**Short Views** - Fleeting glimpses of relatively short duration, from 1 to 3 seconds.

**Medium Views** - Visible for a moderate amount of time, from 3 to 10 seconds.

**Long Views** - Visible for extended periods of time, greater than 10 seconds.

***EXISTING USES.** The current appearance and use of the landscape, considering previous human alterations.*

**FORM:** The mass or shape of an object or combination of objects which appear unified: the physical structure of an object(s).

**HUE :** The name of a color, such as yellow-green or red, and one of color's three components.

**LANDFORM:** The dominant topographic features of the landscape, described in terms of slope and repetitive natural forms.

***LANDSCAPE:** An area characterized by its geology, landform, biota, and human influences throughout that area.*

**LANDSCAPE QUALITY:** Relative level of visual diversity or landscape character. Features such as Landform, Vegetation, Water, and Cultural Features are compared singularly or in combination with those commonly found in the study area. Landscapes can be classified into variety classes to indicate the degree of variety present:

**Class A: Distinctive** - Areas where vegetation patterns, landforms, waterbodies, rock formations, cultural patterns, or combinations of these elements are of unusual or outstanding visual quality, and are generally considered to be of state-wide or national significance. Examples might include Mount Katahdin, Camden Harbor, or the Loop Road at Acadia National Park.

**Class B: Scenic** - A combination of landscape elements that is above the average for the characteristic landscape, but not outstanding relative to national or state-wide measures. Examples might include Wolf's Neck State Park, Rangeley Lake, or Rockland Harbor.

**Class C: Common** - The characteristic landscape of an area.

**Class D: Below Average** - Little or no visual variety with the landscape. Characterized by monotonous patterns of tree growth, little topographic relief, and the lack of waterbodies.

**Class E: Disturbed** - Landscapes that have been severely altered by natural or man-made forces that result in an alteration or degradation of visual quality. Disturbed landscapes may be either temporary, semi-permanent, or permanent in nature. Examples might include a forest scarred by a forest fire, tailings from a mining operation, or a highly visible quarry on an island.

**LINE:** Anything that is arranged in a row or sequence. The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture, or when objects are aligned in a one-dimensional sequence. Line is usually evident as the edge of shapes or masses in the landscape.

**MITIGATION:** *Any action taken or not taken to avoid, minimize, rectify, reduce, or eliminate actual or potential adverse environmental impact, including adverse visual impact.*  
Actions may include:

**Avoidance** - Not taking a certain action

**Design** - Measures taken during the siting or design of a facility to minimize contrasts in form, line, color, texture, or scale with the surrounding landscape

**Screening** - Installation or preservation of physical visual barriers to minimize views of a proposed activity

**Minimization** - Limiting the magnitude, duration, or time of an activity

**Rectification** - Restoration, repair, or rehabilitation of an affected environment

**Management** - Reducing or eliminating an impact through preservation and maintenance operations during the life of a project

**Compensation** - Replacement of affected resources or provision of substitutes.

**PRACTICABLE.** *Available and feasible considering cost, existing technology and logistics based on the overall purpose of the activity.*

**SCALE:** The proportional size relationship between an introduced object(s) relative to the surrounding landscape. Severe contrasts result from the introduction of major objects significantly larger than their surroundings. Viewing angle can affect the perception of scale. Scale can be described in terms of:

**Absolute Scale** - A measurement of height or width

**Relative Scale** - The apparent size relationship between the object and its surroundings.

**SCENERY:** The general appearance of a place; the features seen in the landscape.

**SCENIC AREA:** A place that exhibits a high degree of variety, harmony, and contrast among the basic visual elements, resulting in a place with greater than normal visual quality.

**SCENIC HIGHWAY:** A section of state-assisted highway that has been noted by the Maine Department of Transportation for its scenic quality.

**SCENIC RESOURCE.** *Public natural resources or public lands visited by the general public, in part for the use, observation, enjoyment, and appreciation of natural or cultural visual qualities. The attributes, characteristics, and features of a scenic resource provide varying responses from and varying degrees of benefits to humans.*

**SIGHTLINE:** The unobstructed line of sight between an observer and an object.

**TEXTURE:** The aggregation of small forms or color mixtures into a continuous surface pattern, resulting in a surface's mottling, graininess, or smoothness. These smaller parts do not appear as discrete objects in the landscape.

**VALUE:** The sensation that one color appears to be lighter or darker than another. Value is one element in determining the relative contrast or congruity between landscape elements.

**VIEW:** That portion of the landscape that is seen from a particular vantage point.

**VIEWER ELEVATION:** The position of the viewer relative to the scene being viewed.

**Viewer Inferior** - Viewer is below that portion of a scene with the greatest visual interest.

**Viewer Normal** - Viewer looks straight ahead to see the majority of the view; the most common relationship between viewer and scenery.

**Viewer Superior** - Viewer is elevated above the scene observed, usually looking down to the rear portions of the foreground. This position tends to increase the importance of landscape elements observed because of the viewer's usual tendency to look slightly downward and more of the view is obstacle-free.

**VIEWER EXPECTATION:** An estimate of people's concern for visual quality in the environment.

**VIEWERS:** People who see the landscape at present, or who are likely to see a project in the future.

**VIEWPOINT:** The actual point from which a viewer sees the landscape or a proposed alteration.

***VIEWSHED:** The geographic area as viewed from a scenic resource, which includes the proposed activity. The viewshed may include the total visible activity area from a single observer position or the total visible activity area from multiple observers' positions.*

**VISUAL ACCESS.** The degree to which a landscape element can be seen from a particular viewpoint. The loss of visual access to a scenic resource could be considered an adverse visual impact.

**VISUAL CHARACTER:** The overall impression of a landscape created by the order of the patterns composing it; the visual elements of these patterns are the form, line, color, and texture of the landscape's components. Their interrelationships can be described in terms of dominance, scale, diversity, and continuity.

**VISUAL IMPACT:** The degree of scenic quality change that results from a land use activity. Negative visual impacts affect environmental quality, either by limiting visual access to scenic resources or by disrupting the harmony, diversity, or character of natural landscape elements.

***VISUAL QUALITY.** The essential attributes of the landscape that when viewed elicit overall benefits to individuals and, therefore, to society in general. The quality of the resource and the significance of the resource are usually, but not always, correlated.*

**VISUAL RESOURCES:** The features that make up the visible landscape.