NEW ENGLAND CLEAN ENERGY CONNECT

Compensation Plan

New England Clean Energy Connect (NECEC)

CENTRAL MAINE POWER

Prepared for:

Maine Department of Environmental Protection and United States Army Corps of Engineers

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1.0 COMPENSATION PLAN

1.1 Overview

Central Maine Power Company ("CMP") is pleased to provide a Compensation Plan ("Plan") which addresses a variety of natural resource impacts from the proposed construction and operation of the New England Clean Energy Connect ("NECEC") Project. This Plan achieves a *no-net-loss* of ecological functions and values through a combination of: use of the In-Lieu-Fee ("ILF") Program by the Maine Department of Environmental Protection ("MDEP") and US Army Corps of Engineers-New England District ("USACE") as a compensatory mitigation option for permit applicants; preservation of regionally significant natural resources; and implementation of a number of wildlife habitat enhancement projects. This Plan meets the compensation requirements of the MDEP, pursuant to the Natural Resources Protection Act ("NRPA"), 38 M.R.S. §480-A *et seq.*, and of the USACE pursuant to Section 404 of the CWA (33.U.S.C. §1344).

As described in CMP's NRPA application, submitted on September 27, 2017, CMP first sought to avoid and then minimize impacts wherever practicable through a thorough alternatives analysis (NRPA Attachment 2) and engineering design. However, where impacts cannot be avoided, a number of mitigation measures will be employed prior to and during construction to minimize impacts. These include measures such as: erosion and sedimentation controls, the use of equipment mats, consultation with third-party inspectors, construction timing restrictions, installation of avian avoidance markers where applicable, and winter condition clearing and construction, where practicable. Areas of temporary impact will be restored and revegetated as per the restoration measures described in CMP's Environmental Guidelines for Construction and Maintenance Activities on Transmission Line and Substation Projects ("Environmental Guidelines") (*see* CMP's Site Law Application, Exhibit 14-1).

In this Plan, CMP will compensate for temporary and indirect natural resource impacts (i.e., impacts not directly associated with the placement of fill, such as conversion of habitat or tree clearing) and permanent alteration of protected natural resources. All temporary impacts will be of short duration, i.e., less than 18 months, and typically much shorter than 18 months. Permanent impacts requiring compensation are limited to either cover type conversion of protected natural resources or placement of fill resulting in loss of protected natural resource area.

CMP developed this compensation plan with input and participation from the MDEP and USACE. CMP held a working session with both agencies in April 2018, with the goal to define those compensable

impacts and determine the compensation rates or ratios each agency would require. While each agency's requirements differed slightly, CMP's has developed a comprehensive compensation package that satisfies the requirements of both the MDEP and USACE. In the NRPA Application, CMP proposed to offset unavoidable impacts to natural resources, which are not fully addressed through CMP's avoidance and mitigation measures, through a contribution to the MDEP ILF Program. While USACE specified that full compensation via ILF was acceptable, the MDEP indicated that ILF cannot be used as the sole source of compensation for the Project. The MDEP requires a compensation package that consists of a combination of preservation, enhancement, and/or ILF to offset the variety of project impacts including those impacts that are outside the purview of the ILF Program (38 M.R.S § 480-Z, e.g. indirect impact to rivers, streams or brooks, indirect impact to local and/or regional recreational values and outstanding river segments and wildlife habitat). The Compensation Plan set forth here is robust, fully accounts for and, in fact, provides more than the required compensation amounts for unavoidable Project impacts.

In consultation with MDEP and USACE, CMP defined the protected natural resource impacts that will result from construction of the NECEC and which will be addressed in the Compensation Plan. Additionally, the compensation ratios at which CMP must offset those impacts were determined by working directly with MDEP and USACE. Those rates can be found in Exhibit 1-1, NECEC Mitigation Guidance: Compensation Ratios and Adjustments per Agency.

CMP's Compensation Plan addresses the following unavoidable impacts:

- Temporary Wetland Fill
- Permanent Cover Type Conversion of Forested Wetlands
- Permanent Cover Type Conversion of Inland Waterfowl and Wading Bird Habitat (IWWH)
- Permanent Cover Type Conversion in Significant Vernal Pool Habitat (SVPH)
- Permanent Cover Type Conversion in Deer Wintering Areas (DWAs)
- Permanent Fill in IWWH
- Permanent Fill in SVPH
- Direct and Secondary Impact to USACE Jurisdictional Vernal Pools
- Other Impacts:
    - Impacts to recreational uses of outstanding river segments
    - Indirect impacts to coldwater fisheries
    - Impacts to wildlife habitat, including rare species
    - Impacts to rare plants and unique natural communities

1.2 NECEC Compensation Components

1.2.1 Compensation Summary

The NRPA Wetlands and Waterbodies Protection Rules provide that "compensation is the offsetting of a lost wetland function with a function of equal or greater value," and sets as a goal "no-net loss of wetland functions and values" (NRPA Wetlands and Waterbodies Protection Rules, Chapter 310 § 5C). This goal supports the federal goal of *no net loss* stated in a February 6, 1990 Memorandum of Agreement ("MOA") between USEPA and USACE titled *The Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines.*

Compensation amounts, or ratios of compensation to impact, are established by the Wetlands and Waterbodies Protection Rules, Chapter 310, and the Significant Wildlife Habitat Rules, Chapter 335. For example, compensation by restoration, enhancement, or creation is to be at least at a ratio of 1:1 for wetlands that are not of special significance and 2:1 for impacts to Wetlands of Special Significance ("WOSS"; (Chapter 310 §4). The ratio is set at 8:1 for preservation, which can include adjacent upland areas (Chapter 310 § 5C5(a-c). For those impacts offset through the ILF Program, resource compensation fees are calculated using resource-specific formulas, resource compensation rates and resource multipliers, as provided in the DEP Fact Sheet – In Lieu Fee Compensation Program (2015) ("ILF Program"). Resource multiplier takes into consideration the significance of specific resources.

Compensation ratios established by the USACE's 2016 New England District Compensatory Mitigation Guidance ("Mitigation Guidance") are based on complexity of the wetland system, likelihood of compensation success, degree to which functions are replaced, and temporal losses for certain functions. The USACE has developed standard compensatory mitigation ratios (multipliers), provided as guidance allowing for "flexibility," and suggested multipliers, which are a starting point for developing a compensation plan. The guidance also suggests that while the ILF Program is "considered preferable," preservation as mitigation can support the goal of "no net loss of wetland functions." Preservation parcels used for mitigation must meet certain criteria to be considered for this purpose (33 CFR 332.3(h)). The USACE generally follows the MDEP's ILF Program resource compensation rates and resource multipliers.

Both agencies recognize that, for some resources, the temporary or secondary impact associated with transmission line construction and long-term operation does not equate to a full loss of resource functions and values, and therefore allows for adjustments to the standard ratios and multipliers depending upon the

resource and activity type. The USACE defines these adjustments, as a percentage of the standard amount by resource type, within Table C2 Recommended Compensatory Mitigation for Temporary and/or Secondary Impacts to Wetlands of the 2016 Mitigation Guidance. The MDEP provided correspondence to CMP dated April 25, 2017, in which Michael Mullin, former Director of Land Division, Bureau of Land Resources, allowed for a compensation adjustment of 60% for permanent cover type conversion impacts within significant vernal pool habitat, as defined by 38 M.R.S. § 480-B(10). CMP interpreted this adjustment to apply to all significant wildlife habitat and as such is applying a 60% adjustment to permanent cover type conversion impacts within IWWH. *See* Exhibit 1-1, NECEC Mitigation Guidance: Compensation Ratios and Adjustments Per Agency; Exhibit 1-2 MDEP Letter Re: Compensation for significant vernal pool habitats within transmission line corridors (Apr.25, 2017).

Compensation planning for the NECEC included a review of existing and potential compensation tracts already in CMP's ownership. CMP looked for compensation opportunities based on the criteria set forth in the USACE's Mitigation Rule, 33 CFR 332.3(h). Properties which were not considered as part of this final plan did not provide sufficient ecological or regional value to merit preservation. After a comprehensive GIS evaluation, the most viable tracts were field surveyed for the presence of natural resources. CMP considers the compensation parcels presented in this Plan as eligible for this use, as demonstrated in Section 1.2.2.2 and within the letter report from the Musson Group dated August 10, 2018, which evaluated the preservation parcels for purposes of meeting the USACE mitigation requirements and which is provided as Exhibit 1-3.

For impacts that require compensation from both the MDEP and USACE, CMP used the higher USACE ratios in determining required compensation amounts. For resource impacts for which only one agency required compensation, NRPA or USACE guidance was followed. The Compensation Package Summary, Exhibit 1-4, details the preservation parcels and the Project impacts they are proposed to offset. The In-Lieu Fee Summary, Exhibit 1-5, presents the calculated fees by resource type with the standard formulas, and appropriate multipliers and adjustments. Table 1-1below summarizes the results of those Exhibits. Table 1-2 summarizes compensation resulting from consultation with the Maine Department of Inland Fisheries and Wildlife ("MDIFW") and Maine Natural Areas Program ("MNAP").

Table 1-1: Summary of Compensation as Required by NRPA and/or USACE

Resource Type & Impact	Agency Requiring	Form of Compensation	Amount of Compensation
47.15 acres of Temporary Wetland Fill	USACE	In-Lieu Fee	$593,815.59
132.38 acres of Permanent Cover Type Conversion of Forested Wetlands (Includes 2.62 acres of wetland cover type conversion within IWWH and 3.90 acres of wetland cover type conversion within SVPH)	USACE and MDEP[1]	Preservation	Preservation of 510.75 acres of wetlands.
0.85 acres of Permanent Fill in Wetlands of Special Significance (WOSS) (Includes fill within SVPH and IWWH)	USACE and MDEP	In-Lieu Fee	$278,871.99
4.47 acres of Permanent Fill in Wetland (Non-WOSS)	USACE and MDEP	In-Lieu Fee	$767,080.71
0.01 acres of Permanent Upland Fill in IWWH	MDEP	Preservation	Preservation of 132.19 acres of IWWH
13.31 acres of Permanent Upland Conversion in IWWH			
0.72 acres of Permanent Upland Fill in SVP Habitat	MDEP	In-Lieu Fee	$$71,104.03

[1] The USACE requires compensation for Permanent Cover Type Conversion of Forested Wetlands. The MDEP requires compensation for Permanent Cover Type Conversion of Significant Wildlife Habitat. Compensation for wetlands within Significant Wildlife Habitat is included within the Permanent Cover Type Conversion of Forested Wetlands calculation. Cover type conversion within upland areas of Significant Wildlife Habitat areas are compensated in their respective categories.

Resource Type & Impact	**Agency Requiring**	**Form of Compensation**	**Amount of Compensation**
31.27 acres of Permanent Upland Conversion in SVPH	MDEP	In-Lieu Fee	$56,320.47
Direct and Indirect Impact to USACE Jurisdictional Vernal Pools	USACE	In-Lieu Fee	$2,113,103.77
	In-Lieu Fee		$3,880,296.56
	Total In-Lieu Fee with 10% Contingency (see Section 1.2.2.1)		$4,268,326.22
	Total Land Preservation		2,076 acres of total land preservation which contain: 510.75 acres of wetland preservation, and 132.19 acres of IWWH preservation

Table 1-2: Summary of Compensation Resulting from Consultation with Resource Agencies

Resource Type & Impact	Agency Requiring	Form of Compensation	Amount of Compensation
9.3 acres of forest conversion in Unique Natural Communities	MNAP	Fee Contribution to Maine Natural Areas Conservation Fund	$129,634.56
26.4 acres of forest conversion in Roaring Brook Mayfly and Northern Spring Salamander Conservation Management Areas	MDIFW	Fee Contribution to Maine Endangered and Nongame Wildlife Fund	$469,790.63
39.3 acres of forest conversion in the Upper Kennebec Deer Wintering Area	MDIFW	Preservation	717 acres of land in the Upper Kennebec DWA
Indirect impacts to Coldwater Fisheries	MDEP and MDIFW	Fee contribution to Maine Endangered and Nongame Wildlife Fund	$180,000
		Funding for Culvert Replacements	$200,000

1.2.1.1 Temporary Wetland Fill

Temporary wetland fill impacts are primarily associated with the construction of short term access ways required for clearing and construction activities. Temporary fill associated with access way construction was conservatively calculated assuming non-frozen ground conditions. As a result, temporary fill or the use of protective matting (e.g. timber mats) for heavy equipment set up and travel was included in the calculation for access ways and structure preparation areas in all wetlands. Access ways have been designed to avoid, and when avoidance is not possible, to minimize disturbance to protected natural resources to the greatest extent practicable. For example, wetlands and streams will be crossed at their narrowest point if other conditions and construction access requirements allow this. Access ways will be removed as soon as it is safe and feasible to do so and when access ways are no longer needed for the Project. Fill needed for temporary access ways will not cause a net loss in wetland acreage or functionality. These small, scattered impacts will have a de minimis effect on the overall functions and values in the areas in which they occur, and there will be no permanent loss of wetland functions and values or wetland area. Temporary wetland fill will be in place significantly less than 18 months, and typically for a period of 12 months.

Compensation for temporary wetland fill, in place less than 18 months, is only required by the USACE, and is not required by MDEP. For the purposes of determining the appropriate ILF, the USACE follows the guidance defined in the MDEP Fact Sheet-In Lieu Fee Compensation Program (rev. 8/13/2015). The compensation fee for temporary fill was calculated using the resource-specific formula with a resource multiplier of one. An adjustment to the standard calculation for ILF payment developed by the USACE for temporary and secondary impacts is applied to temporary impacts to emergent wetlands (5%) and temporary impacts to scrub-shrub wetlands (10%).

There are approximately 19.18 acres of temporary wetland fill impact to emergent wetlands and 27.64 acres of wetland fill impact to scrub-shrub wetlands. A payment of $593,815.59 will be contributed to the ILF Program to offset Temporary Wetland Fill Impacts.

1.2.1.2 Permanent Cover Type Conversion of Forested Wetlands

The majority (73%) of the NECEC Project will be located within or immediately adjacent to existing transmission line corridors. Clearing of tree species capable of growing into the conductors (referred to as “capable species”) will be required to expand, typically by 75 feet, the width of the portion of the corridor where the Project will be co-located with existing transmission lines, and to create the 150-foot wide

section of the new corridor located between The Forks Plt. and Beattie Twp. Tree removal from wetlands does not result in a net loss of any wetland area, and only potentially shifts or alters, but does not reduce, certain wetland functions and values. This type of cover type alteration, i.e., conversion of forested wetlands to early successional cover type wetlands, will result in the largest cumulative wetland alteration.

Compensation for forested wetland conversion is not required by the MDEP but is required by the USACE. The MDEP requires compensation for permanent cover type conversion of significant wildlife habitat. Compensation for wetlands within significant wildlife habitat is included within the permanent cover type conversion of forested wetlands calculation. Cover type conversion within upland areas of Significant Wildlife Habitat areas are compensated for in their own respective categories (i.e. IWWH and SVPH). Conversion of forested wetlands to scrub-shrub wetlands account for approximately 132.38 acres. Of the 132.38 acres of conversion, 3.90 acres are within SVPH and 0.003 acres (150 square feet) are within IWWH. Even though there is no-net-loss of wetland functions or acreage resulting from clearing of forested wetland CMP will offset conversion of this habitat with the permanent preservation of lands which provide comparable habitat. For forested wetland conversion, the USACE's standard is 20:1; with a ratio adjustment of 15% was used to calculate the total required preservation amount of 397.14 acres.

The three proposed preservation parcels -- Flagstaff Lake Tract, Little Jimmie Pond-Harwood Tract, and Pooler Pond Tract -- contain 510.75 acres of wetland to offset 132.38 acres of forested wetland conversion impact, which is 113.61 acres over the amount of compensation required.

1.2.1.3 Permanent Upland Cover Type Conversion of IWWH

High quality IWWHs are typically composed of deep emergent marshes with high levels of interspersion of shrubs, open water, emergent wetland vegetation, and floating leaf, aquatic plants. As such, these habitats are typically not heavily forested and can be crossed by transmission line corridors without being significantly or adversely affected.

There will be approximately 13.31 acres of permanent cover type conversion in upland areas of moderate and high value IWWH. Compensation for wetland portions of IWWH are accounted for as part of Permanent Cover Type Conversion of Forested Wetlands. Compensation for cover type conversion is only required by the MDEP, and not the USACE. Clearing and construction in IWWHs will take place in accordance with the time of year restrictions for work within IWWHs, as described in Section 7 of the Site Law Application. In some cases, clearing in IWWHs will provide vegetation cover type diversity that

adds value to existing IWWHs. Because there is no loss of acreage of IWWH, and in most circumstances no, or minor, reductions in the functionality of the habitats from conversion activities, CMP determined that permanent preservation of comparable or higher-value habitat provides more than sufficient compensation for clearing in IWWHs.

The MDEP's standard ratio of 8:1 and a ratio adjustment of 60% (consistent with adjustments in other significant wildlife habitats prescribed by MDEP, e.g., significant vernal pools) was used to calculate the total required preservation of 63.87 acres of IWWH for permanent cover type conversion of high and moderate value IWWH. CMP will preserve a total of 132.19 acres of high and moderate value IWWH to offset 13.31 acres of upland cover type conversion within IWWH, which is 62.47 acres over the amount of compensation required.

1.2.1.4 Permanent Upland Cover Type Conversion of Significant Vernal Pool Habitat

The NECEC Project contains approximately 62 vernal pools which meet the definition of significant vernal pool under the Maine NRPA Chapter 335 significant vernal pool habitat identification criteria (DEP Reg 335.9B). The vernal pool habitat (also referred to as "vernal pool critical terrestrial habitat") includes the pool basin or depression plus a 250-foot buffer around the pool. Within the NECEC Project, permanent conversion from forested to non-forested cover in upland portions of significant vernal pool habitats totals approximately 29.61 acres. Compensation for wetland portions of SVPH, are accounted for under Permanent Cover Type Conversion of Forested Wetlands.

CMP will compensate for this unavoidable impact through a payment to the ILF Program. The compensation fee for upland cover type conversion within SVPH was calculated using the average assessed land value per square feet of impact. During the April 3, 2018 compensation working session, MDEP (Jim Beyer) indicated that impacts to upland areas within Significant Wildlife Habitat do not require a Natural Resource Enhancement & Restoration Cost factor, which is intended for the restoration of wetland areas. An adjustment of 60% to the standard calculation for ILF payment, as prescribed by MDEP, was applied. A payment of $56,320.47 will be contributed to the ILF Program to offset Permanent Upland Cover Type Conversion within SVPH.

1.2.1.5 Permanent Fill in Wetlands

There will be permanent fill impact from structures placed in wetlands. Fill will result from structures, soil mounding associated with pole placement, and, where necessary, concrete foundations. The area of disturbance for each pole varies based on structure type. Installations will range from approximately 30 to 185 square feet of permanent fill per structure, depending on structure type (e.g., steel monopole or wood H-frame). Following installation, the areas around each structure will naturally revegetate to herbaceous or shrub wetland communities. The small loss of wetland area from the structure fill equates to a negligible loss of wetlands functions and values relative to the remaining wetland area at each structure site. Taken individually, impacts from structures will have a negligible permanent impact on their particular installation locations.

The Merrill Road Converter Station and the Fickett Road Substation will have permanent wetland impacts from fill. Approximately 3.84 acres and 1.33 acres of permanent wetland fill will be required to construct the Merrill Road Converter Station and Fickett Road Substation, respectively. Permanent fill impact from transmission line structures total approximately 0.15 acre. CMP will provide compensation for the cumulative permanent wetland impacts associated with structure installation and substation site development, which total approximately 5.32 acres.

Wetlands within NECEC segments and substations were classified as either wetlands that are not of special significance or as WOSS, as defined in DEP Reg. Chapter 310.4, and discussed at CMP's Site Law Application Section 9.2.3. Significant wildlife habitats reviewed to determine freshwater WOSS include:

- mapped habitats for state and federally listed T&E species;
- high and moderate value IWWH;
- presence of significant vernal pool habitat;
- areas within 250 feet of a great pond;
- wetland containing more than 20,000 square feet of open water or aquatic or emergent marsh;
- located within a flood plain;
- designated as a peatland; or
- located within 25 feet of a river stream or brook.

Of the 5.32 acres of permanent wetland fill, fill in Non-WOSS and WOSS wetlands totals 4.47 acres and 0.85 acre, respectively.

The ILF contribution for permanent fill in wetlands was calculated for each wetland type, non-WOSS and WOSS. The compensation fee for permanent fill in non-WOSS was calculated using the resource-specific formula with a resource multiplier of one; WOSS was calculated using a resource multiplier of two, as prescribed in the DEP Fact Sheet - In Lieu Fee Compensation Program.

There are approximately 5.32 acres of direct wetland fill. A payment of $1,045,952.70 will be contributed to the ILF Program to offset Permanent Fill in Wetlands.

1.2.1.6 Permanent Upland Fill in IWWH

Where unavoidable, direct non-wetland impact to IWWH will result from the placement of transmission line structures. Direct impacts to non-wetland areas within IWWH total approximately 0.013 acre (561 square feet). Compensation for impacts to wetlands within IWWH will be included in the ILF contribution for permanent fill in freshwater wetlands contained in IWWH, designated as WOSS.

The MDEP's standard ratio of 8:1 was used to calculate the total required preservation of 0.06 acres of IWWH for upland fill within high and moderate value IWWH. CMP will preserve a total of 132.19 acres of high and moderate value IWWH, to offset the .013 acres of upland permanent direct fill within IWWH as well as the 13.31 acres of upland cover type conversion, discussed in 1.2.1.3.

1.2.1.7 Permanent Fill in Upland Significant Vernal Pool Habitat

Permanent fill in SVP habitat will result from pole placement in both wetlands and uplands located within the 250 foot critical terrestrial habitat located around the pool depression, as well as from site development associated with the Merrill Road Converter Station. Potentially significant vernal pools that have not yet been determined as "significant" by MDIFW will be included in this calculation. There will be no direct impact to any significant vernal pool depressions.

Permanent fill in wetland areas located within SVP critical terrestrial habitat requires 100% compensation with a resource multiplier of two, and is accounted for in the ILF calculation for permanent fill in WOSS. Permanent fill impact in upland portions of the significant vernal pool habitat requires 100% compensation with a resource multiplier of one and will also be accounted for in the ILF. Approximately 0.03 acre of permanent fill will be required for the placement of transmission structures within upland portions of the SVP habitat. Construction of the Merrill Road Converter Station will result in the placement of 0.721 acre of permanent fill in upland portions of vernal pool habitat. There are no SVPs on the Fickett Road Substation site.

The MDEP ratio for compensation of permanent fill in upland portions of significant vernal pool habitat was applied. An ILF contribution of $71,104.03 was determined for compensation for permanent fill in upland portions of significant vernal pool habitat.

1.2.1.8 Direct and Indirect Impacts to USACE Jurisdictional Vernal Pools

Under the provisions of Section 404 of the federal Clean Water Act, the USACE regulates activities in "waters of the United States," which include vernal pools. Vernal pools are defined by the New England District of the USACE in the General Permit (GP) for the State of Maine reissued on October 13, 2015. The USACE definition, while very similar to the MDEP's, does not reference "natural" and does not recognize or differentiate significant vernal pools based on number of indicator species egg masses. Instead, the GP definition indicates: "the presence of any of the following species in any life stage in any abundance level/quantity would designate the waterbody as a vernal pool: fairy shrimp, blue spotted salamanders, spotted salamanders or wood frogs. The USACE may determine during a Category 2 Review that a waterbody should not be regulated as a vernal pool based on available evidence." Furthermore, under the Maine GP the USACE regulates activities within a distance of 750 feet from vernal pool depression, also referred to as the "vernal pool management area," which includes the pool depression, the envelope (area within 0 to100 feet of the vernal pool depression edge), and the critical terrestrial habitat (area within 100 to 750 feet of the vernal pool depressions edge).

In September 2016, the USACE New England District issued its updated Mitigation Guidance document. Within this document, the USACE provides the following guidance: "to determine the appropriate mitigation for vernal pool impacts, the pools to be impacted must be evaluated using the USACE Vernal Pool Characterization Form. This form documents both the quality of the vernal pool and its surrounding landscape to determine overall level of function of the pool." This "DRAFT Vernal Pool Characterization Form (9-7-16)," included within the guidance, is designed to characterize vernal pools and provide a valuation based on a point system for features of the pool and surrounding habitat for regulatory purposes, impact and compensatory mitigation assessment. The pools are scored or valued based on vernal pool characteristics, vernal pool envelope (100 ft) and critical terrestrial habitat area (100-750 ft) characteristics, and species present within the pool. Pools are then classified as having high, medium or low levels of functions, as determined by the scoring system on the form.

When the 2016 USACE Mitigation Guidance was issued, the NECEC natural resources survey effort was well underway. As such, CMP's consultants recorded field observations and pool characteristic data on the MDEP's Maine State Vernal Pool Assessment forms (DEPLW0897-82008) if the pool was potentially

significant as defined in NRPA. For those pools which were not potentially significant as defined in NRPA, but were USACE- jurisdictional, data was collected on a consultant-created form that documented the survey efforts, which were conducted in accordance with a long standing, broadly vetted, rigorous methodology accepted by the regulatory agencies. Nonetheless, the form did not utilize the scoring or classification contained in the 2016 guidance.

To equitably evaluate the pools based upon the classification of high, medium, or low, and to provide the appropriate level of compensation for each resource, CMP proposed evaluation criteria based upon the existing level of information collected using the principals of the 2016 guidance as a framework. CMP worked with the USACE to determine the evaluation methods and received feedback on its proposal. *See* Exhibit 1-6.

Following the examination of all vernal pool features within the project area, CMP determined that 56 high value pools, 122 medium value pools, and 72 low value pools will be impacted by the Project and will require compensation.

The 2016 Guidance defines the amount of mitigation credit necessary to compensate for vernal pool impacts. The USACE uses the following ratio pattern for determining amount of preservation necessary to offset project impacts:

- For the loss of a low value pool, one medium or high value pool and its associated CTH should be preserved.
- For the loss of one medium value pool, three pools of medium or high value and its associated CTH should be preserved.
- For the loss of one high value pool, five pools of medium or high value and its associated CTH should be preserved.

For calculating ILF, the applicant is to provide an ILF for direct fill to the pool depression or 100-foot envelope at the regular wetland rate and, in addition, the same ratio pattern is applied using a standard of 13,000 square feet for each vernal pool habitat, regardless of pool size. For example, the applicant will pay the equivalent of 13,000 square feet for a low value pool to protect one vernal pool and CTH, plus any direct fill impacts to the depression or envelope. Similarly, for medium value pools the calculation would be multiplied by three, 13,000 x 3 = 39,000 square feet; for a high value pool the calculation would be multiplied by five, 13,000 x 5 = 65,000 square feet.

The fee structure in the 2016 Guidance (at page 95) does not address impacts associated only with conversion of forested habitat within vernal pool critical terrestrial habitat, and it assumes placement of direct fill within the vernal pool depression. This guidance is thus generally intended for "hard" developments resulting in direct fill within the vernal pool. Based on data gathered and evaluated by TRC (see attached position paper and conference presentation summary, Exhibits 1-7 and 1-8), it is very likely that the majority of these pools will retain their productivity and functions following construction. TRC's study of pools within "soft" land use developments like CMP's corridors found that the reduction in forested canopy does not result in a full loss of functions, and the data demonstrate that the highest value pools (i.e., significant vernal pools as defined by the Maine NRPA) continue to function without loss or significant degradation of their ecological functions after the forest canopy within their critical terrestrial habitat has been cleared.

CMP will utilize the ILF Program to offset direct and indirect impacts to USACE Jurisdictional Vernal Pools. There is approximately 4.7 acres of direct fill impact to vernal pool depressions or the 100' envelope. The ILF for direct fill was calculated using the resource dependent formula with a resource multiplier of one. The ILF contribution for direct fill to USACE vernal pools is $382,686.77.

Because the guidance is more suited for use for "hard" developments, and because of the above-cited TRC information regarding the health and productivity of vernal pools whose critical terrestrial habitat has been cleared, it is reasonable, at a minimum, to apply an adjustment to the suggested in-lieu fee amount in those instances where there is no direct fill in the pool envelope or depression. CMP has included compensation for conversion of forested wetlands previously within this plan, including those that are within USACE vernal pool critical terrestrial habitat. The compensation plan includes 510.75 acres of wetland preservation, or 15% over the amount of compensation required to offset the 149.07 acres of forested wetland conversion. Therefore, a significant adjustment to the suggested mitigation is reasonable and appropriate to compensate for forested upland conversion impacts within the vernal pool critical terrestrial habitat, which is the only impact not otherwise compensated for.

There are 56 high value vernal pools that will be impacted by the Project. This fee, which is calculated based on the fee structure outlined in the 2016 USACE Guidance, is offered in addition the fee for direct fill described above. CMP applied the ratio of five (5) multiplied by 13,000 square feet to the resource-specific ILF formula and then applied a 5% adjustment to the calculation to develop the ILF to address indirect impacts to the upland portion of the critical terrestrial habitat. Upland areas are not regulated directly by the USACE, as their regulatory authority is over the waters of the United States"; however, it

can be reasoned that there may be secondary impact to this critical terrestrial habitat. As such, for high value USACE jurisdictional vernal pools, a payment to the ILF Program of $672,587.50 will be made.

For medium value vernal pools, the standard of 13,000 square feet is multiplied by three (3) and then applied to the resource-specific formula for wetland impacts. For low value vernal pools, the standard of 13,000 square feet is multiplied by one (1) and then applied to the resource-specific formula. There are 122 medium value vernal pools and 72 low value vernal pools which require compensation. When applying these formulas, CMP calculated that the ILF is $889,219.50 and $168,610.00, respectively.

In total, CMP will provide $2,113,103.77 to the ILF Program for compensation of direct and indirect impacts to USACE jurisdictional vernal pools.

1.2.1.9 Compensation of Other Impacts

In its December 12, 2017 Environmental Information Request, the MDEP requested that CMP provide a mitigation package to compensate for impacts to cold water fisheries and recreational uses of the outstanding river segments. The MDEP notes, "The Department envisions this mitigation package will be the responsibility of CMP to implement, not simply providing ILF monies." In its response, CMP committed to reach agreement on the terms of compensation for Project impacts with the MDEP and USACE, which will avoid, minimize or mitigate those impacts through design, location, construction practices, ILF contribution and/or compensatory mitigation parcels.

On April 3, 2018, CMP, MDEP, and USACE held a working session to discuss the NECEC Compensation Plan. MDEP (Jim Beyer), maintained that the compensation package must include a combination of compensation components: ILF, preservation, and/or enhancement, to account for all Project impacts (most notably, impact to recreational uses of outstanding river segment and indirect impact to coldwater fisheries). CMP proposes a number of methods to offset impact to these resources, including land preservation, a culvert replacement program, and incorporation of construction practices to protect coldwater fisheries habitat and enhancement, described within Sections 1.2.2.3 through 1.2.2.6. This plan, in combination with the ILF and the compensation parcels used to offset natural resource impacts, described in Sections 1.2.2.1 and 1.2.2.2, exceeds the minimum compensation amounts required and provides long term protection of protected natural resources in Maine.

1. Existing Recreational Uses of Outstanding River Segments

The Maine legislature protects certain rivers, "because of their unparalleled natural and recreational values, provide irreplaceable social and economic benefits to the people in their existing state." 12 M.R.S. § 403. The NECEC crosses the following five locations which are afforded special protection as outstanding river segments, as identified in 38 M.R.S. § 480-P and 12 M.R.S § 403:

- Upper Kennebec River
- Kennebec River below Wyman Dam
- Carrabassett River
- Sandy River
- West Branch of the Sheepscot River

The NRPA further governs proposed activities that cross any outstanding river segment as identified in section 480-P and provides that "the applicant shall demonstrate that no reasonable alternative exists which would have less adverse effect upon the natural and recreational features of the river segment." 38 M.R.S. § 480-D(8). CMP provided an alternatives analyses demonstrating that "no reasonable alternative exists" for each river segment the transmission line crosses. *See* NRPA Application, Chapter 2 (submitted September 27, 2017); Responses to Data Requests Letter (submitted March 29, 2018); NECEC Overhead Crossing of the Kennebec River Letter (submitted July 26, 2018).

As demonstrated by CMP, "no reasonable alternative exists which would have less adverse effect upon the natural and recreational features of this river segment." CMP has therefore taken measures to minimize the Project impact to these resources. In the locations where the HVDC line is to be co-located within existing rights-of-way, CMP has minimized additional clearing to an average additional width of 75 feet, and minimized additional natural resources impacts by proposing crossing locations in existing, developed transmission line corridors. CMP has proposed to cross under the upper Kennebec River using horizontal directional drilling (HDD) in order to preserve the aesthetic value of this river segment and to prevent visual impacts to recreational and other river users. Additionally, in response to MDIFW's Environmental Review Comments (submitted July 13, 2018), CMP committed to retaining 100 foot riparian buffers at all outstanding river segments.

Impacts to outstanding river segments further have been minimized by crossing in locations where a CMP right-of-way already exists or through design modifications and/or increased riparian buffers. As

discussed in detail in Section 1.2.2.3, as part of this compensation plan to offset impact to existing recreational uses of outstanding river segments, CMP is including land preservation of three tracts along the Dead River which collectively will add 1,054 acres to Maine's conserved lands and provide protection in perpetuity of 8.1 miles of river frontage along the Dead River, an outstanding river segment. In addition to the wealth of recreational opportunities (which are not limited to hiking, fishing, whitewater rafting, canoeing, snowmobiling, wildlife viewing and hunting), these tracts include the protection of Grand Falls waterfall, the largest horseshoe waterfall in the State, in perpetuity. Impacts to outstanding river segments will not unreasonably impact existing recreational uses of these rivers.

2. Indirect Impacts to Coldwater Fisheries

In its December 12, 2017 Environmental Information Request, MDEP notes that "the project crosses 67 river, streams, or brooks, which contain brook trout habitat." The MDIFW's March 15, 2018 NECEC application review comments stated that "CMP's proposed 25 foot riparian buffer will not be adequate for the protection of water temperatures, water quality, and inputs of coarse woody debris necessary to support conditions required by brook trout and other aquatic life." As referenced by CMP's July 13, 2018 response to the MDIFW, a study by Gleason[2] on the impacts of powerline rights-of-way ("ROW") on forested stream habitat found that despite the open canopy condition, water temperatures were slightly lower than in off-ROW areas and that none of the water quality parameters were significantly different between the on-ROW and off-ROW study areas. Gleason's study also found no correlation between percent canopy cover and mean percentage of fines and found no significant difference in the Benthic Index of Biotic Integrity scores between on-ROW and upstream areas. Similarly, a study conducted by Peterson[3] on the effects of electric transmission line ROWs on trout in forested headwater streams in upstate New York found that stream reaches in electric transmission ROWs were exposed to more light, had denser stream bank vegetation, were deeper and narrower, and had a greater area composed of pools. Peterson's study found that trout were more abundant in stream reaches within ROWs and concluded that the increase in incident sunshine resulted in a denser forb and shrub root mass which further stabilized stream banks, resulting in less stream bank erosion, deeper channels, and higher populations of trout. Peterson concluded that electric transmission ROWs need not constitute an adverse effect on headwater trout population densities in forested basins.

[2] Gleason, N.C. 2008. Impacts of Power Line Rights-of-Way on Forested Stream Habitat in Western Washington. Environmental Symposium in Rights-of-Way Management, 8th International Symposium, pages 665-678.
[3] Peterson, A.M. 1993. Effects of Electric Transmission Rights-of-Way on Trout in Forested Headwater Streams in New York. North American Journal of Fisheries Management, vol. 13 pp. 581-585.

Nevertheless, in consideration of both MDEP's and MDIFW's expressed concern of indirect Project impacts from clearing of the transmission line ROW, CMP has revised its NECEC Plan for Protection of Sensitive Natural Resources During Initial Vegetation Clearing and Post-Construction Vegetation Maintenance Plan (Exhibits 10-1 and 10-2, respectively) to include the following:

> *Riparian natural buffers (or "riparian buffers) must be retained within 100 feet of all perennial streams within the greenfield (Segment 1) portion of the Project, outstanding river segments, or rivers, streams, or brooks containing Threatened or Endangered species unless the department determines that the functions and values of the riparian buffer will not be impacted by the removal of vegetation and approves an alternative minimum buffer. A "riparian buffer" is a buffer on a stream, river, or brook. In no case may the riparian buffer be reduced to less than 25 feet. The riparian buffer is measured horizontally from the top of the stream bank.*

Extending the buffer to 100 feet for those streams which meet the above criteria will adequately protect coldwater fisheries. CMP also intends to replace improperly installed or non-functioning culverts to improve habitat connectivity as further described in Section 1.2.2.5.

Additionally, the Grand Falls, Basin, Lower Enchanted, Flagstaff Lake, and Pooler Pond tracts, located within an area of the State with an abundance of valuable coldwater fisheries, collectively contain 78,710 linear feet of streams, including frontage on the Dead River and Enchanted Stream, which will be protected under a deed restriction or conservation easement.

3. Impact to Deer Wintering Areas

According to data provided by the MDIFW, a total of 22 deer wintering areas ("DWA") are crossed by the NECEC transmission line corridor. All DWAs crossed by the Project are classified by the MDIFW as indeterminate in value, which means that they are recognized as candidate Significant Wildlife Habitat under the NRPA, but currently have no formal value rating. No DWAs are impacted by the Merrill Road Converter Station or Fickett Road Substation.

Of the 22 DWAs crossed, 11 will be subjected to some conversion of forested habitat to shrub and herbaceous cover types. Additional DWAs intersected by Segment 4 of the Project will not be affected as there will be no clearing within DWAs along this segment.

One DWA, located near the Upper Kennebec River, is crossed by the Project in Segment 1. This resource is "non-regulatory, but still important for consideration in planning to accommodate needs of wintering deer" according to Bob Cordes, MDIFW (email correspondence 8/15/17). Project impacts within the HDD project modification area include 5.75 acres of tree clearing, and 0.84 acres of permanent impact from construction of the HDD termination stations. The underground HDD crossing beneath the

Kennebec River minimizes impact to the DWA by retaining approximately 1,450 feet and 1,160 feet of forested buffer on the east and west sides of the Kennebec River, respectively. Intact, mature riparian buffers or vegetation bridges provide good travel corridors for wintering deer and are particularly valuable in this area of Maine, which experiences high winter snow depths. A total of 39.3 acres of tree clearing is proposed within the Upper Kennebec DWA. Through consultation with MDIFW, to mitigate impact to this DWA, CMP is proposing a combination of preservation of lands within the larger Upper Kennebec DWA and the implementation of deer travel corridors in the proposed ROW as further described in Section 1.2.2.4.

Construction and maintenance of Segments 2, 3, and 5 will not significantly affect the habitat functional attributes of the DWAs intersected by the Project for the following reasons:

- Corridor construction will only widen existing, non-forested transmission line corridors by an average of approximately 75 feet. As such, functional effects on these DWAs are expected to be indiscernible. It is expected that after construction has been completed, these DWAs will function similarly to the way they currently do.

- CMP will maintain its transmission line corridors in a manner that encourages the growth of non-capable shrub species that can provide important winter browse for over-wintering deer and in accordance with the CMP Post-Construction Vegetation Management Plan (Site Law Application Exhibit 10-2, revised August 2018 as described above) and CMP's Environmental Guidelines (Site Law Application Exhibit 14-1, revised June 2018).

CMP has avoided and minimized direct and temporary impact through adjusting pole placement where possible and minimizing temporary access roads through these areas. CMP proposes to enhance wildlife habitat in the Project corridor adjacent to DWA by revegetating disturbed soils in upland areas with a wildlife seed mix promoted and developed by the Sportsman's Alliance of Maine ("SAM") and the Maine Seed Company.

4. Impacts to Rare Plant and Unusual Natural Communities

CMP conducted field surveys for rare plants and unique natural communities within the project area in July 2018. As a result of the surveys, 15 rare plant occurrences and 5 unique natural communities were identified within or immediately adjacent to the project right-of-way. Through consultation with MNAP and the United States Fish and Wildlife Service ("USFWS"), CMP has addressed agency concerns for the

rare plant occurrences through a combination of avoidance, minimization and construction best practices as detailed in Table 1-3, below.

Table 1-3: NECEC Rare Plant Avoidance, Minimization, and Mitigation Summary Table

Description	Common Name	Feature ID	Rank	Proposed Impact Based on Original Design	CMP Proposed Avoidance, Minimization, or Mitigation
Isotria medeoloides	Small whorled pogonia	ISME01AR	S1	Indirect impact, clearing	CMP proposes to avoid impact by re-aligning the infrastructure within the existing corridor and eliminating tree clearing. CMP will implement yearly monitoring for the first three (3) years following construction and once every three years thereafter.
Gentiana rubricaulis	Red stemmed gentian	GERU02AR	S1	No impact	CMP will flag the populations prior to construction, clearing should be done during frozen ground conditions or on matted travel lanes, CMP will restrict travel lanes where possible.
Gentiana rubricaulis	Red stemmed gentian	GERU03AR	S1	Clearing	CMP will flag the populations prior to construction, clearing should be done during frozen ground conditions or on matted travel lanes, CMP will restrict travel lanes where possible.
Dryopteris goldiana	Goldie's wood fern	DRGO01AR	S2	Indirect impact, the clearing limits are located within 20 feet of the population	CMP will flag this population prior to construction, maintain the riparian buffer adjacent to this occurrence and will plant non-capable species along the edge of the clearing limits to provide additional shading. Clearing will be performed by hand only to avoid heavy equipment disturbance.
Carex siccata	Dryspike sedge	CASI02AR	S2	No impact	Install and maintain flagging for avoidance throughout construction. Poles to be removed should be cut at ground level, soil added, and the area allowed to revegetate.
Carex siccata	Dryspike sedge	CASI01AR	S2	No impact, Close to demo structure but likely not impact by activity. Hand cut and winch structure.	Install and maintain flagging for avoidance throughout construction. Poles to be removed should be cut at ground level, soil added, and the area allowed to revegetate.

Description	Common Name	Feature ID	Rank	Proposed Impact Based on Original Design	CMP Proposed Avoidance, Minimization, or Mitigation
Houstonia longifolia	Long leaved bluet	HOLO01AR	S2/S3	No impact, clearing limits shown on map but no clearing will be needed here	Install and maintain flagging for avoidance throughout construction and verify the correct placement of the access road during access road installation.
Gentiana rubricaulis	Red stemmed gentian	GERU01AR	S1	Clearing (Minor impact, clips an edge of the polygon)	CMP will flag the populations prior to construction, clearing should be done during frozen ground conditions or on matted travel lanes, CMP will restrict travel lanes where possible.
Gentiana rubricaulis	Red stemmed gentian	GERU04AR	S1	Clearing (Minor impact, clips an edge of the polygon)	CMP will flag the populations prior to construction, clearing should be done during frozen ground conditions or on matted travel lanes, CMP will restrict travel lanes where possible.
Gentiana rubricaulis	Red stemmed gentian	GERU04AR	S1	Clearing (Minor impact, clips an edge of the polygon)	CMP will flag the populations prior to construction, clearing should be done during frozen ground conditions or on matted travel lanes, CMP will restrict travel lanes where possible.
Trichophorum clintonii	Clinton's bulrush	TRCL01AR	S3	No impact	Install and maintain flagging for avoidance throughout construction.
Galium kamtschaticum	Boreal bedstraw	GALKAM002DMC	S2	No impact	Install and maintain flagging for avoidance throughout construction.
Galium kamtschaticum	Boreal bedstraw	GALKAM003DMC	S2	No impact	Install and maintain flagging for avoidance throughout construction.
Galium kamtschaticum	Boreal bedstraw	GALKAM001DMC	S2	No impact	Install and maintain flagging for avoidance throughout construction.
Lindernia dubia var. anagallidea	Yellowseed false pimpernel	LIDU01AG	SH	No impact	Install and maintain flagging for avoidance (protection of basin) and hand cutting of vegetation only.

Three (3) of the unique natural community types, meeting the minimum standards to qualify as a unique natural community, will be impacted by unavoidable tree clearing activities. These include portions of three Jack Pine communities, one Enriched Northern Hardwood Forest community, and one Hardwood River Terrace Forest community. The Hardwood River Terrace Forest community is within Segment 3 of the Project where project impacts have been minimized through co-location of corridors. These natural communities that will be impacted by the project total 9.3 acres of habitat. The Jack Pine and Enriched Northern Hardwood communities are all located within Segment 1 of the Project (new corridor). CMP conducted an analysis of Segment 1 that compared the environmental impacts of siting the transmission line on the north and south sides of the 300-foot wide corridor and provided this analysis to the MDEP and USACE (filed May 8, 2018). The analysis concluded that the southern alignment as proposed would cause fewer environmental impacts and was the preferred alternative. Similarly, reduction of overall impact to the unique natural communities in Segment 1 favors the southern alignment (i.e., 6.4 acres of a total of 20.9 acres of unique natural community types within the corridor will be impacted as opposed to the 14.5 acres that would be impacted if the transmission line were located on the northern side of the corridor). As detailed in Section 1.2.2.6, CMP proposes to compensate for unavoidable impacts to unique natural communities through a contribution to the Maine Natural Areas Conservation Fund.

1.2.2 Total Compensation

The compensation package consists of 13 mitigation parcels, 3 of which are proposed for preservation to partially offset unavoidable natural resource impacts and 10 of which will be placed into conservation to provide compensation for recreational impacts to outstanding river segments, protect and preserve coldwater fishery habitat, and preserve deer wintering areas within the Upper Kennebec DWA. CMP owns all of the tracts proposed for mitigation and will identify recipients and finalize transfer of the properties once all required Project permits and approvals have been required.

In addition, CMP will provide a total $4,268,326.22 in-lieu fee payment; a $649,790.63 payment to the Maine Endangered and Nongame Wildlife Fund; a $200,000 commitment for culvert replacements; a $129,634.56 payment (or land preservation) to the Maine Natural Areas Conservation Fund and has included a number of habitat enhancements in the plan to improve habitat for coldwater fisheries, species of concern, and DWAs, further described as follows.

1.2.2.1 In-Lieu Fee

For those impacts offset through the ILF Program, compensation fees were calculated using the resource-specific formulas, based on the resource compensation rates and multipliers, as provided in the DEP Fact Sheet – In Lieu Fee Compensation Program (2015) ("ILF" or "ILF Program"). The resource multiplier takes into consideration the significance of specific resources. Additionally, based on recommended guidance from the USACE and MDEP, an adjustment, or percentage of standard amount was applied to account for resources in which a full loss of functions and values do not occur.

As calculated within Exhibit 1-5.1 through 1-5.7 and summarized within Exhibit 1-5, CMP is providing an In-Lieu Fee of $3,880,296.56 to off-set unavoidable impacts to resource functions and values as a result of the NECEC Project.

Additionally, CMP has added a robust contingency to account for potential additional natural resource impacts that may result from future minor design changes (e.g., guy wire types and precise locations that have not yet been determined) and resolution of minor discrepancies in the natural resource data identified by third party reviewers and/or during construction of the Project. CMP is providing an additional 10% of the calculated ILF total, which will add $388,029.66 to the ILF payment, totaling $4,268,326.22, to be used for these purposes. CMP anticipates requesting a refund of any unused funds remaining in this contingency after completion of construction.

1.2.2.2 Compensation Parcels

MDEP allows for compensation which may include the restoration, enhancement, creation, or preservation of an area or areas that have functions or values similar to the area. 38 M.R.S. § 480-Z. CMP has selected its Flagstaff Lake, Little Jimmie Pond-Hardwood Tract, and Pooler Pond Tracts for preservation as mitigation.

According to the USACE's 2016 Mitigation Guidance, preservation as mitigation "does reduce the threat of future impacts and may stem future aquatic resource degradation." Mitigation Guidance, p. 10. Furthermore, the USACE "encourages a combination of upland and aquatic resource preservation over aquatic resources-only preservation to offer better protection of aquatic functions," as state laws may not protect non-wetlands whose degradation would affect aquatic resources. Mitigation Guidance, p. 11. Pursuant to 33 C.F.R. § 332.3(h), preservation may be used to provide compensatory mitigation when:

(i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed;
(ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available;
(iii) Preservation is determined by the district engineer to be appropriate and practicable;
(iv) The resources are under threat of destruction or adverse modifications; and
(v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust).

Each of the potential preservation tracts (Flagstaff Lake Tract, Little Jimmie Pond-Harwood Tract, and Pooler Pond Tract) included in this plan meets all of these criteria and provides important physical, chemical, or biological functions for the watershed in which it is located. A detailed description of each parcel is included in Exhibit 1-9: NECEC Potential Compensation Tract- Natural Resources Survey Results Report.

An analysis of the applicable regulatory framework and regional trends, prepared by the Musson Group and included as Exhibit 1-3, shows that each of these three tracts is open to development in ways that could damage these important functions and thereby threaten to adversely modify the ecological sustainability of the watershed.

The functions and values of the three preservation tracts are similar to the functions and values associated with Project impacts to forested wetlands and IWWH. These three tracts will be used to offset permanent cover type conversion of forested wetlands, as well as direct and indirect impacts to IWWH. Forested wetland conversion does not result in a permanent loss of wetland functions or values, although functional shifts will occur. The functions and values present on the preservation tracts are more than sufficient to offset these impacts. Similarly, direct and indirect impacts in IWWH will result in a minimal reduction in habitat value. In some cases, clearing in IWWH will provide vegetation cover type diversity that adds value to existing IWWH. Because there is no loss of acreage of IWWH, and in most circumstances no, or minor, reductions in the functionality of the habitats from conversion activities, CMP determined that permanent preservation of comparable or higher-value habitat provides more than sufficient compensation for impact to IWWHs. A comparison of the functions and values of the Project impact types and the three preservation tracts is provided below in Table 1-4.

Documentation of CMP's title, right, or interest in each of the preservation tracts is included in Exhibit 1-10. For each property, CMP proposes to convey fee ownership to either a non-profit land trust/non-governmental organization or a state resource agency and the transfer document between the parties will

contain deed covenants and restrictions to preserve the compensation tract and its ecological values in perpetuity.

Table 1-4: Functions and Values Comparison				
Impacts		**Compensation**		
Activity & Regulating Agency	**Functions and Values Impacted[1]**	**Compensation Type**	**Site Name**	**Primary Functions and Values Provided[2]**
Temporary Wetland Fill Impacts (USACE)	Temporary impacts to WH, FA, GW, and VQA	ILF	NA	NA
Permanent Cover Type Conversion of Forested Wetlands to Scrub Shrub (USACE)[3]	Conversion will result in no permanent loss of wetland functions or values. Functional shifts will occur with regards to GW, FA, NR, SS, WH, REC, UNQ, VQA, and ESH.	Wetland Preservation	Little Jimmie Pond-Harwood Tract	GW, FF, FH, PE, STPR, NR, SS, WH, ED, REC
			Flagstaff Lake	GW, FF, FH, PE, STPR, NR, SS, WH, ED, REC
			Pooler Pond Tract	GW, FF, FH, PE, STPR, NR, SS, WH, ED, REC
Direct and Indirect Impacts to High and Moderate Value Inland Wading Bird and Waterfowl Habitat (MDEP)	Clearing of IWWH habitats will result in a de minimis reduction of IWWH value	High and Moderate Value IWWH Preservation	Little Jimmie Pond-Harwood Tract	GW, FF, FH, PE, STPR, NR, SS, WH, ED, REC
			Flagstaff Lake	GW, FF, FH, PE, STPR, NR, SS, WH, ED, REC
			Pooler Pond Tract	GW, FF, FH, PE, STPR, NR, SS, WH, ED, REC
Permanent Cover Type Conversion in Upland Vernal Pool Habitat (MDEP & USACE)	Clearing of VP Habitats will result in a de minimus reduction in VP habitat value	ILF	NA	NA
Permanent Fill in Vernal Pool Habitat (MDEP & USACE)	WH	ILF	NA	NA
Permanent Wetland Fill Impacts (MDEP & USACE)	Permanent loss of GW, PE, NR, WH, REC, UNQ, VQA, and ESH.	ILF	NA	NA

[1] Function & Value List: GW = Groundwater Recharge/Discharge, FA = Floodwater Alteration, FH = Fish & Shellfish Habitat, STPR = Sediment/Toxicant Retention, NR = Nutrient Removal, PE = Production Export, SS = Sediment and Shoreline Stabilization, WH = Wildlife Habitat, R = Recreation, ED = Educational & Scenic Value, VQA = Visual Quality and Aesthetics, ESH = Endangered Species Habitat, UH = Uniqueness/Heritage

[2] Source: CMP NECEC Potential Compensation Tracts- Natural Resource Survey Results (8/13/2018).

[3] Conversion of forested wetlands includes clearing within SVPH or IWWH.

1.2.2.3 Preservation for Recreational Uses of Outstanding River Segments

CMP is including, as part of this compensation plan to offset impact to existing recreational uses of outstanding river segments, land preservation of three tracts along the Dead River which collectively will add 1,053.5 acres to Maine's conserved lands and provide protection in perpetuity of 8.1 miles of river frontage along the Dead River, an outstanding river segment (12 M.R.S § 403).

These lands, as detailed within the *NECEC Potential Compensation Tract- Natural Resources Survey Results Report*, Exhibit 1-9, include the Grand Falls Tract, Lower Enchanted Tract, and Basin Tract (see Figure 1-1), which not only contain high quality natural resources but will also augment existing conserved lands, protect habitat connectivity, provide opportunity to expand recreational opportunities and trail networks, and provide long term protection of 8.1 miles along the Dead River, most notably used by whitewater rafting tourism companies. Adjacent conserved lands include two Western Mountain Conservation Easement ("CE") parcels, 457.84 and 560.35 acres, respectively, and the Dead River Trail and Conservation Corridor easement which includes 660.97 acres. In summary, the 1,053.5 acres contained within the Grand Falls Tract, Lower Enchanted Tract, and Basin Tract will add directly to adjacent conserved lands, which total approximately 1,679 acres, increasing the area conservation lands as a whole by 39%. The recreational opportunities and their relationship to other conserved lands are highlighted below.

Table 1-5

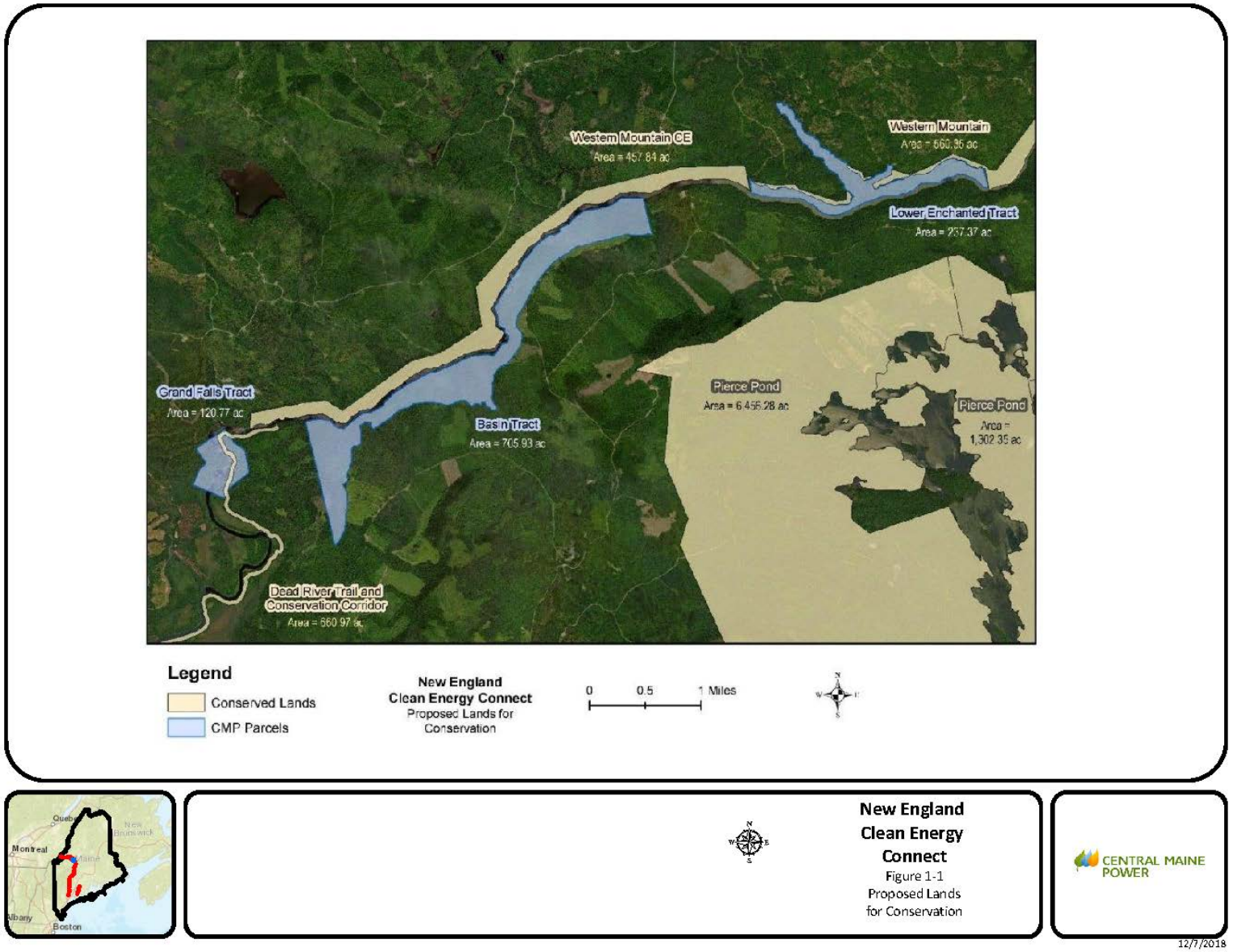
Tract	**Dead River Frontage**	**Acres**
Grand Falls Tract	1.6 miles (0.8 on each side)	120.84
Lower Enchanted Tract	2.3 miles along the north side	235.60
Basin Tract	4.2 miles along the south side	697.06
Total:	8.1 miles	1,053.50

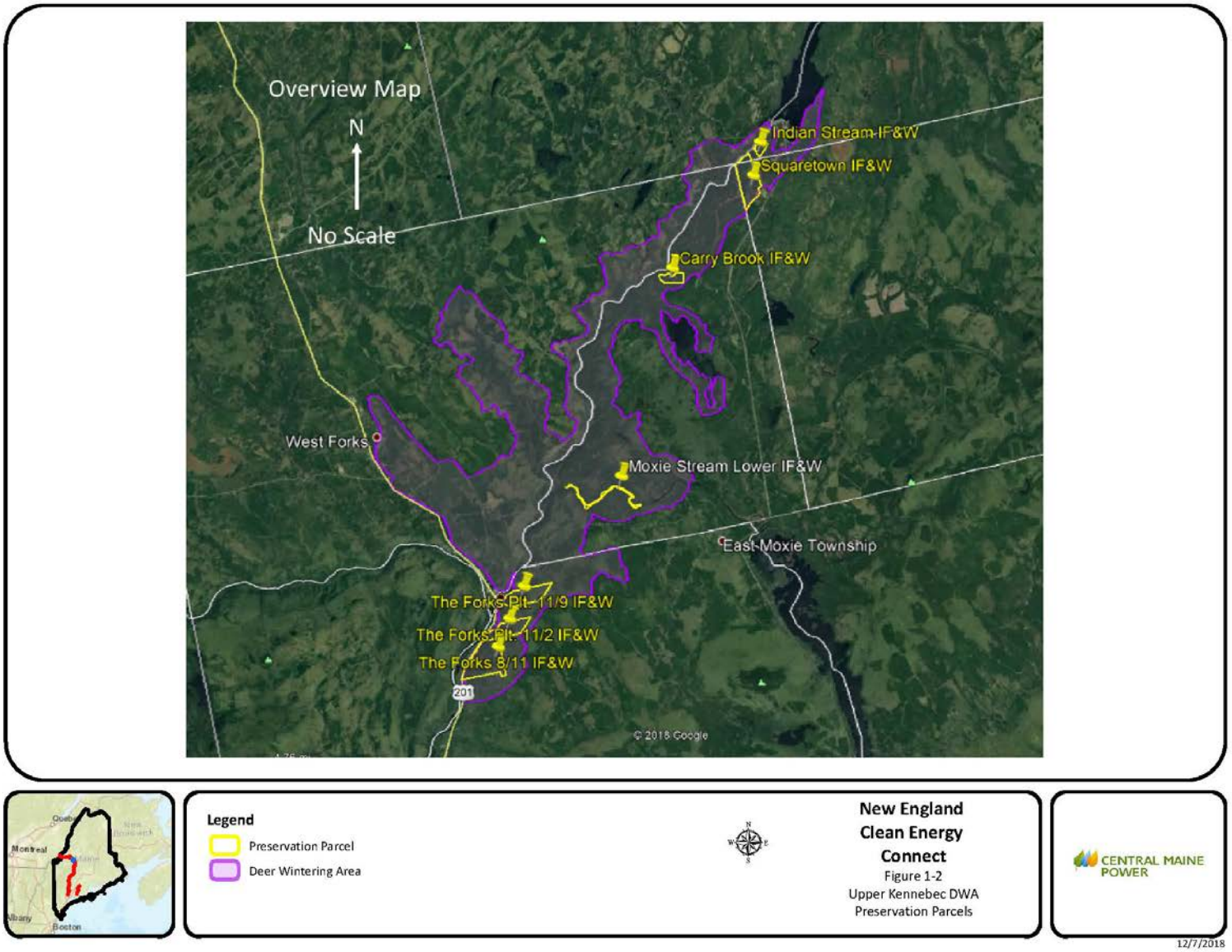
Grand Falls Tract: The Dead River Trail and Conservation Corridor passes through this tract. This parcel is part of the Maine Huts & Trails network traveled by day and through hikers and also used for camping, cross country skiing and snowshoeing. The Northern Forest Canoe Trail traverses the tract connecting Flagstaff Lake with Spencer Stream and is the starting point for commercial Dead River rafting operations. The Tract is also highly regarded for trout and salmon fishing and hunting opportunities. The Grand Falls Tract has the largest horseshoe waterfall in the state. This tract is approximately 3.25 miles downstream, along the Dead River, of the 50,000 acre Bigelow Mountain-Flagstaff Lake-North Branch of the Dead River Focus Area of Statewide Ecological Significance. Within the intervening distance is a 1,542 acre moderate value IWWH, linking Grand Falls Tract with the Focus

Area. Conserved lands on this property are limited to the 200 foot wide Dead River Trail and Conservation Corridor on the east side of the river.

Lower Enchanted Tract: The Lower Enchanted Tract abuts the Western Mountain Conservation Easement parcel on both sides (east and west). Preservation of this tract will link segments of and expand on the Western Mountain Conservation Easement and will encompass approximately 0.7 miles on both sides of Enchanted Stream as well as 2.3 miles along the north shoreline of the Dead River. The Lower Enchanted Stream and the Dead River are very popular for brook trout and landlocked salmon fishing. Commercial river rafting on the Dead River passes along the shoreline of the Lower Enchanted Tract which also provides emergency access to the river.

Basin Tract: The Basin Tract includes approximately 4.2 miles of frontage along the south side of the Dead River. The Western Mountain Conservation Easement is located on the opposite shore of the Dead River, directly north of the Basin Tract. Commercial river rafting on the Dead River passes along the shoreline of the Basin Tract. Approximately one mile south of the 697-acre Basin Tract there are approximately 10,000 contiguous acres of Conserved Lands encompassing Pierce Pond, Grass Pond, Kilgore Pond, Split Rock Pond, Higher Pond, Dixon Pond, Fernald Pond, and Horseshoe Pond, and the Appalachian Trail Corridor. The Dead River is also highly regarded for brook trout and salmon fishing. Hunting opportunities are another recreational value of the Tract, as is its wetlands.


Western Mountain CE
Area = 457.84 ac
Western Mountain
Area = 560.35 ac
Lower Enchanted Tract
Area = 237.37 ac
Grand Falls Tract
Area = 120.77 ac
Basin Tract
Area = 705.93 ac
Pierce Pond
Area = 6,456.28 ac
Pierce Pond
Area = 1,302.35 ac
Dead River Trail and Conservation Corridor
Area = 660.97 ac
Legend
Conserved Lands
CMP Parcels
New England Clean Energy Connect
Proposed Lands for Conservation
0 0.5 1 Miles
Montreal
Boston
New England Clean Energy Connect
Figure 1-1
Proposed Lands for Conservation
CENTRAL MAINE POWER
12/7/2018


Overview Map
N
No Scale
Indian Stream IF&W
Squaretown IF&W
Carry Brook IF&W
West Forks
Moxie Stream Lower IF&W
East Moxie Township
The Forks Plt 11/9 IF&W
The Forks Plt 11/2 IF&W
The Forks 8/11 IF&W
201
© 2018 Google
Legend
Preservation Parcel
Deer Wintering Area
New England Clean Energy Connect
Figure 1-2
Upper Kennebec DWA
Preservation Parcels
CENTRAL MAINE POWER
12/7/2018

1.2.2.4 Preservation for the Upper Kennebec Deering Wintering Area

As discussed in Section 1.2.1.9, the Upper Kennebec DWA was identified by MDIFW as a biological deer wintering area with nearly four decades of data collection and in an area of the state where wintering deer are vulnerable to deep snow depths. A total of 39.3 acres of tree clearing is proposed within the Upper Kennebec DWA. In addition to establishing deer travel corridors within the ROW in this habitat, described in Section 1.2.2.5, and through consultation with MDIFW, CMP is proposing preservation of lands within the larger Upper Kennebec DWA to mitigate for unavoidable impacts and provide long term protection of this deer wintering area.

CMP has identified 7 parcels for preservation, depicted in Figure 1-2, which CMP owns and which are located in the Upper Kennebec DWA. The table below includes the total acreage for each parcel, and the net acreage, i.e., the acreage of each parcel located within the mapped DWA.

Table 1-6

Parcel Name	Township	Total Acres	Less	Net Acres
The Forks Plt. 11/9	The Forks Plt.	130	5	126
The Forks Plt. 11/2	The Forks Plt.	109	7	102
The Forks Plt. 8/11	The Forks Plt.	233	5	228
Carry Brook	Moxie Gore	43	-	43
Moxie Stream Lower	Moxie Gore	29	-	29
Squaretown	Squaretown Twp	164	-	164
Indian Stream	Indian Stream Twp	25	-	25
			Total	**717**

CMP proposes to convey these properties to the Maine Bureau of Public Lands ("BPL") to be managed as deer wintering areas in perpetuity. The Forks Plt. 11/9 lot abuts the existing Cold Stream BPL parcel and the 11/2 and 8/11 lots are in close proximity and abut each other. The Moxie Stream parcel is located in the center of the mapped DWA and contains a segment of Moxie Stream. The Squaretown and Indian Stream parcels are in the northern section of the DWA. The properties contain softwood and mixed forest stands, preferred habitat for deer during the winter months.

CMP previously agreed to allow a multi-use recreational trail across The Forks Plt. Parcels to connect the Forks area trail systems (formerly the FAST Trail, Ridge Trail Section) from the Flood Road to the center

of town, as part of a May 30, 2018 Memorandum of Understanding ("MOU") between CMP and the Western Mountain & Rivers Corporation ("WM&RC"). CMP will work with MDIFW to determine the specific construction, dimensions, location, and uses of this trail, such that the parcels retain their function and value as deer wintering areas.

MDIFW recommended that to appropriately mitigate for forest conversion within the Kennebec DWA, CMP should conserve land at an 8:1 ratio, which equals approximately 315 acres based on 39.3 acres of forest conversion within the DWA. These parcels provide significantly more than the recommended 8:1 ratio, totaling 717 acres, an excess of 402 acres, and a ratio of greater than 18:1.

1.2.2.5 Wildlife Habitat Protection and Enhancement

COLDWATER FISHERY MITIGATION

Coldwater fishery habitat is prevalent in the northern region of the Project. In fact, MDIFW has acknowledged, in an email from Robert Stratton – MDIFW Program Support Supervisor, that "viable brook trout habitat is not lacking in this region to the extent it might be elsewhere". Regardless, in addition to the 100 foot riparian buffer discussed in Section 1.2.1.9 above and the coldwater fishery habitat proposed for preservation, CMP is proposing the following measures to mitigate for coldwater fishery impacts and to improve coldwater fisheries habitat.

CMP has developed a culvert replacement program, in order to improve the habitat connectivity of coldwater fisheries in a number of locations where improperly installed, undersized, or damaged culverts are currently known to exist (Exhibit 1-11) . In addition, within the Project right-of-way, CMP will replace existing culverts found to be damaged, installed improperly, or non-functioning. CMP will install replacement culverts consistent with Stream Smart Principles to improve or maintain habitat connectivity. In addition to replacing culverts within CMP-controlled lands associated with the Project, CMP will dedicate $200,000, sufficient to replace approximately 20-35 culverts on lands outside of CMP's ownership. CMP proposes to work with MDEP, MDIFW, and interested environmental non-governmental organizations, and to grant this money to the appropriate entity or entities who can identify those culverts most beneficial to replace, and who will manage and oversee their replacement. Additionally, CMP proposes a payment in the amount of $180,000 to the Maine Endangered and Nongame Wildlife Fund as additional mitigation for unavoidable indirect coldwater fishery impacts.

ROARING BROOK MAYFLY AND NORTHERN SPRING SALAMANDER HABITAT AVOIDANCE AND COMPENSATION

CMP executed surveys for Roaring Brook Mayfly and Northern Spring Salamander in the Fall of 2018. CMP will attempt to avoid crossing waterbodies with known occurrences of these two species. In the event alternative access cannot be found, CMP will coordinate with MDIFW regarding the location and placement of the equipment bridge prior to its installation. An environmental inspector will be present during installation of equipment bridges in these locations.

Through consultation with MDIFW, CMP agreed to modify its project design to include taller structures near Mountain Brook in Johnson Mountain Twp and Gold Brook in Appleton Twp to avoid and minimize impacts by allowing full height canopy to be retained within the conservation management areas

associated with rare species in these locations. MDIFW agreed that for unavoidable impacts to all other streams containing one or both of these species, a payment to the Maine Endangered and Nongame Wildlife Fund, using the MDEP ILF calculation (absent the wetland restoration and enhancement cost) at an 8:1 ratio is appropriate mitigation. As a result, CMP is proposing a contribution to the Maine Endangered and Nongame Wildlife Fund in the amount of $469,790.63.

HABITAT ENHANCEMENT FOR DEER WINTERING AREAS

The NECEC will have unavoidable forested conversion impacts to DWA, as discussed in in Section 1.2.1.9. In the co-located portions of the project, CMP has minimized impact by siting the HVDC line in existing corridors, thus requiring minimal additional clearing to accommodate the line. Only one deer wintering area, the Upper Kennebec DWA, was identified in Segment 1 (new corridor).

The Upper Kennebec DWA will require 39.3 acres of forest conversion. CMP's HDD design change at the Kennebec River has minimized clearing impact to this resource by preserving approximately 2,610 linear feet between the two termination stations and the Kennebec River. There will be no tree clearing activities in these areas. These areas will continue to function as deer travel corridors, providing habitat connectivity, within the riparian buffer of the river.

The remainder of the Kennebec DWA consists of 10,179 linear feet of right-of-way, and through consultation with the MDIFW, CMP has identified an additional 8 travel corridors to maintain habitat connectivity within the DWA. These additional 8 travel corridors, totaling approximately 3,279 linear feet (32.2% of the cleared DWA traversed), will maintain connectivity for deer travel in the winter months. CMP will manage these travel corridors as described Exhibits 10-1 and 10-2 of the Site Law Application (Revised December 2018). These management standards were developed in close consultation with MDIFW.

CMP also proposes, to enhance wildlife habitat in and adjacent to DWA, to revegetate disturbed soils in upland areas with a Wildlife Seed Mix, promoted by SAM and developed with Maine Seed Company. This wildlife friendly seed mix will offer nutrition to deer and other wildlife such as moose, rabbits, ruffed grouse, geese, and wild turkeys during late fall and early spring when woods forage is sparse. The

tender shoots derived from SAM's seed mix offer forage that is high in calories and protein, and deer find them to be highly digestible.[4]

Maine Seed Company's wildlife friendly seed mix contains highly nutritious cool season perennial grasses and clover that deer are attracted to in late fall and early spring. Other benefits[5] of the seed mix include:

- More wildlife-friendly than "conservation mixes"
- Provides superior deer nutrition immediately before and after the winter yarding season
- Grasses remain green and highly palatable into late fall/early winter, even under snow
- Contains five times the clover of "conservation mixes"
- White and red clover attract wildlife over most of the growing season
- Adaptable to a wide array of sites and soil conditions
- Cost effective - small seed size broadcast at only 25 lb./acre
- Plantings last several years with minimal maintenance.

Additionally, CMP worked with SAM during the Maine Power Reliability Program ("MPRP") to re-establish vegetation along several experimental plots near DWA and pastures using their Wildlife Seed Mix. The contractors at the time expressed considerable success regarding seed germination and vegetative cover as compared to other typical "conservation mixes." For the NECEC, CMP will require a Wildlife Seed Mix to be applied in and adjacent to DWAs. In addition, for unavoidable clearing impacts to the DWA in Segment 1 (adjacent to the upper Kennebec River), CMP is proposing a payment to the Maine Endangered and Nongame Wildlife Fund in the amount of $41,000.

1.2.2.6 Rare Plants and Unique Natural Communities

The NECEC will have unavoidable impacts to approximately 9.3 acres of unique natural communities, as discussed in Section 1.2.1.9. MNAP has not yet assigned a quality ranking to the unique natural communities that will be impacted by the project. In lieu of MNAP's formal ranking of these communities, CMP proposes to compensate impacts to these communities at the maximum 8:1 ratio consistent with the preservation ratio defined in Chapter 310 § 5C5(a-c).

[4] Lavigne, G., Experimental Wildlife Seed Mix Available through SAM, Maine Forest Products Council, June 2013.
[5] Advertisement for Wildlife See Mix, SAM and Maine Seed Company, available at: http://sportsmansallianceofmaine.org/archive/archive_files/2016/SAM_Seed_2016_ad.pdf

As mitigation for this impact CMP proposes a contribution to the Maine Natural Areas Conservation Fund in the amount of $129,634.56 or the preservation lands containing similar unique natural communities at an 8:1 ratio. CMP developed the fee amount proposed by using the MDEP in-lieu fee calculation, absent the restoration and enhancement cost for wetlands, using an 8:1 multiplier.

1.3 Conclusion

The NECEC Project will result in unavoidable temporary and permanent impacts to protected natural resources including freshwater wetlands, and is subject to the compensation requirements of the Wetlands and Waterbodies and Protection Rules (Chapter 310) and Significant Wildlife Habitat Rules (Chapter 335) of the Natural Resources Protection Act (38 M.R.S. §480-A-FF, and the Final Rule for Compensatory Mitigation for Losses of Aquatic Resources (40 CFR §230) pursuant to Section 404 of the U.S. Clean Water Act (33 U.S.C. § 1344).

Compensation for NECEC Project impacts, includes 2,793 acres of preservation or conservation; a $4,268,326.22 in-lieu fee payment; a $649,790.63 payment to the Maine Endangered and Nongame Wildlife Fund; a $200,000 commitment for culvert replacements; a $129,634.56 payment to the Maine Natural Areas Conservation Fund (or land preservation); and, implementation of various wildlife habitat enhancement measures. The total land preservation and $5,247,751.41 in monetary compensation surpasses requirements set forth in these compensation Rules so that national goals of No Net Loss, articulated in a February 6, 1990 Memorandum of Agreement between the US EPA and US Army Corps of Engineers Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines, are fulfilled.

Exhibit 1-1: NECEC Mitigation Guidance: Compensation Ratios and Adjustments Per Agency

Exhibit 1-1: NECEC Mitigation Guidance: Compensation Ratios and Adjustments Per Agency

Impact Type		In Lieu (ILF) Fee Compensation (MDEP & USACE)[1]		Preservation Ratios[2]		Adjustments to Standard Ratios/Amounts[3]	
		Formula	Multiplier	MDEP	USACE	DEP	USACE
Wetland Impact	Permanent Fill in Wetlands (Non-WOSS)	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	8:1	30:1	100%	100%
	Permanent Fill in WOSS	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	2	8:1	30:1	100%	100%
	Temporary Wetland Fill in PEM (<18 months)	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	USACE only	20:1	USACE only	5%
	Temporary Wetland Fill in PSS[4] (<18 months)	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	USACE only	20:1	USACE only	10%
	Permanent Forested Wetland Conversion	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	USACE only	20:1	USACE only	15%
Impact to MDEP Significant Vernal Pool Habitat (250')	Permanent Wetland Fill in SVPH	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	2	8:1	30:1	100%	100%
	Permanent Forested Wetland Conversion SVPH	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	8:1	20:1	60%	15%
	Permanent Upland Fill in SVPH	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	8:1	DEP only	100%	DEP only
	Permanent Upland Conversion in SVPH	Avg. Assessed Land Value/Sq. Ft	1	8:1	DEP only	60%	DEP only
Impact to USACE Jurisdictional Vernal Pool Habitat	Direct Fill in Vernal Pool Depression or 100' Envelope	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	Corps only	n/a	Corps only	100%
	High Value (750')	(13,000 Sq. ft x 5) X (Natural Resource Enhancement & Restoration Cost + Avg. Assessed Land Value)	1	Corps only	1 high: 5 med/high	Corps only	5%
	Medium Value (750')	(13,000 Sq. ft x 3) X (Natural Resource Enhancement & Restoration Cost + Avg. Assessed Land Value)	1	Corps only	1 med: 3 med/high	Corps only	5%
	Low Value (750')	(13,000 Sq. ft x 1) X (Natural Resource Enhancement & Restoration Cost + Avg. Assessed Land Value)	1	Corps only	1 low: 1 med/high	Corps only	5%
Inland Wading Bird & Waterfowl Habitat (IWWH)	Permanent Wetland Fill in IWWH	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	2	8:1	30:1	100%	100%
	Permanent Forested Wetland Conversion IWWH	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	8:1	20:1	60%	15%
	Permanent Upland Fill in IWWH	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	8:1	DEP only	100%	DEP only
	Permanent Upland Conversion in IWWH	Avg. Assessed Land Value/Sq. Ft	1	8:1	DEP only	60%	DEP only

[1] Source: USACE New England District Compensatory Mitigation Guidance 2016, DEP Fact Sheet In Lieu Fee Compensation Program Rev 8/13/2015

[2] Source: USACE New England District Compensatory Mitigation Guidance 2016, MDEP NRPA Chapter 335

3 Based on ratios and adjustments within the DEP Fact Sheet-In-Lieu Fee Compensation Program, 2016 USACE New England District Compensatory Mitigation Guidance and discussions held during the Compensation Working Session on 4/3/18, with the USACE and MDEP.

[4] Given that hydrology or significant soil disturbance will not result, all forested wetlands will convert to scrub-shrub wetland.

Exhibit 1-2: MDEP Letter RE: *Compensation for significant vernal pool habitats within transmission line corridors*, April 25, 2017

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

April 25, 2017

Adam Marquis
Central Maine Power Company
83 Edison Drive
Augusta, ME 04336

Re: Compensation for significant vernal pool impacts within transmission line corridors

Dear Mr. Marquis:

As part of Central Maine Power Company's efforts to maintain and improve its transmission capabilities, there are times when new clearing and line placement occurs within significant vernal pool habitat (SVP) as defined in the *Natural Resources Protection Act*, 38 M.R.S. § 480-A et seq. and Chapter 335 *Significant Wildlife Habitat* rules, 06-096 C.M.R. ch. 335.

During the course of permitting for the Maine Power Reliability Program project, the Department determined in consultation with the Department of Inland Fisheries and Wildlife that impacts to SVPs resulting solely from vegetation conversion from forested to scrub/shrub could be compensated for at a rate less than 100%. During that project, the Department determined that compensation at a rate of 60% of that required by Chapter 310 *Wetlands and Waterbodies Protection Rules* and the Department's *In Lieu Fee Compensation Program,* would be adequate to offset the loss in functions and values to SVPs for vegetation conversion only.

This letter is to inform you that the Department will continue to assess compensation at a rate of 60% for vegetation conversion within transmission line corridors should compensation be required and barring any unforeseen circumstance where the facts of the situation would warrant a different rate based on the loss of functions and values of a significant vernal pool habitat.

I hope this letter serves yours needs. Feel free to call me at 207-446-1611 should you have any questions or need further clarification.

Sincerely,

Michael K. Mullen, Director
Land Division, Bureau of Land Resources

cc. Alison Sirois, SMRO Regional Manager
Dawn Hallowell, CMRO Regional Manager
Jim Beyer, EMRO and NMRO Regional Manager

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ite: www.maine.gov/dep

Exhibit 1-3: Musson Group Letter Report
***NECEC Compensation Plan Preservation Parcels*, August 10, 2018**

THE MUSSON GROUP Planning & Economic Development · Permitting · Project Management

August 10, 2018

Mr. Jay Clement
US Army Corps of Engineers, Maine Project Office
442 Civic Center Drive, Suite 350
Augusta, Maine 04330

RE: NECEC Compensation Plan – Preservation Parcels

Dear Mr. Clement,

We have considered your May 3, 2018 comments regarding the information on the potential preservation tracts that we sent to you and Jim Beyer on April 29, 2018, as well as Jim's June 1, 2018 comments. Based on those comments, as discussed below, we eliminated several parcels from our compensation plan for purposes of satisfying Army Corps requirements, though we are including those parcels as part of our compensation plan for the DEP, to go above and beyond the DEP's minimum requirements and to offset unavoidable Project impacts that are not otherwise captured through its compensation plan.

The parcels that we eliminated from our compensation plan for purposes of satisfying Corps requirements are:

1. Grand Falls Tract;
2. Basin Tract; and
3. Lower Enchanted Tract.

The parcels that we believe satisfy the Corps' requirements, and which are discussed below, are:

1. Flagstaff Lake Tract;
2. Little Jimmie Pond-Harwood Tract; and
3. Pooler Pond Tract.

Please see Attachment A, which is a map showing all compensation tract locations. Individual parcel maps also are attached, at Attachments B-G, showing the location and development district or zoning of each parcel.

According to the Corps' 2016 New England District Compensatory Mitigation Guidance ("Mitigation Guidance"), preservation as mitigation "does reduce the threat of future impacts and may stem future aquatic resource degradation." Mitigation Guidance, p. 10. Furthermore, the Corps "encourages a combination of upland and aquatic resource preservation over aquatic resources-only preservation to offer better protection of aquatic functions," as state laws may not protect non-wetlands whose degradation would affect aquatic resources. Mitigation Guidance, p. 11. Pursuant to 33 C.F.R. § 332.3(h), preservation may be used to provide compensatory mitigation when:

(i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed;

(ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available;

(iii) Preservation is determined by the district engineer to be appropriate and practicable;

(iv) The resources are under threat of destruction or adverse modifications; and

(v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust).

Each of the potential preservation tracts (Flagstaff Lake Tract, Little Jimmie Pond-Harwood Tract, and Pooler Pond Tract) that we are including in our plan meets all of these criteria and provides important physical, chemical, or biological functions for the watershed in which it is located. Our analysis of the applicable regulatory framework and regional trends shows that each of these three tracts is open to development in ways that could damage these important functions and thereby threaten to adversely modify the ecological sustainability of the watershed.

On the following pages we offer further analysis on each tract demonstrating that preservation may be used here to provide compensatory mitigation[1] because these parcels satisfy the criteria set forth in 33 C.F.R. § 332.3(h).

There are common themes that apply to each tract, including:

- **Access.** All three tracts – Flagstaff Lake, Little Jimmie Pond-Harwood, and Pooler Pond – are accessible via public roads, addressing the access concern that you and Jim raised in your comments. While Maine has a strong tradition of open access for members of the public to use private property for a wide variety of recreational activities free of charge, having direct access via a public road increases the likelihood of development.

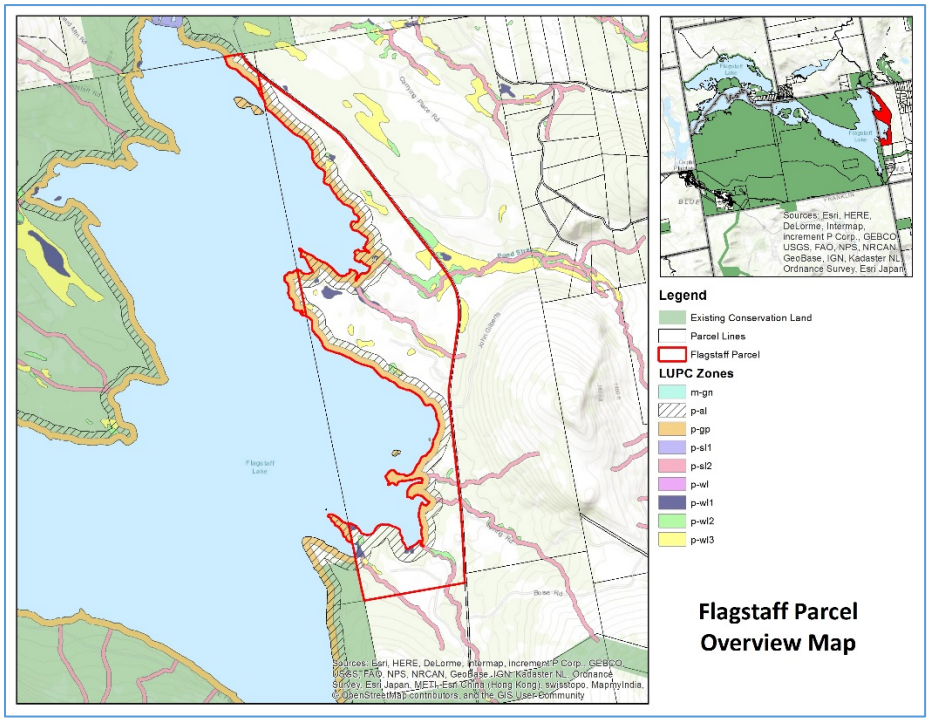
- **CMP's Development/Land Sale Policy.** Historically CMP's land policy has been to secure and retain certain surplus land to be offered as potential compensation (to be preserved in perpetuity) in order to offset unavoidable environmental impacts of future projects, including the NECEC Project. However, if regulatory agencies determine that specific tracts would not

[1] The Corps may consider mitigation as part of its Section 404 permitting, and because the Preferred Alternative is the least environmentally damaging practicable alternative, this compensatory mitigation may be considered and incorporated as a condition to the permit. *See Butte Environmental Council v. U.S. Army Corps of Engineers*, 620 F.3d 936, 946-947 (9th Cir. 2010) (rejecting plaintiff's contention that the USACE allowed the adoption of off-site mitigation measures to relieve the City of its responsibility to adopt the least environmentally damaging practicable alternative, and finding instead that while the Corps made compensatory mitigation a condition of the permit, "there is no indication that such mitigation was meant as an obligation in place of the City's responsibility to adopt the least environmentally damaging practicable alternative, as opposed to an obligation in addition to it."); *Florida Keys Citizens Coalition, Inc. v. U.S. Army Corps of Engineers*, 374 F. Supp. 2d 1116, 1132, 1134-35 (S.D. Fla. 2005) (upholding the Corps's Section 404 permit granted upon finding that "[t]he project as proposed with minimization efforts and mitigation ... is the least damaging practicable alternative.").

qualify as preservation/compensatory mitigation tracts because they are not, for example, under threat of destruction or adverse modification, CMP may consider offering these tracts for sale.

FLAGSTAFF LAKE TRACT

The Flagstaff Lake Tract (FLT) is approximately 831 acres located on the largely undeveloped eastern end of Flagstaff Lake in northwest Somerset County. The parcel has 4 miles of frontage along the Long Falls Dam Road, which is a paved public road and the main public access road to this area. The lake side of the property runs along the shoreline for approximately 8.5 miles. The property is defined by the 1150-foot contour line, which is just inland of the full lake elevation of 1146 feet. The land between the lake and the 1150-foot contour line is part of the Brookfield hydro project, but CMP has deeded access to this area that includes crossing rights and boat storage. Although the FLT is subject to flowage rights, such rights apply only to the extent to which such land has been historically flowed by the dam. Because the extent of such historical flowage is limited, and given the FLT's access right to Flagstaff Lake, the FLT could be developed at and above the highest typical and historical flowage elevations.



While your comments raise concern with the "level of human activity" at this parcel, echoed by Jim, existing development on the parcel is limited. Maine Huts and Trails (MHT) has constructed a popular lodge known as the Flagstaff Lake Huts along the northern shoreline and MHT maintains a trail network that crosses the property. The lodge and trail have been sited with sensitivity to the existing resources of the property, including wetlands and habitat. The facilities are operated to coexist with the important functions and values of the site and region. There is also one small leased camp near the middle of the property.

You also raised concern with this parcel's "tie in" to other protected parcels, a concern that Jim also noted. As discussed below, the FLT lies between the Maine Bureau of Parks and Land (MBPL) Dead River Peninsula property and Bigelow Preserve. Preservation of the FLT would link these two areas and close

a now open gap within the conservation land for this important part of the State of Maine, including over 8.5 miles of shoreline along Flagstaff Lake.

The property is located within Maine's Unorganized Territory and is regulated by the Land Use Planning Commission (LUPC). Much of the parcel is within a General Management Subdistrict (M-GN) where, in accordance to LUPC's Chapter 10 provisions, various land uses are permissible. Uses permitted without a permit include campsites, accessory structures, hand carry launches, trailed ramps, and forest management. Land uses that can be allowed through permitting include residential construction, subdivisions, and recreational lodging facilities. The parcel also includes the Wetland Protection Subdistrict (P-WL), including Wetlands of Special Significance (P-WL1, i.e., WOSS), Scrub-Shrub Wetlands (P-WL2, i.e., PSS), and Forested Wetlands (P-WL3, i.e., PFO). Other Protection Subdistricts on the FLT include Accessible Lake (P-AL), Great Pond (P-GP), Shoreland (P-SL2,), and Unusual Area (P-UA).

Physical, chemical, or biological functions

The existing functions and values of the FLT include the following (for more information please see the Natural Resources report from Power Engineers):

- *Lake Character*: Flagstaff Lake has been classified as a lake of statewide significance by LUPC due to its exceptional values. The Wildlands Lake Assessment identified it as having an outstanding resource rating for fisheries and for wildlife. It was rated as significant for scenic and shore character.

- *Wetland Resources*: FLT contains approximately 412 acres of a diverse mix of wetland types (PFO, PSS, PEM) at the center of which is a high value IWWH. In addition to the lacustrine shoreline, there is also approximately 9,800 linear feet of named and unnamed perennial and intermittent streams that cross the tract and are tributaries to Flagstaff Lake.

Flagstaff Lake Tract Summary	
Size	831.39 acres
NWI Wetlands	84 acres
Mapped Wetlands (delineated/GPS Identified)	412 acres
Inland Wading Bird/Waterfowl Habitat	30 acres
Upland Buffer Area	420 acres
Streams	9,810 linear feet
Non-Significant Vernal Pool Types	
1 PSVP 7 VPs 20 CVPs 39 PVPs	

- *Groundwater Recharge:* There are no Maine Geological Survey mapped sand and gravel aquifers on the FLT property. However, an esker at the south end of the lake is identified as a Significant Sand and Gravel Aquifer (MGS OF No. 01-132). The FLT is part of the surface hydrologic system draining into the lake and therefore helps to recharge this downgradient aquifer.

- *Fish Habitat:* Landlocked salmon, brook trout, yellow perch, chain pickerel, and an assortment of baitfish inhabit Flagstaff Lake and, although marginal for coldwater gamefish (MDIFW, 1988), in 2017 it was stocked with approximately 3,400, 7-to-8 inch landlocked salmon and brook trout to support the lake fishery for recreational anglers (MDIFW, 2018). Freshwater mussels observed

downstream along muddy shorelines of the Dead River are also likely to inhabit similar substrate in Flagstaff Lake.

- *Wildlife Habitat: M*oose, bear, deer, beaver, otter, mink, and other smaller mammals are abundant on FLT. In addition, FLT provides high quality habitat for a wide variety of raptors, waterfowl, gamebirds, passerines, songbirds, amphibians, reptiles, and insects. Habitat is further enhanced by the presence of a high rated IWWH (ID UMO-9951) near the center of the tract.

- *Recreation/Preservation:* FLT is at the crossroads of the MHT, Appalachian, and Northern Forest Canoe trail network traveled by day- and through-hikers and is also used for camping, cross-country skiing, and snowshoeing. Fishing and boating are widely used offerings of Flagstaff Lake, and hunting opportunities are also provided by FLT. When combined with the adjacent conservation lands, the FLT is part of a large conservation area comprising over 42,000 acres and over 8.5 miles of shoreline.

Overall, the FLT includes a combination of upland and aquatic resource preservation, rather than aquatic resources-only preservation, to offer better protection of aquatic functions (as state laws may not protect non-wetlands whose degradation would affect aquatic resources).

Ecological sustainability of the watershed

The resources listed above contribute significantly to the sustainability of the watershed. Palustrine wetlands along named and unnamed streams crossing FLT help to stabilize adjoining upland, thereby limiting and protecting lake degradation. The wetlands contribute to water quality in the lake as well as the downgradient aquifer. The tract consists of a variety of vegetative communities that provide different cover types, habitat characteristics, and ecological functions. Due to the large westward fetch of Flagstaff Lake, lacustrine and palustrine vegetated wetlands aligned along the east shore of the lake buffer and protect the adjoining shoreline from prevailing wind generated waves.

The FLT is within Maine's Western Mountain area, which is known for its natural resources and recreational opportunities. Multiple recreational trails, including the Appalachian Trail and the Northern Forest Canoe Trail, can be accessed from the FLT. The property lies between, and therefore links, the Maine Bureau of Parks and Land (MBPL) Dead River Peninsula property and the 36,000 acres of Public Land making up the Bigelow Preserve. Bigelow Mountain, with a highest elevation of 4,150 feet, and the view focal point from the property, is designated as a National Natural Landmark by the U.S. Department of the Interior.

Appropriateness and practicability of preservation

Preservation of FLT will allow for permanent protection from development and will preserve the existing wildlife habitat, water quality benefits, vernal pool habitat, and recreational/educational opportunities that are an integral component of the watershed. Approximately half of the 831.39 acre tract has a diverse mix of wetland types (PFO, PSS, PEM) at the center of which is a high value IWWH. There are approximately 9,800 linear feet of named and unnamed perennial and intermittent streams that cross the tract and are tributaries to Flagstaff Lake.

In addition, as noted in the section above, the FLT lies wholly within the 50,000-acre Bigelow Mountain-Flagstaff Lake-North Branch Dead River Focus Area. These are areas of Statewide Ecological Significance as identified by MNAP, MDIFW, MDMR, USFWS, TNC, Maine Audubon, and the Maine Coast Heritage Trust. This classification is based on the abundance of recreational opportunities and natural features and landscapes of exceptional ecological value. Preservation of this Tract along approximately 8.5 miles of the east shore of Flagstaff Lake will close a now open link between the conserved Bigelow Preserve to the south and the Dead River Peninsula to the north.

Preservation of this parcel is appropriate as it makes sense in the watershed context, provides protection of important aquatic resources, and is sustainable in the long-term.

Threat of destruction or adverse modifications

Like many areas in Maine, Somerset County has experienced population and economic decline, primarily due to the loss of manufacturing. However, in recent years Somerset County has shifted focus toward building a regional economy that takes advantage of the area's vast natural resources. Economic and community initiatives, such as the Somerset County Rural Cultural Plan, are working to shift the focus of growth and community development toward cultural opportunities, arts, and recreation. At the heart of these initiatives is the need to attract a steady flow of people to help preserve a sustainable population and economic base.

While removed from the core communities along Route 201, the FLT is positioned in a location that offers recreation-oriented development in the form of residential lots and/or recreational lodging facilities much like the existing MHT Flagstaff Lodge. The site has over 400 acres of upland available for development and offers over 8 miles of shoreline access on Flagstaff lake.

Residential Development. It is likely that any residential development on this site would take the form of single lots over a period of time rather than a full subdivision. Under current rules, landowners are allowed to create 2 lots every 5 years in each township without subdivision approval. This is known commonly as the "2 in 5 exemption". The LUPC has recognized that the "2 in 5" subdivision exemption could have negative implications to the principal values of the Unorganized Territory. These values, which include unique high-value natural resources and a unique natural character, are present in the FLT and surrounding lands. In any development analysis, the existing 2 in 5 exemption could result in several new lots, which would be sited in scattered and haphazard developments. This type of piecemeal development results in the loss of high value shoreline, forest fragmentation, and loss of recreational values.

Recreational Lodging Development. The existing rules would allow the development of a recreational lodging facility. There are a several different scales of Recreational Lodging Facility that could be approved on the FLT. Within 500 feet of the shoreline the Chapter 10 rules allow for facilities that could accommodate a maximum overnight capacity of up to 100 people. Outside this area, the maximum size increases to allow a principal building of up to 12,000 SF and an overnight occupancy of up to 150 people. In addition to the risks of losing high value shoreline and of habitat fragmentation, one over-arching result of these types of developments is that the nature of the area could shift from a "backcountry" experience to an intensively managed recreation destination. This change would be contrary to the purposes for which the adjacent conservation parcels were established.

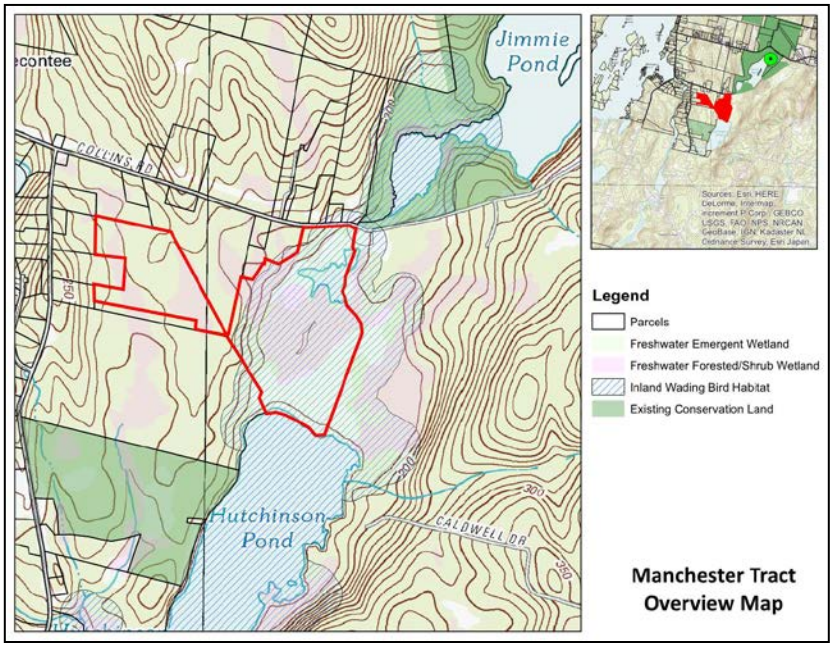
Forest Management Activities. According to the Forest Operations Notifications (FONS) from the last five and one-half years, within a 20-mile buffer of the FLT, the Maine Forest Service has received 784 notifications for forest management activities totaling 125,918.69 harvest acres. These notifications demonstrate that if this tract is determined to not qualify as a preservation/compensatory mitigation tract, and even if it were not sold for development, it would be under threat of destruction or adverse modification through forest management, which is common in this area.

In short, the parcel is open to development in ways that could damage the functions and values of wetland resources located there, and preservation would reduce the threat of future impacts and may stem future aquatic resource degradation.

Legal instrument
As part of the compensation package for NECEC, the entire tract will be permanently protected via a conservation easement or similar document.

LITTLE JIMMIE POND-HARWOOD TRACT

The Little Jimmie Pond-Harwood Tract (LJPT) is comprised of two separate parcels totaling approximately 110 acres. The property is accessible from the Collins Road, which is a public street in the Town of Manchester (about 6 miles from downtown Augusta). The LJPT has approximately 310 feet of road frontage along the Collins Road and approximately 900 feet of frontage on Hutchinson Pond.



The northern side of tract shares approximately 1,200-feet with the 886-acre Jamie's (Jimmie's) Pond Wildlife Management Area (WMA), which is managed by the Maine Department of Inland Fisheries and Wildlife (MDIFW). Jimmie's Pond is approximately 107 acres and is 75 feet deep. It is stocked with brook trout and splake. It also has small and large mouth bass and pickerel. The property provides habitat to numerous birds, including herons, hawks, loons, osprey and a wide variety of songbirds. Jamie's Pond is undeveloped but does provide carry-in boat access and six miles of hiking/cross-country skiing trails, which, with the surrounding woods, make Jamie's Pond a unique natural getaway in Central Maine. MDIFW manages the area primarily for wildlife.

LJPT is currently undeveloped but is actively used for recreational activities and hunting. The property is located within the Town's Rural Residential Zone, which allows for a mixture of uses including residential dwelling and commercial activities (with conditional use approval from the Town). Areas within 250 feet of the pond are in a Resource Protection Zone. LJPT was among the parcels considered in 2008 and 2009 for use in the compensation plan for the Maine Power Reliability Program (MPRP) project, and a natural resource inventory was completed on this parcel at that time.

Physical, chemical, or biological functions for the watershed

The existing functions and values of the LJPT include the following (for more information please see the Natural Resources report from Power Engineers):

- *Lake Character*: Hutchinson Pond has been classified by Maine DEP as a lake which is most at risk from new development. According to the Town's Comprehensive Plan, water quality is listed as "moderate-sensitive" and it would be very susceptible to phosphorous loading if not for its rapid flushing rate (seven flushes per year). The Kennebec Land Trust owns a 105-acre conservation parcel on Hutchinson Pond 2,765 feet of stream frontage and 1600 feet of undeveloped shoreline. They have recreational trails and access to the Pond. Nearby Jimmies Pond, which is connected to Hutchinson Pond by a small stream and wetland complex, contains a mixture of open water, shallow and deep marsh, shrub swamp, and flooded woodland. The area provides habitat for numerous species of waterfowl and wading birds, aquatic furbearers and other wildlife species. The 808 acres of upland habitat is predominantly mixed forest. The pond's shoreline remains largely undeveloped, making it popular with local anglers seeking to enjoy the unspoiled setting. It's also a quiet and scenic canoe or kayak.

- *Wetland Resources*: Approximately 66.46 acres (62%) of the 110 total acres of the LJPT were identified as wetland. The primary wetland system on the eastern parcel is a large emergent marsh (PEM) located on the northern end of Hutchinson Pond which extends off site and to the south from the southeast corner of the parcel. The portion of the marsh located on the LJPT totals approximately 50.5 acres. A perennial stream flows from the northern property boundary through the large marsh and into Hutchinson Pond (L1UB). The stream flow is relatively low velocity that has further slowed to a ponded condition by an active beaver dam. The marsh is surrounded by a perimeter of scrub-shrub wetland (PSS) that transitions into forested wetland in most locations before ultimately becoming upland forest both along the western marsh edge and within the large section of upland in the center of the marsh.

Little Jimmie Pont-Harwood Tract Summary	
Size	109.77 acres
Wetland Areas	66.97 acres
Inland Wading Bird/Waterfowl Habitat	75 acres
Upland Buffer Area	42.08 acres
Streams	3,030 linear feet
Vernal Pool Types	
2 PSVPs (42.80 acres of potential Critical Terrestrial Habitat) 6 VPs 2 ABA	

The most recent FIRM for this part of Manchester (Community Panel Nos. 23011 C0494D, C0513D effective date June 6, 2011), prepared FEMA identifies a 100-year floodplain associated with Inlet Stream that encompasses the wetland

southward from Collins Road to Hutchinson Pond (HP). On the west side of the parcel wetlands hydrologically connected to HP therefore also contribute to the function of flood flow alteration

- *Groundwater Recharge:* Groundwater recharge was noted as a primary function for the black spruce bog in the west parcel of LJPT as well as in the smaller isolated, seasonally flooded wetlands located throughout the property. Groundwater discharge was noted in the forested wetlands that are connected to the large emergent marsh in the east parcel as well as the black spruce bog and larger wetland system off-site to the west of LJPT.

- *Fish Habitat:* Surveys conducted by MDIFW indicate Hutchinson Pond has abundant warm water fish habitat, including pickerel and largemouth bass, white and yellow perch, pumpkinseed sunfish, baitfish and American eel. Brook trout are stocked annually in Jimmie Pond to the north of the parcel and likely migrate south into Hutchinson Pond during spring and fall when water temperatures are adequate.

- *Wildlife Habitat:* The variety of vegetation provides suitable habitat for a multitude of birds, reptiles, amphibians, insects, and mammals. The large marsh on the eastern part of the property has been mapped as IWWH (ID 031056) and provides outstanding habitat for species of birds. Deer Wintering Areas have also been identified on Beginning with Habitat maps in the forested area between the east and west parcels that comprise the LJPT. Upland areas associated with the wetlands provide additional habitat for various species which utilize a mix of wetland and upland habitats or those that typically utilize uplands as their primary habitat.

- *Recreation/Preservation:* The property is in close proximity to the greater Augusta area as well as between a WMA to the north and an existing conservation land parcel to the south. Numerous recreational opportunities are available on the property including, fishing, hunting, hiking, boating, and bird watching. The quality and type of wetlands on the property, soil types, diverse vegetation communities, and presence of numerous vernal pools would provide a vast array of educational opportunities for the public.

The LJHP Tract includes a combination of upland and aquatic resource preservation, rather than aquatic resources-only preservation, to offer better protection of aquatic functions (as state laws may not protect non-wetlands whose degradation would affect aquatic resources).

Ecological sustainability of the watershed

The resources listed above contribute significantly to the watershed. The LJPT is within the Kennebec River watershed and is connected hydrologically via the outlet of Hutchinson Pond, which drains into Cobbosseecontee Stream and ultimately connects with the Kennebec River approximately 10.5 downstream from the Tract. Immediately to the east of the tract on the opposite side of Benson Road is Beginning with Habitat's Cobbossee–Annabessacook Focus Area (BWH, 2018). The focus area is comprised of extensive areas of wetlands that provide habitat for wintering deer, rare species, and outstanding habitat for wading birds and waterfowl. Storm water runoff from uplands and small ephemeral streams that drain into the wetlands is dissipated within the organic soils and dense vegetation where nutrients carried with the runoff are processed into other forms and transferred to higher trophic levels in the ecosystem.

Open water and emergent marsh habitats in the west parcel have suitable organic and/or fine grained soils, slow moving water, variable water depths, flood storage capacity, and dense vegetation that are important and effective aspects of sediment, toxicant, and pathogen retention. The organic soils and long duration water retention time present in the black spruce bog in the west parcel also are important factors in sediment, toxicant, and pathogen reduction.

The emergent marsh in the east parcel is in a mapped floodplain and contains a riparian buffer area comprised of scrub-shrub wetland that transitions into forested wetland. The wetlands around the perimeter of the marsh are an important component of floodwater attenuation and help to provide overall stability for downstream water resources such as Hutchinson Pond.

Appropriateness and practicability of preservation

Preservation of this property will include 66.97 acres of diverse wetland habitat, 3,030 linear feet of streams, eight (8) vernal pools and 42.80 acres of vernal pool critical terrestrial habitat. Preservation of this tract will allow for permanent protection from development and will preserve the existing recreational opportunities, wildlife habitat, water quality benefits, vernal pool habitat, and educational opportunities of the LJPT.

The location of the LJPT in proximity to ecological focus areas, conservation lands, and protected wildlife areas provides enhanced value to the property from a protected land standpoint, primarily due to connectivity with these other parcels that will provide greater habitat functionality at a landscape scale. The current lack of development in the surrounding landscape and proximity to protected lands provides large buffer areas which augment the overall ecological functions of the property, specifically the diverse set of wetland systems located on site.

Preservation of this parcel is appropriate as it makes sense in the watershed context, provides protection of important aquatic resources, and is sustainable in the long-term.

Threat of destruction or adverse modifications

Development in this part of the Town of Manchester is primarily residential homes with small fields and secondary roads scattered throughout the area. Hutchinson Pond itself is lightly developed. Considering the property location within close proximity to Augusta (approximately 12.7 miles from Exit 109 on I-95 in Augusta), there are attractive options for future development

It is likely that any development on this parcel would be residential similar to the existing pattern of development in the area. Approximately twenty (20) acres or 18% of the property is zoned to permit single lot residential or duplex development with a permit from the Code Enforcement Officer. The minimum lot size, which is two acres, could allow an estimated ten homes to be built. Using the “2 in 5” subdivision exemption this type of development could have a negative impact on the wetlands and water quality of Hutchinson Pond. Subdivisions are also allowed with conditional use approval, as are several commercial activities. Overall, should development occur on this tract, it would cause fragmentation of the existing habitat and change the undeveloped nature of Hutchinson Pond.

Forest Management Activities. According to the FONS from the last five and one half years, within a 20-mile buffer of the LJPT, the Maine Forest Service has received 2,215 notifications for forest management activities totaling 89,221.97 harvest acres. These notifications demonstrate that if this tract is determined to not qualify as a preservation/compensatory mitigation tract, and even if it were not sold for development, it would be under threat of destruction or adverse modification through forest management, which is common in this area.

In short, the parcel is open to development in ways that could damage the functions and values of wetland resources located there, and preservation would reduce the threat of future impacts and may stem future aquatic resource degradation.

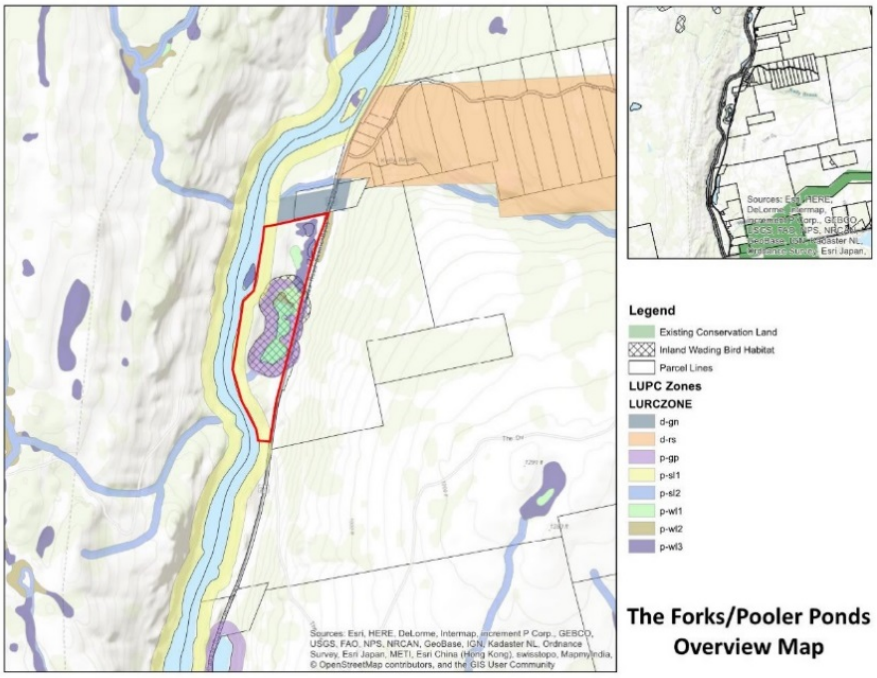
Legal instrument
As part of the compensation package for NECEC, the entire 110 acre (+/-) LJPT will be permanently protected via a conservation easement or similar document.

POOLER POND TRACT

The Pooler Pond Tract (PPT) is approximately 81 acres located along Maine Scenic Byway Route 201 in The Forks Plantation about 3 miles from the village of The Forks. The site has .8 miles of river frontage along the Kennebec and encompasses all of Pooler Pond.

There is no existing development on the property, however, a portion of the Forks Area Scenic Trail (F.A.S.T.) runs through the site between Pooler Pond and the River. The adjacent property is developed by a rafting and river campground.

The property is located within Maine's Unorganized Territory and is regulated under LUPC rules and guidelines. The parcel contains multiple zoning subdistricts including the Shoreland Protection Subdistrict (P-SL), the General Management Subdistrict (M-GN), Great Pond Subdistrict (P-GP), and Wetland Protection Subdistricts (P-WL). There are several permitted uses within each of these subdistricts including residential dwellings and campsites.



The Forks/Pooler Ponds Overview Map

Retail stores, restaurants, and recreational lodging facilities are also allowed with special exception approval. Pooler Pond and the associated shoreline has been designated as an Inland Wading Bird and Water Fowl habitat by MDIFW. There are also areas wetland (and associated wetland zoning) around the northerly portion of the pond.

Physical, chemical, or biological functions for the watershed
Lake Character: Pooler Ponds (MIDAS # 4106) are designated as a "water quality limiting lake" (WQLL) sensitive to increased phosphorus concentrations and therefore is subject to additional residential development restrictions.

- *Wetland Resources*: Approximately 18.33 acres (22.6%) on PPT were identified as palustrine wetland. This includes the 8.12 acre Pooler Ponds complex (PUB) and 10.21 acres of additional palustrine wetland. The primary wetland system on this property is palustrine unconsolidated bottom (PUB) associated with the open water of the pond complex. The fringe of this wetland system is enveloped by a graminoid-dominant palustrine emergent area (PEM), which is bordered by a co-dominant palustrine scrub-shrub wetland (PSS). The Tract has approximately 0.8 river-miles of frontage along the Kennebec River, a permanently flooded, lower perennial riverine wetland system with an unconsolidated bottom (R2UBH). Where the land does not abruptly drop from bedrock cliff to river, there is generally a 20- to 50-foot strip of palustrine scrub shrub (PSS) wetland along the fringe of the Kennebec River.

  As mapped by the USDA NRCS on Web Soil Survey, approximately 56 acres (68%) of PPT is underlain by somewhat excessively drained (SED) soils. In addition to slightly more than 8 acres of waterbody, the remainder of the Tract is mapped as well drained. The soils are derived from glacial outwash plains, till plains and eskers consisting of fine silt loams and clay loams. Hydric soils were identified primarily along fringe wetlands that occur around most of Pooler Ponds and parts of the Kennebec River. The fringe wetlands associated with the pond are classified as PEM and PSS with some smaller components of PFO. A small PSS wetland was mapped along the Kennebec River consisting of fine loamy sands.

- *Groundwater Recharge:* PPT occurs on the Kennebec River Significant Sand and Gravel Aquifer. Onsite wetlands help groundwater discharge from up gradient, as well as recharge areas to the adjoining Kennebec River.

- *Fish Habitat:* The Kennebec River is popular for brook trout and landlocked salmon fishing. Pooler Ponds lack a perennial stream connection to the river and are most likely habitat for a warmwater fishery.

- *Wildlife Habitat:* PPT provides high quality habitat for a wide variety of wildlife including large mammals, raptors,

Pooler Pond Tract Summary	
Size	81.24 acres
Wetland Areas	18.33 acres
Inland Wading Bird/Waterfowl Habitat	31.39 acres
Upland Buffer Area	62.91 acres
Streams	4,480 linear feet
Vernal Pool Types	
1 VP	

waterfowl, passerines songbirds, amphibians, reptiles and insects. The property also has been mapped as a moderate value IWWH (ID UMO-9951) near the center of the Tract.

- *Recreation/Preservation:* PPT is located between a commercial rafting and river guide operation and campground immediately to the north and the Appalachian Trail Corridor 3.4 miles to the south. The Tract is also crossed by the F.A.S.T. and is an access point to fishing and boating on the Kennebec River. This easily accessible Tract provides diversity and abundance of aquatic plants and graminoids relevant to the study of botany and wetland ecology.

The PPT includes a combination of upland and aquatic resource preservation, rather than aquatic resources-only preservation, to offer better protection of aquatic functions (as state laws may not protect non-wetlands whose degradation would affect aquatic resources).

Ecological sustainability of the watershed
The resources outlined above contribute significantly to the ecological sustainability of the watershed. Riverine vegetated wetlands aligned along the east shore of the Kennebec River buffer and protect the adjoining upland shoreline from scour and erosion. Palustrine wetlands around the perimeter of Pooler Ponds also stabilize adjoining upland, thereby limiting and protecting lake degradation. The Tract provides a comprehensive mix of wetland types corresponding to the topographic gradient. PPT provides high quality habitat for a wide variety of wildlife including large mammals, raptors, waterfowl, passerines songbirds, amphibians, reptiles and insects.

In addition, this area of Route 201 is part of the Canada Scenic Byway and recognized for its recreational and scenic character. The area is developed with a mix of residential and commercial uses.

Appropriateness and practicability of preservation
There are no conserved lands or focus areas immediately adjacent to or within one mile of PPT. However, this area is important to the preservation of the watershed and recreational nature of the area. As part of the compensation package for NECEC, the approximately 81.24 acre Pooler Ponds Tract will be permanently protected. Preservation of this Tract along approximately 0.8 miles of the Kennebec River will secure access for rafting, other boating/ canoeing and fishing. In addition, preservation of PPT will result in permanent protection from development and will preserve the existing wildlife habitat, water quality benefits, vernal pool habitat, and educational opportunities adjacent to a Maine Scenic Byway.

Preservation of this parcel is appropriate as it makes sense in the watershed context, provides protection of important aquatic resources, and is sustainable in the long-term.

Threat of destruction or adverse modifications
Like the FLT, this property is located in a part of the state where the regional economy is shifting toward a focus on cultural opportunities, arts and recreation. This property has the same development opportunities due to the proximity of the site to existing development (3.5 miles to the village of The Forks, 4 miles to Caratunk, 20 miles to Bingham), availability of shore frontage for direct access to the Kennebec, shore frontage on Pooler Pond, and accessibility to a main road. It is likely that development

would be in the form of residential homes or camp style development, overnight accommodations, or recreational development, much like the FLT. Even without formal subdivision approval, development in the form of single lots over a period of time, using the "2 in 5 exemption", could have negative implications to unique undeveloped character of the river frontage and shoreline around Pooler Ponds.

Residential Development. It is likely that any residential development on this site would take the form of single lots over a period of time rather than a full subdivision. Under current rules, landowners are allowed to create 2 lots every 5 years in each township without subdivision approval. This is known commonly as the "2 in 5 exemption". The LUPC has recognized that the "2 in 5" subdivision exemption could have negative implications to the principal values of the Unorganized Territory. These values, which include unique high-value natural resources and a unique natural character, are present in the PPT and surrounding lands. In any development analysis, the existing 2 in 5 exemption could result in several new lots which would be sited in scattered and haphazard developments. This type of piecemeal development results in the loss of high value shoreline, forest fragmentation, and loss of recreational values.

Recreational Lodging Development. The existing rules would allow the development of a recreational lodging facility. There are a several different scales of Recreational Lodging Facility that could be approved on the FLT. Within 500 feet of the shoreline the Chapter 10 rules allow for facilities that could accommodate a maximum overnight capacity of up to 100 people. Outside this area, the maximum size increases to allow a principal building of up to 12,000 SF and an overnight occupancy of up to 150 people. In addition to the risks of losing high value shoreline, one over-arching results of these types of developments is that the nature of the area could shift from a "backcountry" experience to an intensively managed recreation destination. This change would be contrary to the purposes for which the adjacent conservation parcels were established.

Forest Management Activities. According to the FONS from the last five and one half years, within a 20-mile buffer of the PPT, the Maine Forest Service has received 627 notifications for forest management activities totaling 156,568.27 harvest acres. These notifications demonstrate that if this tract is determined to not qualify as a preservation/compensatory mitigation tract, and even if it were not sold for development, it would be under threat of destruction or adverse modification through forest management, which is common in this area.

The parcel is open to development in ways that could damage the functions and values of wetland resources located there, and preservation would reduce the threat of future impacts and may stem future aquatic resource degradation.

Legal instrument.
As part of the compensation package for NECEC, the entire tract will be permanently protected via a conservation easement or similar document.

Please do not hesitate to contact me if you have any questions.

Sincerely,
The Musson Group

Noel Musson, Principal

Enclosures

Exhibit 1-4: NECEC Compensation Package Summary

Exhibit 1-4 Compensation Package Summary as Required by USACE and NRPA

Project Impact				Compensation Required[1]			Compensation Sites			
Activity		Square feet	Acres	Agency Required by	Compensation Ratio X Adjustment[2]	Estimated Quantity Required	Flagstaff Lake Tract	Little Jimmie Pond-Harwood Tract	Pooler Pond Tract	Total Compensation
							Total Acres= 831.39	Total Acres= 109.77	Total Acres= 81.24	Total Area= 1022.40
Impact to Wetlands	Permanent Fill in Wetlands (Non-WOSS)	194,713	4.47	USACE & MDEP	See Exhibit 1-4 ILF Compensation Table		423.96 of wetland preservation	68.46 of wetland preservation	18.33 of wetland preservation	510.75 acres of wetland preservation to offset 132.38 acres of Permanent forested wetland conversion, which is 113.61 acres over the amount of compensation required. $1,642,160.81 ILF for Permanent Fill in Non-WOSS, Permanent fill in WOSS and Temporary Wetland Fill.
	Permanent Fill in WOSS[3]	36,895	0.85	USACE & MDEP						
	Temporary Wetland Fill[3] in PEM (<18 months)	835,481	19.18	USACE						
	Temporary Wetland Fill[3] in PSS[4] (<18 months)	1,203,998	27.64	USACE						
	Permanent Forested Wetland Conversion[5]	5,766,473	132.38	USACE	20:1 x 0.15 USACE ratio applied	397.14				
	Total Impact:	8,037,691	184.52		**Total Required:**	397.14				
Impact to Significant Vernal Pool Habitat (250')[6]	Permanent Wetland Fill in SVPH	32,365	0.74	USACE & MDEP	See Exhibit 1-4 ILF Compensation Table		See Exhibit 1-4 ILF Compensation Table			$134,602.50 ILF amount
	Permanent Forested Wetland Conversion SVPH	169,884	3.90	USACE & MDEP	20:1 x 0.15 USACE ratio applied	Included In Forested Wetland Conversion				
	Permanent Upland Fill in SVPH	31,320	0.72	MDEP	See Exhibit 1-4 ILF Compensation Table					
	Permanent Upland Conversion in SVPH	1,289,812	29.61	MDEP						
	Total Impact:	1,321,131	34.97		**Total Required:**	n/a				
Impact to USACE Juridictional Vernal Pools	Direct Fill in Vernal Pool Depression or 100' Envelope	96,503	4.47	USACE	See Exhibit 1-4 ILF Compensation Table		See Exhibit 1-4 ILF Compensation Table			$2,113,103.77 ILF amount
	High Value Vernal Pools[7]		56.00	USACE						
	Medium Value Vernal Pools		122.00	USACE						
	Low Value Vernal Pools		72.00	USACE						
	Total Impact:	4.47 acres of direct fill / 250 vernal pools								
Impact to Inland Wading Bird & Waterfowl[8]	Permanent Wetland Fill in IWWH	150	0.00	USACE & MDEP	30:1 x 110 USACE ratio applied	Included in Permanent Fill in WOSS	28.88 acres (high value)	71.92 acres (moderate value)	31.39 acres (moderate value)	132.19 acres provided to offset 13.32 acres of IWWH, which is 62.47 acres over the amount of compensation required.
	Permanent Forested Wetland Conversion IWWH	114,231	2.62	USACE & MDEP	20:1 x 0.15 USACE ratio applied	Included In Forested Wetland Conversion				
	Permanent Upland Fill in IWWH	561	0.01	MDEP	8:1 x 1 MDEP ratio applied	0.06				
	Permanent Upland Conversion in IWWH	579,592	13.31	MDEP	8:1 x 0.60 MDEP ratio applied	63.87				
	Total Impact:	580,153	13.32		**Total Required:**	**69.72**				

[1] Based on ratios and adjustments within the DEP Fact Sheet-In-Lieu Fee Compensation Program, 2016 USACE New England District Compensatory Mitigation Guidance and discussions held during the Compensation Working Session on 4/3/18, with the USACE and MDEP.

[2] In each case where compensation is required by both the MDEP and USACE, the higher ratio and adjustment was applied.

[3] Temporary wetland fill to PEM and PSS wetlands within SVPH and IWWH is included within calculation.

[4] Given that hydrology or significant soil disturbance will not result, all forested wetlands will convert to scrub-shrub wetland.

[5] Conversion of forested wetlands includes clearing within SVPH or IWWH.

[6] Permanent wetland fill and forested wetland conversion impacts (shaded gray) in SVPH are included in the calculations provided in the Wetland Impact section of the table.

[7] Excludes impacts to SVPH

[8] Permanent wetland fill and forested wetland conversion impacts (shaded gray) in IWWH are included in the calculations provided in the Wetland Impact section of the table.

Exhibit 1-5: In Lieu Fee Summary and ILF Fee Calculations Tables

Exhibit 1-5A: In-Lieu Fee Summary

Impact Type		Resource Impact		In Lieu (ILF) Fee Compensation (MDEP & USACE)[1]		Adjustments to Standard Ratios/Amounts[2]		ILF Payment
		Sq ft	Acres	Formula	Multiplier	DEP	USACE	
Wetland Impact	**Permanent Fill in Wetlands (Non-WOSS)** See Table 1-5.1	195,018	4.477	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	100%	100%	$767,080.71
	Permanent Fill in WOSS[3] See Table 1-5.2	36,895	0.846	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	2	100%	100%	$278,871.99
	Temporary Wetland Fill[3] in PEM (<18 months) See Table 1-5.3	835,481	19.180	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	USACE only	5%	$154,526.49
	Temporary Wetland Fill[3] in PSS[4] (<18 months) See Table 1-5.4	1,203,998	27.640	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	USACE only	10%	$439,289.10
	Permanent Forested Wetland Conversion[5] See Exhibit 1-4	5,766,473	132.380	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	USACE only	15%	Preservation, See Exhibit 1-4
Impact to MDEP Significant Vernal Pool Habitat (250')[6]	**Permanent Wetland Fill in SVPH** Included within WOSS calculation, Table 1-5.2	32,365	0.743	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	2	100%	100%	Preservation, See Exhibit 1-4
	Permanent Forested Wetland Conversion SVPH Included within Temporary Wetland Fill in PSS calculation, Table 1-5.4	169,884	3.900	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	60%	15%	Preservation, See Exhibit 1-3
	Permanent Upland Fill in SVPH See Table 1-5.5	31,407	0.721	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	100%	DEP only	$71,104.03
	Permanent Upland Conversion in SVPH See Table 1-5.6	1,289,812	29.610	Avg. Assessed Land Value/Sq. Ft	1	60%	DEP only	$56,320.47
Impact to USACE Jurisdictional Vernal Pool Habitat[7] (750')	**Direct Fill in Vernal Pool Depression or 100' Envelope** See Table 1.5.7a	96,699	4.700	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	USACE only	100%	$382,686.77
	High Value Vernal Pools[7] See Table 1.5.7b	56 High Value Vernal Pools		(13,000 Sq. ft x 5) X (Natural Resource Enhancement & Restoration Cost + Avg. Assessed Land Value)	1	USACE only	5%	$672,587.50
	Medium Value Vernal Pools See Table 1.5.7c	122 Medium Value Vernal Pools		(13,000 Sq. ft x 3) X (Natural Resource Enhancement & Restoration Cost + Avg. Assessed Land Value)	1	USACE only	5%	$889,219.50
	Low Value Vernal Pools See Table 1-5.7d	72 Low Value Vernal Pools		(13,000 Sq. ft x 1) X (Natural Resource Enhancement & Restoration Cost + Avg. Assessed Land Value)	1	USACE only	5%	$168,610.00
Inland Wading Bird & Waterfowl Habitat (IWWH)[8]	**Permanent Wetland Fill in IWWH** Included within WOSS calculation, Table 1-5.2	150	0.003	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	2	100%	100%	Preservation, See Exhibit 1-3
	Permanent Forested Wetland Conversion IWWH Included within Temporary Wetland Fill in PSS calculation, Table 1-5.4	114,231	2.622	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	60%	15%	
	Permanent Upland Fill in IWWH	561	0.013	Natural Resource Enhancement & Restoration Cost/Sq. Ft. X Avg. Assessed Land Value/Sq. Ft	1	100%	DEP only	
	Permanent Upland Conversion in IWWH	579,592	13.306	Avg. Assessed Land Value/Sq. Ft	1	60%	DEP only	
							Sub-Total	$3,880,296.56
							10% Contingency	$388,029.66
							Total In-Lieu Fee Payment	**$4,268,326.22**

[1] In each case where compensation is required by both the MDEP and USACE, the higher ratio and adjustment was applied.

[2] Ratios and adjustments are based in part on the DEP Fact Sheet-In-Lieu Fee Compensation Program, 2016 USACE New England District Compensatory Mitigation Guidance and discussions held during the Compensation Working Session on 4/3/18, with the USACE and MDEP.

[3] Temporary wetland fill to PEM and PSS wetlands within SVPH and IWWH is included within calculation.

[4] Given that hydrology or significant soil disturbance will not result, all forested wetlands will convert to scrub-shrub wetland.

[5] Conversion of forested wetlands includes clearing within SVPH or IWWH.

[6] Permanent wetland fill and forested wetland conversion impacts (shaded gray) in SVPH are included in the calculations provided in the Wetland Impact section of the table.

[7] Excludes impacts to SVPH.

[8] Permanent wetland fill and forested wetland conversion impacts (shaded gray) in IWWH are included in the calculations provided in the Wetland Impact section of the table.

Exhibit 1-5B: Summary of Compensation Resulting from Consultation with Resource Agencies

Impact Type		Resource Impact		Fee Rationale		Adjustments to Standard Ratios/Amounts[2]		Fund	Contribution
		Sq ft	Acres	Formula	Multiplier	DEP	USACE		
Impact to Unique Natural Communities (MNAP)	Forest Conversion in Unique Natural Communities See Table 1-5.8	405,108	9.300	Avg. Assessed Land Value/Sq. Ft [1]	8	n/a	n/a	Maine Natural Areas Conservation Fund	$129,634.56
Impact to Rare Species Habitat (MDIFW)	Forest Conversion in the Roaring Brook Mayfly and Northern Spring Salamander Conservation Management Areas See Table 1-5.9	1,149,984	26.400	Avg. Assessed Land Value/Sq. Ft[1]	8 [2]	n/a	n/a	Maine Endangered and Nongame Wildlife Fund	$469,790.63
Impact to Coldwater Fisheries (MDEP / MDIFW)	Forest Conversion in Riparian Buffers Coldwater Fisheries Habitat (Segment 1)	87 perennial streams on Segment 1		Culvert Replacement funding sufficient to replace approximately 20-35 culverts on lands outside of CMP's ownership		n/a	n/a	Grant to be determined	$200,000.00
				Payment amount was based on the estimated labor and equipment costs to implement Chop and Drop on 87 perennial streams, which has been removed from the Compensation Plan at the request of MDIFW.		n/a	n/a	Maine Endangered and Nongame Wildlife Fund	$180,000
								Total Additional Monetary Contributions	**$979,425.19**

[1] Source: MDEP Fact Sheet- In Lieu Fee Compensation Program (rev August 13, 2015).

[2] On 11/8/2018, MDIFW recommended a resource multiplier of 8 be applied to the fee calculation for each species present, where both species are present a multiplier of 16 was applied.

Table 1-5.1 ILF Compensation for Permanant Fill in Wetlands (Non-WOSS)

		Permanent Wetland Fill in Non-WOSS						Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
			Cowardin Cover Type (Sq. Ft.)								
NECEC Project Component	Total Acres of Fill	Resource Impact (sq. ft.)[1]	PEM	PFO	PSS	HUC8 Watershed	Bailey and Keys Ecoregion	County	Natural Resource Enhancement and Restoration Cost ($)	Assessed Land Value ($)	In-Lieu Fee ($)
Transmission	0.045	1,960	0.018	0.002	0.025	NA	Central Maine Embayment	Androscoggin	3.61	0.17	$7,409.56
Transmission	0.01	436	0.006	0.000	0.004	NA	Presumpscot River and Casco Bay	Cumberland	3.61	0.69	$1,873.08
Transmission	0.01	436	0.005	0.004	0.000	NA	Foothills and Central	Franklin	2.86	0.03	$1,258.88
Transmission	0.001	44	0.000	0.000	0.001	NA	Central Interior	Kennebec	3.61	0.16	$164.22
Transmission	0.02	871	0.007	0.000	0.010	NA	Midcoast Region	Lincoln	3.61	0.3	$3,406.39
Transmission	0.001	44	0.001	0.000	0.000	NA	Midcoast Region	Sagadahoc	3.61	0.27	$169.01
Transmission	0.03	1,307	0.008	0.013	0.012	NA	Western Mountains	Somerset	3.61	0.04	$4,769.82
Merrill Road Converter	3.03	131,987	2.351	0.000	0.679	Androscoggin River	Maine Embayment	Androscoggin	3.61	0.17	$498,910.10
Fickett Road Substation	1.33	57,935	1.328	0.000	0.000	Presumpscot River and Casco Bay	Casco Bay Coast	Cumberland	3.61	0.69	$249,119.64
total acres	**4.477**									**Total In-Lieu Fee**	**$767,080.71**

1 Resource multiplier of 1

Table 1-5.2 ILF Compensation for Permanant Fill in WOSS

		Permanent Fill in Wetlands Special Significance (WOSS)[2]						Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
			Cowardin Cover Type (Sq. Ft.)								
NECEC Project Component	Total Acres of Fill	Resource Impact (sq. ft.)[1]	PEM	PFO	PSS	HUC8 Watershed	Bailey and Keys Ecoregion	County	Natural Resource Enhancement and Restoration Cost ($)	Assessed Land Value ($)	In-Lieu Fee ($)
Transmission	0.011	479	0.01	0.00	0.00	NA	Central Maine Embayment	Androscoggin	3.61	0.17	$3,622.45
Transmission	0	0	0.00	0.00	0.00	NA	Presumpscot River and Casco Bay	Cumberland	3.61	0.69	$0.00
Transmission	0	0	0.00	0.00	0.00	NA	Western Foothills and Central Mountains	Franklin	2.86	0.03	$0.00
Transmission	0	0	0.00	0.00	0.00	NA	Central Interior	Kennebec	3.61	0.16	$0.00
Transmission	0.01	436	0.01	0.00	0.01	NA	Midcoast Region	Lincoln	3.61	0.3	$3,406.39
Transmission	0	0	0.00	0.00	0.00	NA	Midcoast Region	Sagadahoc	3.61	0.27	$0.00
Transmission	0.015	653	0.00	0.00	0.00	NA	Western Mountains	Somerset	3.61	0.04	$4,769.82
Merrill Road Converter	0.811	35,327	0.80	0.00	0.00	Lower Androscoggin River	Central Maine Embayment	Androscoggin	3.61	0.17	$267,073.33
Fickett Road Substation	0	0	0.00	0.00	0.00	Presumpscot River and Casco Bay	Casco Bay Coast	Cumberland	3.61	0.69	$0.00
total acres	**0.85**									**Total In-Lieu Fee**	**$278,871.99**

1 Resource multiplier of 2

2 Includes permanent fill in IWWH and SVPH

Table 1-5.3 ILF Compensation for Temporary Wetland Fill in Emergent Wetlands

			Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component[1]	Total Acres of Fill	Resource Impact (sq. ft.)[2]	County	Natural Resource Enhancement and Restoration Cost ($)	Assessed Land Value ($)	In-Lieu Fee ($)[3]
Transmission Structures	6.21	270,508	Androscoggin	3.61	0.17	$51,125.94
Transmission Structures	0.83	36,155	Cumberland	3.61	0.69	$7,773.28
Transmission Structures	2.06	89,734	Franklin	2.86	0.03	$12,966.51
Transmission Structures	0.1	4,356	Kennebec	3.61	0.16	$821.11
Transmission Structures	3.94	171,626	Lincoln	3.61	0.3	$33,552.96
Transmission Structures	0.54	23,522	Sagadahoc	3.61	0.27	$4,563.35
Transmission Structures	5.5	239,580	Somerset	3.61	0.04	$43,723.35
total acres	**19.18**				**Total In-Lieu Fee**	**$154,526.49**

1 Temporary impacts are restricted to access to transmission line structure. There is no temporary wetland fill associated with substation development.

2 Resource multiplier of 1

3 For temporary wetland fill in emergent wetlands, the USACE adjustment to the standard ratio is 5%

Table 1-5.4 ILF Compensation for Temporary Wetland Fill in Scrub-Shrub Wetlands

			Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component[1]	Total Acres of Fill	Resource Impact (sq. ft.)[2]	County	Natural Resource Enhancement and Restoration Cost ($)	Assessed Land Value ($)	In-Lieu Fee ($)[3]
Transmission Structures	9.38	408,593	Androscoggin	3.61	0.17	$154,448.08
Transmission Structures	0.46	20,038	Cumberland	3.61	0.69	$8,616.17
Transmission Structures	2.85	124,146	Franklin	2.86	0.03	$35,878.19
Transmission Structures	0.22	9,583	Kennebec	3.61	0.16	$3,612.87
Transmission Structures	2.23	97,139	Lincoln	3.61	0.3	$37,981.27
Transmission Structures	0.01	436	Sagadahoc	3.61	0.27	$169.01
Transmission Structures	12.49	544,064	Somerset	3.61	0.04	$198,583.51
total acres	**27.64**				**Total In-Lieu Fee**	**$439,289.10**

1 Temporary impacts are restricted to access to transmission line structure. There is no temporary wetland fill associated with substation development.

2 Resource multiplier of 1

3 For temporary wetland fill in scrub-shrub, the USACE adjustment to the standard ratio is 10%

Table 1-5.5: ILF Compensation for Permanent Upland Fill in SVPH

			Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component	**Total Acres of Fill**	**Resource Impact (sq. ft.)[1]**	**County**	**Natural Resource Enhancement and Restoration Cost ($)**	**Assessed Land Value ($)**	**In-Lieu Fee ($)[2]**
Transmission Structures	0.013	566	Androscoggin	3.61	0.17	$1,284.32
Transmission Structures	0.001	44	Cumberland	3.61	0.69	$112.38
Transmission Structures	0.005	218	Franklin	2.86	0.03	$377.67
Transmission Structures	0	0	Kennebec	3.61	0.16	$0.00
Transmission Structures	0.003	131	Lincoln	3.61	0.3	$306.58
Transmission Structures	0	0	Sagadahoc	3.61	0.27	$0.00
Transmission Structures	0.01	436	Somerset	3.61	0.04	$953.96
Merrill Road Converter Station	0.689	30,013	Androscoggin	3.61	0.17	$68,069.12
Fickett Road Substation	0	0	Cumberland	3.61	0.69	$0.00
total acres	**0.721**				**Total In-Lieu Fee**	**$71,104.03**

1 Resource multiplier of 1

2 Adjustment of 60% as per MDEP Guidance

Table 1-5.6: ILF Compensation for Permanent Upland Conversion in SVPH

			Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component	**Total Acres of Conversion**	**Resource Impact (sq. ft.)[1]**	**County**	**Natural Resource Enhancement and Restoration Cost ($)[2]**	**Assessed Land Value ($)**	**In-Lieu Fee ($)**
Transmission Structures	7.51	327,136	Androscoggin	0	0.17	$33,367.83
Transmission Structures	0	0	Cumberland	0	0.69	$0.00
Transmission Structures	8.77	382,021	Franklin	0	0.03	$6,876.38
Transmission Structures	0	0	Kennebec	0	0.16	$0.00
Transmission Structures	0	0	Lincoln	0	0.3	$0.00
Transmission Structures	0	0	Sagadahoc	0	0.27	$0.00
Transmission Structures	12.7	553,212	Somerset	0	0.04	$13,277.09
Merrill Road Converter Station	0.63	27,443	Androscoggin	0	0.17	$2,799.17
Fickett Road Substation	0	0	Cumberland	0	0.69	$0.00
total acres	**29.61**				**Total In-Lieu Fee**	**$56,320.47**

1 Resource multiplier of 1

2 For upland portions of SVPH, no restoration cost is associated with impact to non-wetland resources.

Table 1-5.7a ILF Compensation for Direct Fill in USACE Jurisdictional Vernal Pools

		Permanent Wetland Fill in Non-WOSS						Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component	Total Acres of Fill	Resource Impact (sq. ft.)[1]	Cowardin Cover Type (Sq. Ft.) PEM	PFO	PSS	HUC8 Watershed	Bailey and Keys Ecoregion	County	Natural Resource Enhancement and Restoration Cost ($)	Assessed Land Value ($)	In-Lieu Fee ($)
Transmission	0.27	11,775	298	40	160	NA	Central Maine Embayment	Androscoggin	3.61	0.17	$44,509.50
Transmission	0.00	0	0	0	125	NA	Presumpscot River and Casco Bay	Cumberland	3.61	0.69	$0.00
Transmission	0.01	298	0	40	0	NA	Foothills and Central	Franklin	2.86	0.03	$861.22
Transmission	0.27	0	60	0	130	NA	Central Interior	Kennebec	3.61	0.16	$0.00
Transmission	0.03	1,487	780	0	242	NA	Midcoast Region	Lincoln	3.61	0.3	$5,814.17
Transmission	0.00	60	82	0	0	NA	Midcoast Region	Sagadahoc	3.61	0.27	$232.80
Transmission	0.02	846	191	240	0	NA	Western Mountains	Somerset	3.61	0.04	$3,087.90
Merrill Road Converter	1.12	48,886	6,479	1,310	0	Lower Androscoggin	Central Maine	Androscoggin	3.61	0.17	$184,789.08
Fickett Road Substation	0.77	33,347	0	0	0	Presumpscot River and Casco Bay	Casco Bay Coast	Cumberland	3.61	0.69	$143,392.10
total acres	**4.70**									**Total In-Lieu Fee**	**$382,686.77**

1 Resource multiplier of 1

Table 1-5.7b ILF Compensation for USACE High Value Jurisdictional Vernal Pools

					Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component	High Value Pools (#)	Multiplier x Standard Sq Ft	HUC8 Watershed	Bailey and Keys Ecoregion	County	Natural Resource Enhancement and Restoration Cost ($)	Assessed Land Value ($)	In-Lieu Fee ($)[2]
Transmission	33	65,000	NA	Central Maine Embayment	Androscoggin	3.61	0.17	$405,405.00
Transmission	0	65,000	NA	Presumpscot River and Casco Bay	Cumberland	3.61	0.69	$0.00
Transmission	4	65,000	NA	Foothills and Central	Franklin	2.86	0.03	$37,570.00
Transmission	0	65,000	NA	Central Interior	Kennebec	3.61	0.16	$0.00
Transmission	4	65,000	NA	Midcoast Region	Lincoln	3.61	0.3	$50,830.00
Transmission	0	65,000	NA	Midcoast Region	Sagadahoc	3.61	0.27	$0.00
Transmission	13	65,000	NA	Western Mountains	Somerset	3.61	0.04	$154,212.50
Merrill Road Converter	2	65,000	Lower Androscoggin River	Central Maine Embayment	Androscoggin	3.61	0.17	$24,570.00
Fickett Road Substation	0	65,000	Presumpscot River and Casco Bay	Casco Bay Coast	Cumberland	3.61	0.69	$0.00
Total No.	**56**						**Total In-Lieu Fee**	**$672,587.50**

1 Resource multiplier of 1
2 Adjustment of 5%

Table 1-5.7c ILF Compensation for USACE Medium Value Jurisdictional Vernal Pools

					Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component	Medium Value Pools (#)	Multiplier x Standard Sq Ft	HUC8 Watershed	Bailey and Keys Ecoregion	County	Natural Resource Enhancement and Restoration Cost ($)	Assessed Land Value ($)	In-Lieu Fee ($)[2]
Transmission	55	39,000	NA	Central Maine Embayment	Androscoggin	3.61	0.17	$405,405.00
Transmission	6	39,000	NA	Presumpscot River and Casco Bay	Cumberland	3.61	0.69	$50,310.00
Transmission	10	39,000	NA	Foothills and Central	Franklin	2.86	0.03	$56,355.00
Transmission	1	39,000	NA	Central Interior	Kennebec	3.61	0.16	$7,351.50
Transmission	17	39,000	NA	Midcoast Region	Lincoln	3.61	0.3	$129,616.50
Transmission	9	39,000	NA	Midcoast Region	Sagadahoc	3.61	0.27	$68,094.00
Transmission	23	39,000	NA	Western Mountains	Somerset	3.61	0.04	$163,702.50
Merrill Road Converter	0	39,000	Lower Androscoggin River	Central Maine Embayment	Androscoggin	3.61	0.17	$0.00
Fickett Road Substation	1	39,000	Presumpscot River and Casco Bay	Casco Bay Coast	Cumberland	3.61	0.69	$8,385.00
Total No.	**122**						**Total In-Lieu Fee**	**$889,219.50**

1 Resource multiplier of 1

2 Adjustment of 5%

Table 1-5.7d ILF Compensation for USACE Low Value Jurisdictional Vernal Pools

					Wetland Compensation Formula: Sq. Ft. of Wetland Impacted X (Natural Resource Enhancement and Restoration Cost + Assessed Land Value) x (Resource Multiplier)			
NECEC Project Component	**Low Value Pools (#)**	**Multiplier x Standard Sq Ft**	**HUC8 Watershed**	**Bailey and Keys Ecoregion**	**County**	**Natural Resource Enhancement and Restoration Cost ($)**	**Assessed Land Value ($)**	**In-Lieu Fee ($)[2]**
Transmission	32	13,000	NA	Central Maine Embayment	Androscoggin	3.61	0.17	$78,624.00
Transmission	0	13,000	NA	Presumpscot River and Casco Bay	Cumberland	3.61	0.69	$0.00
Transmission	12	13,000	NA	Foothills and Central	Franklin	2.86	0.03	$22,542.00
Transmission	0	13,000	NA	Central Interior	Kennebec	3.61	0.16	$0.00
Transmission	6	13,000	NA	Midcoast Region	Lincoln	3.61	0.3	$15,249.00
Transmission	0	13,000	NA	Midcoast Region	Sagadahoc	3.61	0.27	$0.00
Transmission	22	13,000	NA	Western Mountains	Somerset	3.61	0.04	$52,195.00
Merrill Road Converter	0	13,000	Lower Androscoggin River	Central Maine Embayment	Androscoggin	3.61	0.17	$0.00
Fickett Road Substation	0	13,000	Presumpscot River and Casco Bay	Casco Bay Coast	Cumberland	3.61	0.69	$0.00
Total No.	**72**						**Total In-Lieu Fee**	**$168,610.00**

1 Resource multiplier of 1

2 Adjustment of 5%

Table 1-5.8: Compensation for Conversion in Unique Natural Communities

			Assessed Land Value x Resource Multiplier of 8			
NECEC Project Component	**Total Acres of Conversion**	**Resource Impact (sq. ft.)**	**County**	**Natural Resource Enhancement and Restoration Cost ($)**	**Assessed Land Value ($)**	**In-Lieu Fee ($)**
Transmission Structures		0	Androscoggin	0	0.17	$0.00
Transmission Structures		0	Cumberland	0	0.69	$0.00
Transmission Structures		0	Franklin	0	0.03	$0.00
Transmission Structures		0	Kennebec	0	0.16	$0.00
Transmission Structures		0	Lincoln	0	0.3	$0.00
Transmission Structures		0	Sagadahoc	0	0.27	$0.00
Transmission Structures	9.3	405,108	Somerset	0	0.04	$129,634.56
Merrill Road Converter Station		0	Androscoggin	0	0.17	$0.00
Fickett Road Substation		0	Cumberland	0	0.69	$0.00
total acres	**9.3**				**Total In-Lieu Fee**	**$129,634.56**

Table 1-5.9 Compensation for Conversion in Roaring Brook Mayfly and Northern Spring Salamander Conservation Management Areas

Township	County	Stream Name	Feature ID	Surveyed? (Y/N)	Species Present[1]	Clearing Impact within the Management Areas[2] (ac)	Clearing Impact (sq ft)	Assessed Land Value ($/sq ft)[3]	Resource Multiplier Applied to Fee[4]	Calculated Fee
Skinner Twp	Franklin	S. Branch Moose River	PSTR-09-11	Y	RBM	1.8	80115.0	0.03	8	$19,227.60
Skinner Twp	Franklin	Trib to Bog Brook	PSTR-11-01	Y	NSS	2.7	119659.5	0.03	8	$28,718.29
Appleton Twp	Somerset	Trib to Bog Brook	PSTR-12-07	Y	NSS	1.9	82588.8	0.04	8	$26,428.42
Appleton Twp	Somerset	Gold Brook	PSTR-15-06	Y	RBM	7.2	311604.7			
Appleton TWP	Somerset	Trib. to Gold Brook	PSTR-16-07	N	RBM					n/a, mitigation being proposed[5]
Appleton TWP	Somerset	Trib. to Gold Brook	PSTR-16-10	N	RBM					
Appleton TWP	Somerset	Trib. to Gold Brook	PSTR-16-15	N	RBM	1.2	50239.1			
Appleton Twp	Somerset	Baker Stream	PSTR-17-07	Y	NSS	3.1	135036.0	0.04	8	$43,211.52
Appleton Twp	Somerset	Baker Stream	PSTR-17R-04	Y	NSS					
Bradstreet TWP	Somerset	Unnamed Stream	PSTR-24-02	N	RBM/NSS	0.1	2793.5	0.04	16	$1,787.87
Bradstreet TWP	Somerset	Trib. to Horse Brook	PSTR-26-05	N	RBM/NSS	1.3	57458.2	0.04	16	$36,773.25
Johnson Mtn TWP	Somerset	Mountain Brook	PSTR-33-01	Y	RBM/NSS	4.4	191664.0			
Johnson Mtn TWP	Somerset	Mountain Brook	PSTR-EM-34-01	Y	RBM/NSS					n/a, mitigation being proposed[5]
Johnson Mtn TWP	Somerset	Trib to Mountain Brook	PSTR-EM-34-02	Y	RBM/NSS					
Johnson Mtn TWP	Somerset	Trib. To East Branch Salmon Stream	PSTR-38-02	Y	NSS	4.3	187308.0	0.04	8	$59,938.56
Johnson Mtn TWP	Somerset	Trib. To East Branch Salmon Stream	PSTR-38-06	Y	NSS					
Johnson Mtn TWP	Somerset	Trib. To East Branch Salmon Stream	PSTR-38-10	Y	NSS	2.2	97782.1	0.04	8	$31,290.26
Johnson Mtn TWP	Somerset	Trib. To East Branch Salmon Stream	PSTR-38-15	Y	NSS	1.9	80907.8	0.04	8	$25,890.49
Johnson Mtn TWP	Somerset	Trib. to Cold Stream	PSTR-40-07	N	RBM/NSS	4.1	177854.6	0.04	16	$113,826.95
Johnson Mtn TWP	Somerset	Trib. to Cold Stream	PSTR-41-04	N	RBM/NSS					
Bradstreet TWP	Somerset	Trib to Piel Brook	PSTR-SRD1-02	N	RBM/NSS	1.5	64607.4	0.04	16	$41,348.71
Bradstreet TWP	Somerset	Unnamed Stream	PSTR-SRD1-28-02	N	RBM/NSS	1.5	64607.4	0.04	16	$41,348.72
Bradstreet TWP	Somerset	Unnamed Stream	PSTR-SRD1-28-05	N	RBM/NSS					
									Total	**$469,790.63**

[1] For those streams outside of CMP's ownership and on lands which permission to survey was not granted from landowners, and unless the waterbody is hydrologically connected to another stream which presence/absence surveys were conducted, the presence of both species is assumed.

[2] The clearing impact includes the area extending 250 feet on both sides of the stream channel. The management areas were mapped according to "Notes on Mapping Protocol for Roaring Brook Mayfly Habitat Polygons in ETSC (12/22/10)" provided by MDIFW. This mapping protocol was applied to RBB and NSS waterbodies, as recommended by MDIFW. Where mapped management area polygons overlapped, the impact area was combined.

[3] Source: MDEP Fact Sheet- In Lieu Fee Compensation Program (rev August 13, 2015).

[4] On 11/8/2018, MDIFW recommended a resource multiplier of 8 be applied to the fee calculation for each species present, where both species are present a multiplier of 16 was applied.

[5] CMP will retain full height vegetation in the CMA's for these resources.

1-6: NECEC Proposed Criteria for USACOE Vernal Pools Values Determination for Compensation Plan Development- May 2018

New England Clean Energy Connect (NECEC)
Proposed Criteria for USACOE Vernal Pools Values Determination for Compensation Plan Development
May 2018

High Value

- Significant Vernal Pools (SVPs), as defined in Maine Natural Resource Protection Act (NRPA), Significant Vernal Pool definition according to Significant Wildlife Habitat Rules (Significant Wildlife Habitat 06-096 Chapter 335 Section 9) or Potentially Significant Vernal Pools (PSVPs) using these same criteria.
- Artificial pools which meet NRPA Significance criteria.
- Cluster/complexes of pools (pools whose depressions are within 1000 feet of one or more other surveyed vernal pools, and where there are no substantial travel barriers (i.e. streams or rivers greater than 25 feet wide; roads classified as principal arterials, minor arterials, and major/urban collectors)between pools.
- Pools with blue spotted salamander (at any life stage) or other state/federal listed rare, threatened or endangered (RTE) species, regardless of abundance.

Medium Value

- Natural or artificial pools whose indicator species abundance does not meet NRPA Significance criteria, but where 2 or more indicator species are present which approach abundance criteria (≥ 75% of NRPA abundance criteria), and/or where RTE species are present.

Low Value

- ATV/Skidder ruts/ABA/Spawning areas which do not meet NRPA significance criteria and which have low indicator species abundance and no RTE species.
- Pools having seasonal or temporary inlets/outlets with evidence of predatory fish.
- Pools whose 750 foot critical terrestrial habitat (CTH) is not comprised of at least 75% suitable forested conditions.

No compensation required (if surveyed feature meets any of these criteria)

- Presence of predatory fish with a permanent inlet/outlet.
- At least 75% forested cover type is retained in the CTH following construction and no fill occurs within the pool depression or 100-foot envelope.
- Where directional buffers are used to maintain a minimum of 75% of the CTH in a forested condition.
- Pools previously compensated for under another permit.
- ATV/Skidder ruts in active areas which experience repeated seasonal disturbance (e.g. club maintained or licensed ATV trail).
- Existing, ongoing human disturbance within the pool depression or within the 100 foot envelope (e.g. unauthorized fill, dumping, or existing polluted condition).

1-7: Position Paper on the Presence of Significant Vernal Pools in or Adjacent to Transmission Line Corridors, TRC Engineers, LLC, March 2009.

Position Paper on the Presence of Significant Vernal Pools in or Adjacent to Transmission Line Corridors in Maine

Prepared by:

TRC Engineers, LLC

Prepared for:

Central Maine Power Company

March 2009

Executive Summary

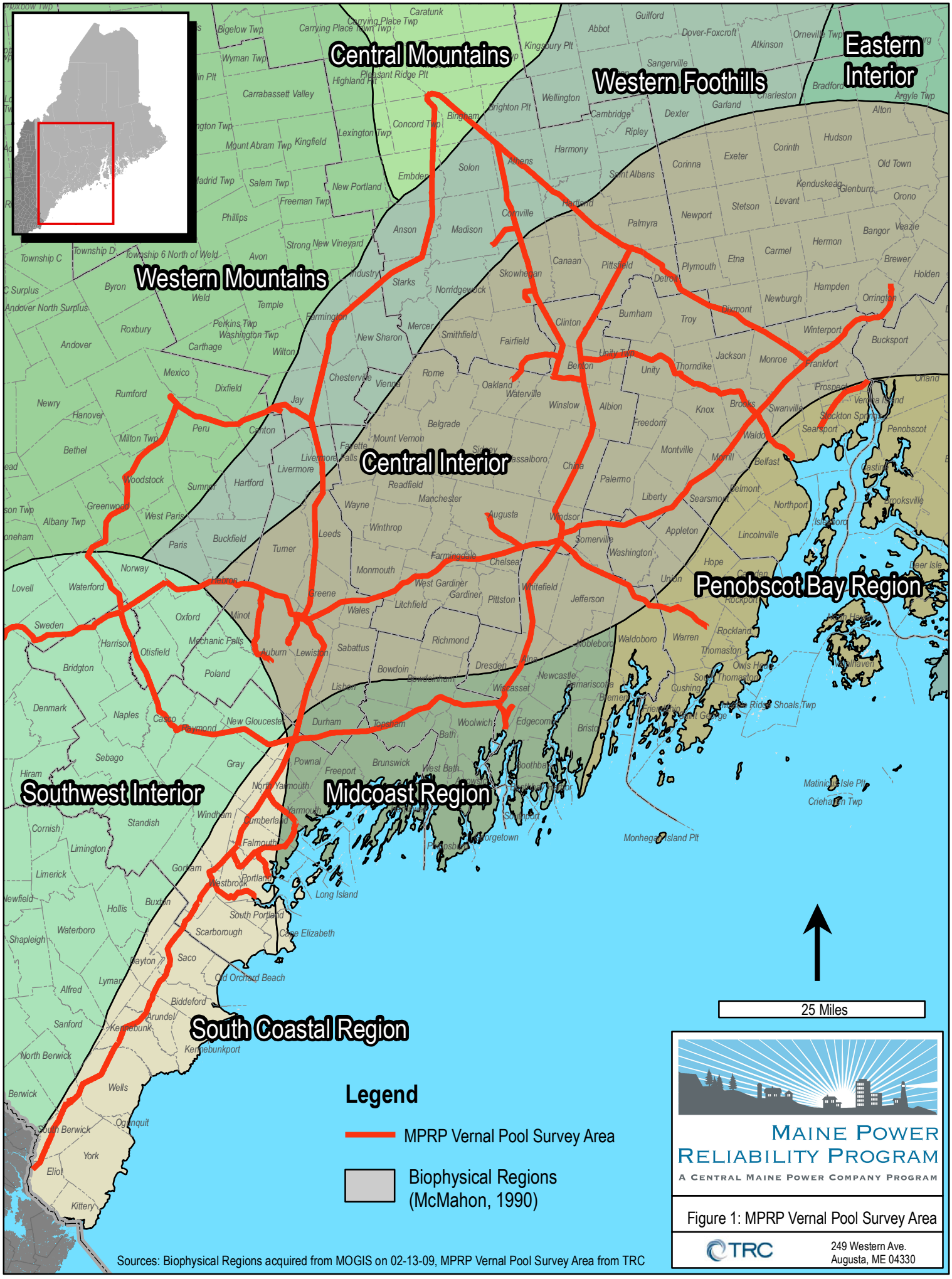
Central Maine Power Company (CMP), in support of its proposed Maine Power Reliability Program (MPRP), conducted extensive vernal pool mapping and assessment surveys along approximately 620 miles of CMP transmission corridor during the springs of 2007 and 2008. These surveys were performed in accordance with an agency-approved protocol and were consistent with the requirements and timeframes presented in the State of Maine Natural Resources Protection Act (NRPA) Chapter 335 – Significant Wildlife Habitat Rules. Central Maine Power documented 200 natural vernal pools and 689 anthropogenic pools within or adjacent to proposed MPRP transmission corridors. *Rana sylvatica, Ambystoma maculatum, Ambystoma laterale,* and *Eubranchipus sp*. or egg masses of these species were observed in these pools. Of the natural vernal pools, 88 (45 percent) qualified as significant vernal pools under Chapter 335. All of these significant vernal pools were located within, or adjacent to, transmission corridors that have been maintained in an early-successional shrub habitat for 40 years or more. In addition, 48 (56 percent) of these significant vernal pools' critical terrestrial habitat was 51 to 75 percent non-forested. In sum, fully 87.5 percent of the identified significant vernal pools had less than 75 percent forested habitat within their critical terrestrial habitat. Most of the non-forested land use within 250 feet of significant vernal pools was transmission corridor. Habitat conditions permeable to amphibian migration, including the presence of leaf litter, coarse woody debris, mammal burrows, dense herbaceous and shrub vegetation cover, were all observed in transmission corridors.

Based on the results of CMP's investigation, no measurable loss of vernal pool functions is apparent in and along electric utility transmission corridors; in fact, significant vernal pools remain abundant and highly productive in the typical scrub/shrub habitat found in most transmission line corridors, even after multiple decades. Data suggest the very different impacts from "hard" land uses (e.g., paved/commercial development) and "soft" land uses (e.g., transmission line maintenance). Given these results, design, location, and construction strategies should focus on maintaining existing vernal pool functions within transmission line corridors. In-lieu fee or preservation type compensatory mitigation strategies are more appropriate where significant natural resource impacts (i.e., functional loss) occurs, and are thus not appropriate in these situations. As an alternative to compensatory mitigation, research to further evaluate best management practices for vernal pool conservation along transmission corridors, may be appropriate.

1.0 INTRODUCTION

Central Maine Power Company (CMP) is currently proposing to bolster the long-term reliability of its bulk power electrical transmission system through a project known as the Maine Power Reliability Program (MPRP). As part of this process, CMP is proposing a number of transmission line and substation improvements to add reliability and redundancy to its aging 345 kilovolt (kV) and 115 kV transmission system. A component of this overall proposal is the consideration of potential impacts to various natural resources, including significant vernal pools. In order to document and evaluate the potential effects of the MPRP on significant vernal pools, CMP initiated an unprecedented effort in Maine during the springs of 2007 and 2008 to assess and map vernal pool resources within, and in the vicinity of, a number of existing transmission line corridors and substation sites. TRC Engineering (TRC) was hired to manage and perform this vernal pool resource assessment and mapping effort. In total, TRC surveyed over 620 miles of existing CMP transmission corridor and associated substation sites (both newly proposed substations and substation expansions) for the presence of vernal pool resources. CMP's vernal pool investigation resulted in one of the largest vernal pool datasets in the State of Maine. Figure 1 depicts the vernal pool survey area contrasted with the biophysical regions of Maine.

This position paper first identifies issues relevant to vernal pool conservation, regulation, and management along transmission corridors in Maine based on existing regulations and published best management practices. This is followed by a description of CMP's methods of vernal pool investigation, and a discussion of the results of CMP's investigation relative to existing knowledge of vernal pool ecology. In the final section of this paper, the findings of this vernal pool investigation are summarized, and recommendations are made regarding significant vernal pool management and regulation in transmission corridors.



MAINE POWER RELIABILITY PROGRAM

A CENTRAL MAINE POWER COMPANY PROGRAM

Figure 1: MPRP Vernal Pool Survey Area

TRC
249 Western Ave.
Augusta, ME 04330

2.0 ISSUE IDENTIFICATION

In the glaciated northeast, vernal pools are temporary to semi-permanent pools that are located in shallow depressions on the landscape, and that lack permanent hydrologic inlets or outlets and populations of predatory fish (Calhoun and deMaynadier, 2008). Vernal pools provide the primary breeding habitat for several amphibian species (DeGraff and Yamasaki, 2001), as well as other obligate vernal pool species. *Rana sylvatica* (wood frogs), *Ambystoma maculatum* (spotted salamanders), and *Ambystoma laterale* (blue spotted salamanders) spend most of their life cycles in upland or wetland habitats surrounding vernal pools, and migrate to vernal pools for a short part of the year during the spring breeding season (Semlitsch, 2000). Thus, although vernal pools are often small hydrologically isolated wetlands, they share a significant ecological connection to the surrounding landscape.

Regulatory protection is provided to certain vernal pools in Maine by the U.S. Army Corps of Engineers (USACE) under § 404 of the Clean Water Act (33 U.S.C. § 1344) and by the Maine Department of Environmental Protection (MDEP) under the Natural Resources Protection Act. Some municipalities in Maine also regulate impacts to vernal pools in their evaluation of proposed developments (e.g., Town of Falmouth, 2009). In recognition of the ecological connection between vernal pools and the adjacent landscape, federal and state regulations also exert jurisdiction over uplands and wetlands adjacent to vernal pools. Given that vernal pools occur broadly across the landscape in the glaciated northeast (Rheindhardt and Hollands, 2008), vernal pool regulations have significant implications for linear transmission corridor construction, because vernal pools are almost certain to be crossed by transmission corridors which span long distances across the landscape.

Projects reviewed by the USACE, pursuant to the Department of the Army Programmatic General Permit - State of Maine (MEPGP) are evaluated for project impacts within 500 feet of jurisdictional vernal pools. Larger projects being permitted by the USACE may also require review by the U.S. Fish and Wildlife Service (USFWS), which evaluates project impacts within 750 feet of vernal pools. Under NRPA, the MDEP exerts jurisdiction over "significant vernal pool habitat" as one type of regulated "significant wildlife habitat," which includes significant vernal pools and land within 250 feet of significant vernal pool depressions. Vernal pools qualify as "significant" based on the presence of certain species known to utilize vernal pools for a critical part of their life phase, or by the abundance of egg masses deposited by certain amphibian species (06 096 C.M.R. Ch. 335 § 9(B)). The MDEP does not have jurisdiction over "non-significant" vernal pools. Both federal and state regulations require that applicants attempt to avoid and minimize impacts to these habitats to the greatest extent practicable, and, in some cases, to provide compensation.

Although not a regulatory requirement, some researchers/authors of current best development practices (guidance for avoiding and minimizing effects) for vernal pool

management recommend no impact to the vernal pool depression and minimal disturbance to the habitat within 100 feet of the pool, and maintenance of 75% of the habitat from 100 to 750 feet of the pool as contiguous forest with undisturbed ground cover (Calhoun and Klemens, 2002). These guidelines identify the habitat from 100 to 750 feet of the pool as the "critical terrestrial habitat" for pool breeding amphibians. Chapter 335 of MDEP's rules defines significant vernal pool habitat as a significant vernal pool depression and that portion of the critical terrestrial habitat within 250 feet of the high water mark of the pool depression.

Due to a lack of published research evaluating vernal pool conservation strategies, the vernal pool best development practices were developed based primarily on years of field observations regarding the effect of land development on pool breeding wildlife populations, (Calhoun and Klemens, 2002). Two recent case studies have demonstrated that residential and commercial development around vernal pools can cause precipitous declines or collapse of vernal pool breeding amphibians (Windmiller et al., 2008). The existing best development practices were based on the limited research regarding vernal pool conservation strategies that was available at the time of their publication, and they should be considered as provisional best-attempts that may need to be modified to meet local or site specific conservation needs (Windmiller and Calhoun, 2008). Despite the provisional nature of these guidelines, the current regulatory standards in the NRPA are predicated on the Calhoun and Klemens (2002) best development practices, and utilize a universal (i.e., "one size fits all") approach to vernal pool conservation, which may not be appropriate to all classes of land use, or optimal for vernal pool conservation and management.

It is also essential to recognize that the existing best development guidelines regarding conservation strategies for vernal pools are specific to three principal land use classes: residential, commercial, and forest management. The Calhoun and Klemens (2002) best development practice recommendations were designed specifically with respect to "hard" land uses (i.e., clearing, grubbing, grading and paving), including commercial and residential development that result in effectively irreversible and permanent habitat loss. More recent case studies evaluating the effect of land use on vernal pool populations also focus on residential and commercial development (Windmiller et al., 2008). However, "soft" land uses, such as forestry operations or transmission corridor construction, where alteration of habitat via removal of large trees (but not necessarily loss of all vegetation or habitat) occurs, warrants a different set of management guidelines. For example, habitat management guidelines for forestry operations have already been developed, and recommend leaving an undisturbed protection zone immediately adjacent to vernal pools, selected harvesting in a larger radius around vernal pools to maintain some shade and canopy cover, and maintaining uncompacted leaf litter and coarse woody debris on the forest floor (Calhoun and deMaynadier, 2004; deMaynadier and Houlahan, 2008). As with the best development guidelines for residential and commercial development, these habitat management guidelines for forestry operations are preliminary and further research is needed to confirm their effectiveness (deMaynadier and Houlahan, 2008). Very little research or published information exists on the effect of transmission corridor construction and maintenance on vernal pools in the glaciated northeast, and no best

development guidelines for transmission corridors relative to vernal pools have been published.

The lack of data regarding whether transmission corridor construction and maintenance adversely affects vernal pool populations is important to recognize, because the effect of transmission corridors on significant vernal pool habitats is markedly different than that of residential and commercial development, or even forestry operations. Transmission corridor construction through forested areas affects habitat principally via the conversion of forest to shrub and herbaceous cover types, and the presence of utility structures that have a minimal footprint. Paved surfaces, permanent roads, lawns, and buildings characteristic of hard forms of development are not necessary for transmission corridor construction and maintenance. Thus, the habitat and landscape conditions that are required to support significant vernal pools (such as shade, woody debris/organic litter, moisture, suitable non-breeding season habitat, and amphibian migration routes) are all maintained along transmission corridors.

Applying Maine's existing NRPA significant vernal pool regulatory and compensatory mitigation framework to transmission corridor construction does not appear to be justified based on the current and evolving knowledge of the effects of transmission line corridors on vernal pools and vernal pool conservation strategies. There is currently no published data documenting that transmission corridors cause a loss or degradation of vernal pool ecological functions.

As will be discussed below, recent scientific observations during CMP's 2007-08 vernal pool investigations indicate that many of the vernal pools occurring in or adjacent to transmission corridors were documented as significant vernal pools as described in Chapter 335. In the absence of previously published data on the occurrence of vernal pools in managed electric transmission corridors, these recent CMP data are particularly useful in evaluating the impact of long-established transmission line corridors on vernal pools.

3.0 METHOD OF INVESTIGATION

TRC completed vernal pool surveys along existing transmission corridors associated with the MPRP. Many of these corridors have been managed as electric transmission corridors for over 40 years. These surveys were located in the South Coastal, Midcoast, Penobscot Bay, Central Interior, Western Foothill, and Western Mountain biophysical regions of Maine (see Figure 1). The objectives of the vernal pool surveys were to identify potential vernal pools within the program area; to determine if the identified pools were being used by obligate pool species; to determine if any of the pools met the criteria for designation as significant vernal pool habitat in accordance with NRPA standards; and to determine U.S. Army Corps jurisdiction under Section 404 of the Clean Water Act.

Under NRPA regulatory standards (06 096 C.M.R. Ch. 335 § 9(B)) significant vernal pools are defined by either: (1) the abundance criteria, which requires surveying the number of amphibian egg masses belonging to certain species and the presence of fairy shrimp in any life stage; or (2) the rarity criteria, which looks to the documented use of a vernal pool by one or more state-listed threatened (T) or endangered (E) species that commonly require a vernal pool to complete a critical life stage. The specific egg mass abundance criteria that are necessary for a vernal pool to be considered significant include:

Species	Abundance Criteria
Blue spotted salamanders	Presence of 10 or more egg masses[1]
Spotted salamanders	Presence of 20 or more egg masses
Wood frogs	Presence of 40 or more egg masses

In Maine, state-listed threatened or endangered species known to use vernal pools for at least one critical life stage include the following:

Species	Listing	Life Stage(s)
Ringed Boghaunter (dragonfly)	Endangered	Egg laying, Larval Development, Larval Emergence
Spotted Turtle	Threatened	Foraging, Courtship, Mating
Blanding's Turtle	Endangered	Foraging, Hibernation
Ribbon Snake	Special Concern	Foraging
Wood Turtle	Special Concern	Foraging

Thus, field investigations focused on identification and tally of amphibian egg masses, identification of fairy shrimp, identification of threatened and endangered species, and wood frog chorusing surveys. Vernal pool and adjacent habitat characteristics were recorded. Evidence of anthropogenic alteration to the identified vernal pools was also

[1] An egg mass is defined as three or more individuals eggs clumped in a gelatinous matrix (06 096 C.M.R. Ch. 335 § 9(B)(4).)

documented. Pools that were created by anthropogenic activities, such as flooded ATV ruts surrounded by soils that were not flooded, were noted as "amphibian breeding areas" in order to distinguish them from non-significant natural vernal pools and significant natural vernal pools.

The timing of vernal pool surveys was also an important consideration. Vernal pool surveys were timed to coincide with the portion of the year when they are used by amphibians and invertebrates for breeding or aquatic phases of their lifecycle. Southern and coastal areas were surveyed first, followed by the western and northern portions of the study area. Egg mass surveys were conducted within the following regional timeframes suggested by the MDEP:

Geographic Region[2]	Wood Frogs	Spotted and Blue Spotted Salamanders
Northern Maine	May 1 – May 21	May 10 – May 31
Southern Maine	April 7 – April 21	April 20 – May 21

Field surveys were conducted by teams of two biologists experienced with evaluation of vernal pools of New England. Each team was responsible for documenting observations on a vernal pool data form that had previously been approved by Maine regulatory agencies. The field teams walked along study corridors to identify and assess new vernal pools, as well as to evaluate any potential vernal pools that had been previously identified from existing information. In general, each field team "meandered" within the study corridor to thoroughly assess the corridor and minimize the chances of any vernal pools (both in and outside of the study corridor) being missed.

To be consistent with NRPA protocol requirements and recommendations, amphibian egg mass surveys were conducted under appropriate field conditions and within the recommended daily timeframes for such survey efforts. To the extent possible, egg mass surveys were conducted during the day when the sun was out (typically between 9 am - 4 pm). Polarized sunglasses were generally used to minimize sun glare and to aid in the detection of egg masses. Two biologists conducted surveys beginning from separate ends of each pool and thoroughly searched the entire pool together, including the pool center, to ensure that all egg masses were counted. In order to reduce the possibility of errors or omissions in field observations, field biologist teams collaborated to observe, identify, and count egg masses. When agreement was reached regarding the number and types of egg masses that were present within an individual pool, the field team documented findings on the data form and took photographs. In order to prevent disturbance of breeding amphibians and egg masses, biologists entered and stayed within the pools only long enough to collect the necessary data for vernal pool evaluation, and were careful not to dislodge egg masses from attachment sites.

Wood frog chorusing surveys and fairy shrimp surveys were also completed concurrently with amphibian egg mass surveys. Chorusing wood frogs were noted and used to

[2] The northern Maine region is considered to be that part of the state north of a line extending from Fryeburg to Auburn to Skowhegan to Calais. The southern Maine region is the part of the state south of that same line (06 096 C.M.R. Ch. 335 § 9(B)(4)).

evaluate whether additional breeding activity could be anticipated within nearby pools and, hence, whether the pools should be revisited at a later date when breeding activity was completed for the season. Fairy shrimp were identified using dip nets, and direct visual observation of fairy shrimp within the water column. View tubes were also occasionally used. Biologists carefully searched sunny patches in the pool, as fairy shrimp often congregate in these areas.

A Geographic Information System (GIS) analysis of land use within the 250 foot critical terrestrial habitat of identified significant vernal pools was completed subsequent to field surveys. Based on aerial photo interpretation and the transmission right-of-way (ROW) boundary, land use was classified into forested and non-forested cover types occurring within and outside of the ROW boundary. Non-forested cover types included scrub-shrub transmission corridor, hayfields, croplands, and developed areas such as roads, houses, and lawns.

4.0 RESULTS AND DISCUSSION

Vernal pools were found to be abundant within and immediately adjacent to CMP's transmission corridors. CMP identified 88 significant vernal pools, 112 non-significant natural vernal pools, and 689 anthropogenically altered or created amphibian breeding areas (Table 1). Thus, of the vernal pools that were identified, 44 percent met the NRPA criteria for significant vernal pools. According to the Maine Department of Inland Fisheries and Wildlife (MDIF&W statement at a Maine Association of Wetland Scientists vernal pool workshop on February 6, 2009), that agency maintains a database of 230 natural vernal pools of which 63 (27 percent) are significant vernal pools. At a February 2009 professional workshop addressing vernal pool protection and management in Maine, agency officials stated that approximately 40 to 50 percent of the natural vernal pools on the landscape were expected to meet the Chapter 335 Significant Wildlife Habitat Rules vernal pool significance criteria. The occurrence of significant natural vernal pools along the transmission corridors surveyed as part of the MPRP (44 percent) falls in the middle of that 40 to 50 range and compares well with regulatory expectations. In addition, the occurrence ratio of significant vernal pools to all natural vernal pools within and along CMP's transmission corridors (88/200 = 44 percent) is higher than that of the existing MDIF&W vernal pool database (63/230 = 27 percent)

Spotted salamanders, blue spotted salamanders, and wood frogs were among the identified amphibians or amphibian egg masses. Fairy shrimp were also identified in a very limited number of pools. Other than the occurrence of fairy shrimp, no threatened or endangered species were observed within 250 feet of any vernal pools. This dataset is one of the largest vernal pool databases within the State of Maine.

The 689 identified amphibian breeding areas were comprised of pools created by human activities, but that were used by obligate pool breeding amphibians. Amphibian breeding areas were primarily all terrain vehicle (ATV) ruts located in wetlands or uplands, but other types of amphibian breeding areas such as farm ponds were also documented. Vernal pools created by human activities can often serve as ecological traps with insufficient hydroperiods, but some anthropogenic pools may have adequate hydroperiods for breeding success (DiMauro and Hunter, 2002). The ecological function of anthropogenically created amphibian breeding areas along transmission corridors is probably variable, and at this time their suitability as viable vernal pool habitat is unproven.

Table 1 Summary of Vernal Pools Identified Along the MPRP Survey Corridor

Approximate Survey Mileage	Significant Natural Vernal Pools	Non-Significant Natural Vernal Pools	Anthropogenically Altered/Created Amphibian Breeding Areas
620	88	112	689

Among the 88 pools that qualify as significant vernal pools under NRPA standards, 77 have non-forested cover types exceeding 25 percent of their critical terrestrial habitat (within 250 feet of the pool) (Table 2). The average non-forested coverage within 250 feet of significant vernal pools was 44 percent, with a range of 14 to 86 percent non-forested coverage (Table 3). Of these significant vernal pools, 50 currently have 26 to 50 percent non-forested cover types within 250 feet of the pool (Table 2), and 26 have 51 to 75 percent non-forested cover types. Land use within 250 feet of significant vernal pools included utility corridor, forest, agricultural land, and "hard" land uses such as roads, parking lots, houses/subdivisions, and lawns. Existing transmission corridors accounted for the vast majority of non-forested cover types within 250 feet of significant vernal pools. Of note, 87.5 percent of significant vernal pools within the surveyed corridors contained less than 25 percent forested cover types within their critical terrestrial habitat (within 250 feet of the pool depression).

The transmission corridors that the pools are located within or along have been in existence and managed as non-forested, early-successional habitat for nearly half a century or more (Table 2). These data suggest that conversion of forest cover types to utility corridor can support and maintain viable and healthy populations of vernal pool breeding amphibians, even after time periods spanning multiple amphibian generations. However, despite what appears to be robust populations of pool breeding amphibians and abundant pool breeding habitat along transmission corridors in Maine, NRPA standards suggest that existing transmission corridors that have existed for multiple decades may need to be counted toward the 25% non-forested habitat threshold beyond which mitigation is required.

Table 2: Significant Vernal Pool Buffer Habitat Characteristics Along the Survey Corridor

Total Number of Significant Vernal Pools	Approximate Age Range of Existing Utility Corridor (years)	Existing Non-Forested Habitat Cover Within 250 Feet of Significant Vernal Pools							
		< 25%		26-50%		51-75%		76% - 100%	
		n	%	n	%	n	%	n	%
88	40 to 60 plus	11	12.5	50	56.8	26	29.5	1	1

The documented abundance of significant vernal pools and associated wildlife occurrences within the surveyed CMP corridors suggests that the habitat conditions necessary to supporting vernal pool populations are maintained along transmission corridors. This is despite the removal of trees that are required to construct and maintain transmission line corridors in a safe and reliable condition. Among these habitat conditions are sufficient pool hydroperiods (Skidds and Golet, 2005), organic carbon inputs to vernal pool depressions via leaf litter and herbaceous vegetation, landscapes that are permeable to amphibian migration (Calhoun and Klemens, 2002), and suitable non-breeding season habitat (Semlitsch, 2000).

Table 3: Non-Forested Habitat Cover Within 250 Feet of Significant Vernal Pools

Number of Pools	Mean	Range
88	44%	14% to 86%

Hydroperiod, an essential element of amphibian breeding success, requires that suitable breeding habitat containing vernal pools must hold water long enough for amphibian larvae to complete their aquatic life phase (Skidds and Golet, 2005). Soil disturbance, harvest road construction, and tree removal are three activities that have been noted as having the potential to affect pool hydroperiod in managed forests (deMaynadier and Houlahan, 2008). While tree removal activities occur during transmission corridor construction, there are significant differences in their implementation relative to forestry operations. The primary differences and similarities between transmission line corridor establishment and forestry operations are summarized below.

During transmission corridor construction, soil disturbance is minimized by the use of erosion and sediment control measures, routine environmental inspections by utility representatives and consultants, third party environmental inspections, and the use of construction mats in wet areas to prevent soil rutting and compaction. Conversely, these practices are generally neither followed nor required in forest management operations. Permanent harvest roads that can alter local surface drainage patterns are common on managed woodlands. Permanent harvest roads are not constructed within transmission corridors. In addition, on transmission corridor projects, initial tree removal is completed in a relatively rapid, one-time effort. In contrast, soils in managed woodlands are often disturbed by the repeated passage of heavy equipment over time, during one or more forest harvests.

Furthermore, forest harvesting has not been proven to produce long-term effects on seasonal forest pool hydroperiod based on chronosequence investigations (Batzer et al., 2000; Palik et al., 2001). Higher groundwater tables have been documented following harvesting (Sun et al., 2000), suggesting that tree removal will not shorten pool hydroperiod. Other work has revealed only subtle effects on local water tables outside of the immediate post-harvest time period (Bliss and Comerford, 2002). These findings suggest that tree removal related to transmission corridor construction will not have any significant long-term effect on vernal pool hydroperiods.

That vernal pools and evidence of pool breeding wildlife populations were common along existing transmission corridors during 2007 and 2008 vernal pool assessment surveys demonstrates that the hydroperiod of many transmission corridor vernal pools is sufficient for pool breeding amphibians to complete their aquatic life phase. In the glaciated northeast, factors such as surficial geologic setting, landscape position, geomorphic setting, and catchment size may very well be more relevant to vernal pool hydroperiod within transmission corridors than tree removal and other activities related to transmission corridor construction.

Importation of leaves, woody debris, and other organic matter to vernal pool basins by wind, flowing water, or other means provides a source of organic carbon to vernal pool habitats. Such carbon sources may be important to supporting a pool's food web (Battle and Golladay, 2001). These organic matter inputs are derived from vegetation that grows within vernal pools and/or in adjacent uplands and wetlands. Transmission corridors are

maintained to support a completely vegetated shrub cover type. Common plants that were observed within Maine transmission corridor uplands during field surveys include *Juniperus communalis* (common juniper), *Spirea latifolia* (meadowsweet), *Rhus typhina* (staghorn sumac), graminoids, several herbaceous species, and hardwood saplings. In wetlands and vernal pools within transmission corridors *Ilex verticillata* (winterberry), *Alnus rugosa* (speckled alder), *Spirea tomentosa* (steeplebush), meadowsweet, *Onoclea sensibilis* (sensitive fern), *Osmunda cinnamomea* (cinnamon fern), and *Scirpus cyperinus* (wool grass) were commonly observed during field surveys. Most vernal pools along the transmission corridor contained significant amounts of organic detritus, which was apparently derived from vegetation within and/or adjacent to the transmission corridor. In addition to providing a source of organic carbon to support secondary production within vernal pools, these plants or their fallen woody branches parts were utilized as amphibian egg mass attachment sites. Subsequent to leaf out, shrub species provide a source of pool shade, as do taller trees adjacent to transmission line corridors.

In order to complete their life cycles and sustain local populations, pool breeding amphibians must be able to successfully migrate across the landscape to suitable non-breeding season habitat (Semlitsch and Skelly, 2008). According to literature, forested settings are the natural and preferred habitat for ambystomatid salamanders and wood frogs (DeGraff and Yamasaki, 2001); however, pool breeding amphibians are known to travel across other non-forested cover types. For example, in one Rhode Island study of golf course fairways, non-forested areas were not a dispersal barrier to spotted salamanders travelling to adjacent forested areas (Montieth and Paton, 2006). The presence of uncompacted leaf litter, coarse woody debris, and shade are important habitat characteristics for pool breeding amphibians (deMaynadier and Hunter, 1995). Areas with high densities of small mammal burrows and cool microclimates have also been found to be preferred by spotted salamanders (Montieth and Paton, 2006).

During field surveys, leaf litter, coarse woody debris, and mammal burrows were all observed within the early-successional cover type of Maine electricity transmission corridors. Shrubs observed in transmission corridors provide shade and organic debris. In addition, many vernal pools within Maine's transmission corridors were found within larger wetland complexes dominated by the scrub-shrub and emergent vegetation cover types. Many of these wetlands spanned the entire transmission corridor, thereby providing a moist environment for amphibians to migrate through as they travel between their breeding pool and adjacent habitat. This demonstrates that transmission corridors are 'permeable' to amphibian migration and movement. This is in contrast to many forms of hard land uses where pavement and construction destroys, removes, or permanently covers burrows, leaf litter, and woody debris, and also introduces the threat of vehicular mortality.

Suitable non-breeding season habitat is also essential for maintaining populations of amphibians that breed in vernal pools. Mean travel distances for spotted salamanders and wood frogs have been calculated at 390 feet and 633 feet, respectively, while maximum travel distances were measured to be 817 feet and 1,549 feet, respectively (numerous studies in Semlitsch and Skelly, 2008).

Transmission corridors surveyed for the MPRP were usually less than a few hundred feet wide; many were less than 150 feet and were adjacent to forested habitat. Therefore, non-breeding season forested habitats adjacent to transmission corridors are well within documented migration distances for pool breeding amphibians. In addition, in Pennsylvania transmission corridors maintained in an early-successional habitat condition were found to provide sufficiently moist microenvironments for salamanders including *Ambystoma jeffersonianum* (Jefferson salamander), *Plethodon cinereus* (red back salamander), and spotted salamander (Yahner et al., 2001). Therefore, it is also plausible that in Maine, the transmission corridor itself may be used as habitat, provided that sufficient leaf litter, burrows, and coarse woody debris, moisture, and shade are present.

5.0 SUMMARY AND RECOMMENDATIONS

In the glaciated northeast, vernal pools have become a focal issue in conservation and land use planning. Regulation of certain vernal pools in Maine has significant implications on the design and permitting of electric transmission corridors and vernal pool management. While existing recommended best development practices for vernal pool conservation are provisional, and were developed to address typically "hard" residential and commercial development, NRPA vernal pool regulations appear to have been developed around these preliminary guidelines and are being applied to a much broader class of land uses (e.g., "soft" land uses including electric transmission line corridors). The most recent literature, however, emphasizes the need for site-specific planning and flexibility for meeting vernal pool conservation needs. Thus, CMP sought to identify vernal pools in its existing transmission corridors and evaluate the implications of the existing regulatory framework on transmission corridor design, permitting, and maintenance. In completing this effort, CMP compiled what is likely one of the largest vernal pool databases in Maine. This new dataset adds to our understanding of vernal pool resources in Maine.

CMP's investigation demonstrates that vernal pools are ubiquitous in transmission corridors located within its service territory. Even after many decades of being managed as early-successional habitat, anthropogenic, natural, and significant vernal pools were found to be common in these corridors. The vast majority (87.5%) of the identified significant vernal pools that would be subject to NRPA jurisdiction currently have vernal pool critical terrestrial habitat that is less than 75 percent forested within 250 feet of the pool; in other words, more than 25 percent of the existing non-forested critical terrestrial habitat around these identified significant vernal pools is managed as early-successional habitat. Field observations of vegetation cover, leaf litter, and coarse woody debris suggest that transmission corridors support habitats that are permeable to the migration of vernal pool breeding amphibians to and from adjacent forests, and that transmission corridors themselves may be utilized as non-breeding season amphibian habitat. The observed abundance of natural and significant vernal pools that were utilized as breeding habitat by obligate vernal pool breeding species suggests that vernal pools in and along transmission corridors are able to function without loss or significant degradation of their ecological function.

These findings are significant relative to vernal pool management as it pertains to electric transmission corridor construction and maintenance. Data on significant vernal pools within and/or along CMP corridors, existing literature, and regulatory guidelines and requirements all demonstrate that significant vernal pools and transmission corridors (as currently constructed and maintained) are compatible. This is further emphasized by the following summary points:

- Extensive data collected by CMP show that significant vernal pools occur in transmission line corridors within the expected frequency range, and at a greater rate than shown in MDIF&W's existing database. Specifically, 45 percent of the

natural vernal pools assessed along CMP transmission corridors were significant. This falls in the middle of the agency-expected range of 40 to 50 percent of all pools assessed being significant;

- The average percentage of non-forested habitat within 250 feet of these significant vernal pools was 44 percent;

- Only 12.5 percent of these significant vernal pools had greater than 75 percent forest habitat coverage with their 250 foot buffers;

- Constructing and maintaining transmission line corridors does not negatively affect vernal pool hydroperiod;

- The early-successional (shrub and herbaceous vegetation) habitat associated with transmission line corridors appears to be permeable to amphibian migration and is capable of sustaining highly productive amphibian breeding habitat;

- The life span of the spotted salamander averages 15 to 20 years. Some of these corridors have been in existence for 40 or more years, a time period which spans multiple generations of spotted salamander. Given that the literature suggests that mole salamanders have high pool spawning fidelity (i.e., over 90 percent of the time they return to spawn in the pools from which they hatched and emerged), the data strongly suggests that several generations of spotted salamanders have successfully reproduced in these vernal pools. In addition, their offspring continue to breed in these pools;

- There is no literature demonstrating adverse impacts from transmission line corridors on vernal pools;

- Current regulations are based on studies that focused on "hard" developments, which are very dissimilar to the vegetated conditions present within transmission line corridors; and

- The current management of vernal pools in transmission line corridors is consistent with some of the significant vernal pool habitat management guidelines and goals presented in Chapter 335 and Calhoun and Klemens (2002). These guidelines and how there are wholly or partially met are as follows:
    - *(1) No disturbance within the vernal pool depression.* CMP and other electric utility companies expend a great amount of effort to ensure that vernal pool depressions are not disturbed during construction and maintenance activities. These efforts include (1) providing environmental oversight during the project design phase to ensure that, whenever possible, pole structures are not placed in vernal pools; (2) implementing and maintaining erosion and sediment controls that help prevent siltation of pools; (3) marking vernal pool depression with flagging tape prior to construction; and (4) performing environmental inspections during

construction to ensure that pools are not traversed by vehicles and construction equipment;

- *(2) Maintain a minimum of 75% of the critical terrestrial habitat as unfragmented forest with at least a partly-closed canopy of overstory trees to provide shade, deep litter and woody debris.* Although transmission line corridors cannot be maintained as forest for reliability and safety reasons (in other words, it is not "practicable"), they are maintained as early-successional habitat composed of shrubs and herbaceous plants. This habitat type provides some level of shading, significant litter accumulation (carbon input) from leaf drop and the die-back of herbaceous vegetation, and woody debris;
- *(3) Maintain or restore forest corridors connecting wetlands and significant vernal pools.* Within transmission line corridors, amphibian travel corridors composed of shrubs and thick growth of herbaceous vegetation are often present. Also, the CMP data indicate that transmission line corridors and their early-successional habitat are permeable to amphibian migration. This meets the needs for maintaining forested travel corridors, which are often required in the vicinity of "hard" development;
- *(4) Minimize forest floor disturbance.* With the exception of pole structure locations, transmission line corridors are not grubbed. Rather, trees are cut at ground level and root systems are left in the ground. In addition, mitigation techniques including winter construction and the use of equipment mats are utilized during construction to minimize ground disturbance such as rutting. By virtue of how transmission line corridors are constructed and maintained, ground disturbance is minimized;
- *(5) Maintain native understory vegetation and downed woody debris.* Transmission line corridors are constructed and maintained to encourage the growth of understory vegetation including shrubs and herbaceous plants. Also, downed woody debris from shrubs occurs naturally and is very common in transmission line corridors.

All of this information indicates that transmission line corridors, as they are currently constructed and maintained in Maine, do not cause a loss of the important ecological functions associated with significant vernal pools in Maine.

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1-8: Vernal Pool Occurrence and Species Distribution within Electrical Transmission Rights-of-Ways in Maine, TRC Environmental, April 2011.

Vernal Pool Occurrence and Species Distribution within Electrical Transmission Right-of-Ways in Maine

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Due to the nature of long distance bulk energy transmission, transmission corridors (or right-of-ways (ROWs)) occur in virtually every landscape position and habitat type across the country. ROWs are managed to sustain non-forested vegetation and can be several hundred feet in width and up to several hundred miles in length. Accordingly, they traverse regulated areas such as wetlands and vernal pool habitats throughout the glaciated northeast. Vernal pools and adjacent habitat areas are regulated by both state and federal agencies, each of which having unique criteria for determining thresholds of jurisdiction. A key aspect to "classically-defined" northeast vernal pool ecology and their regulatory definition is the presence of forested uplands around the pools that provide non-breeding adult-stage habitat for primary vernal pool species such as Ambystomid salamanders and wood frogs (*Rana sylvatica*). Therefore, the management of ROWs to allow only non-forested vegetation in and around vernal pools in the ROW presents a potential conflict for sustaining essential vernal pool habitat conditions. The major question that arises from this potential management conflict is whether and to what extent vernal pools are affected by ROWs in overall occurrence, types of species supported, and the potential populations of organisms based partially on the density of yearly egg masses. Due to the individual permitting requirements associated with several large and geographically diverse ROW maintenance and expansion projects in Maine, an evaluation of a large number of vernal pools occurring in and near ROWs was undertaken to evaluate vernal pool occurrence and species distribution within ROWs. It is worth noting that a large number of the ROWs surveyed have been maintained as non-forested corridors for 40 years or more.

Vernal pool habitats occurring within two large ROW maintenance and expansion projects in Maine were identified and evaluated over multiple breeding seasons. The methodology for field data collection was established based on regulatory criteria, and was similar between the projects. Field parameters included amphibian egg mass counts with species identification as well as other key characteristics cited in scientific literature and regulatory definitions. Surveys were scheduled to observe potential pools during and immediately following the period of active ovipositioning, and in most cases pools were observed twice during the breeding season to view the occurrence of different species that produce egg masses in earlier and later portions of the season. It was also noted if pools were entirely or partially within, or adjacent to the maintained ROW corridor by "percent within the ROW" along this continuum. For purposes of this analysis, pools that occurred within at least 75% within the ROW were considered to be fully "ROW" pools. Categories of pools that were 25 to 75% in the ROW were considered transitional and the balance of the observed pools were considered non-ROW pools. Portions of the projects

involving proposed, undeveloped ROW corridors and potential mitigation sites afforded the opportunity to conduct the same surveys to observe and compare pools within undeveloped areas.

Results for all the surveys were tallied and analyzed for 1,834 vernal pools, all of which contained either wood frog or spotted salamander egg masses, or both. Vernal pool occurrence observations indicate that 55.3% of the total pools observed were considered ROW pools and 23.5% of the pools were found in a non-ROW setting. The remaining 21.2% of the pools were in transitional areas. A total of 1,175 identified pools contained wood frog egg masses. Among these pools, 66.7% occurred in the ROW, 23.7% occurred in transition areas and 9.5% in non-ROW areas. A total of 1,301 identified pools contained spotted salamanders. Among these pools 49.5% occurred in the ROW, 19.9% occurred in transitional areas, and 30.6% occurred in non-ROW areas.

In order to determine the relative "productivity" of each pool in terms of the number of egg masses that were present at the point of seasonally highest occurrence, the number of egg masses occurring per pool for each species was categorized into groups of 1 to 9, 10 to 19, 20 to 39 and 40 or greater egg masses. In this way, it is easier to see which pools could meet the Maine Department of Environmental Protection (MDEP) definition for a Significant Vernal Pool (SVP) (see below). For wood frogs, pools in the ROW (i.e., as above, with 75% of pool occurring in ROW) containing 1 to 9 egg masses comprised 63.7% of the total pools, and 21% of the pools contained 20 or more egg masses (9.3% with 40 or more egg masses). For pools outside of the ROW, pools containing 1 to 9 wood frog egg masses comprised 92.1% of the total pools, and 4.4% of the pools contained 20 or more egg masses (2.6% with 40 or more egg masses). For spotted salamanders, pools in the ROW containing 1 to 9 egg masses comprised 79.5% of the total pools, and 9.1% of the pools contained 20 or more egg masses (3.1% with 40 or more egg masses). For pools outside of the ROW, pools containing 1 to 9 egg masses comprised 62.2% of the total pools, and 26.2% of the pools contained 20 or more egg masses (10.2% with 40 or more egg masses).

This large sampling of data provides the opportunity for several observations. First, while the vernal pool observations concentrated on ROWs and their immediate environs versus a broader study that would compare undeveloped land to ROW, vernal pools containing spotted salamanders and wood frogs egg masses occur half and two-thirds of the time, respectively, directly within ROWs relative to transitional or non-ROW settings. Second, for wood frogs, pools that occur directly within the ROW have a higher egg mass count and distribution per pool (36.3% with 10 or more egg masses) as compared with pools in non-ROW settings (7.9% with 10 or more egg masses). This trend is somewhat reversed for spotted salamanders, though not as pronounced. This suggests that the increased amount of sunlight in an open ROW area compared to an area of dense forested canopy, encouraged wood frog breeding, whereas the spotted salamander prefers deeper depressions with slightly longer hydroperiods typically receiving less direct sunlight.

When looking at pools potentially regulated by the Maine Department of Environmental Protection (MDEP), pools were broken down similarly, as above, with bins (percentage categories) including pools in ranges of ROW occupancy ranging from 0-25%, 26-50%, 51-75%,

and 76-100%. Pools with a 100% rating were found to be completely in a woodland setting, conversely pools with a 0% rating were found to be completely in the non-forested ROW. Due to the majority of the project area being located within existing ROW areas, the data summaries indicate that 67% of the pools surveyed on this project were located nearly entirely within the ROW. Eight percent of the pools within the ROW (0-25% forested) were found to have over 40 wood frog egg masses and therefore potentially regulated by the MDEP. Comparatively, 12% were found to have the same abundance in non-ROW (76-100% forested) settings. For spotted salamanders, a 20 egg mass threshold was used to coincide with MDEP regulations. In the ROW setting, 6% of the pools met MDEP *abundance* criteria, while in the non-ROW setting 20% met the criteria.

These findings are congruent with the results found above as that wood frogs do not show a strong preference between pools with a forested canopy and pools within a maintained ROW setting and therefore demonstrate that maintained ROW vegetation does not seem to be a deterrent in the usage of pools in these areas for breeding. Spotted Salamanders are shown to have a higher abundance within a forested setting as opposed to a maintained ROW and similarly have more pools with the potential to be regulated by the MDEP. This may be explained, as discussed above, by a preference for deeper pools with a more forested canopy.

Continued studies of vernal pools within ROWs and adjacent habitats, including adult population analyses, will help to provide further information about the ecology and viability of vernal pools within non- and semi-forested environments.

1-9: NECEC Potential Compensation Tracts-
Natural Resource Survey Results

August 13, 2018

CENTRAL MAINE POWER COMPANY

NECEC Potential Compensation Tracts

Natural Resources Survey Results

PROJECT NUMBER:
152619

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NECEC Compensation Tracts Natural Resources Survey Results

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ACRONYMS AND ABBREVIATIONS

COMPENSATION TRACT	ABBREVIATION	TOWN/TOWNSHIP (Twp)
Little Jimmie Pond-Harwood Tract	LJPT	Manchester
Flagstaff Lake Tract	FLT	Flagstaff & Dead River Twps
Pooler Ponds Tract	PPT	The Forks Plantation Twp
Grand Falls Tract	GFT	Spring Lake Twp
Lower Enchanted Tract	LET	Lower Enchanted Twp
Basin Tract	BT	Pierce Pond Twp

ACRONYM / ABBREVIATION	TERM
ABA	Amphibian Breeding Area
AT	Appalachian Trail
BMPs	Best Management Practices
BCC	Bird of Conservation Concern
BWH	Beginning with Habitat
CFR	Code of Federal Regulations
CMP	Central Maine Power Company
CVP	Corps Vernal Pool
CWA	Clean Water Act
DWA	Deer Wintering Area
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	geographic information system
GPS	Global Positioning System
HVDC	high voltage direct current
I-95	Interstate 95
ILF	In Lieu Fee
IPaC	Information for Planning and Consultation
IWWH	Inland Waterfowl and Wading Bird Habitat
KLT	Kennebec Land Trust
kV	kilovolt
L	Lacustrine
MLUPC	Maine Land Use Planning Commission
MBPL	Maine Bureau of Parks and Land
MCHT	Maine Coast Heritage Trust
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department of Inland Fisheries and Wildlife
MDMR	Maine Department of Marine Resources
MEGIS	Maine Office of Geographic Information Systems
MGS	Maine Geological Survey

ACRONYM / ABBREVIATION	TERM
MHT	Maine Huts and Trails
MNAP	Maine Natural Areas Program
M.R.S.	Maine Revised Statutes
MW	megawatt
NECEC	New England Clean Energy Connect Project
NED	*New England District*
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NRPA	Natural Resources Protection Act
NWPL	National Wetland Plant List
NWI	National Wetlands Inventory
OM	Organic Matter
PEM	Palustrine Emergent
PFO	Palustrine Forested
POW	Palustrine Open Water
Project	New England Clean Energy Connect Project
PSS	Palustrine Scrub-Shrub
PSVP	Potential Significant Vernal Pool
PUB	Palustrine Unconsolidated Bottom
PVP	Potential Vernal Pool
R	Riverine
RTE	Rare, threatened or endangered
SC	Special Concern
SLODA	Site Location of Development Act/Site Law
SVP	Significant Vernal Pool
T&E	Threatened and Endangered
TNC	The Nature Conservancy
Twp	Township
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VP	Vernal Pool
WMA	Wildlife Management Area
WOSS	Wetlands of Special Significance
WOTUS	Waters of the United States
WQLL	water quality limiting lake

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1.0 NECEC COMPENSATION TRACTS NATURAL RESOURCE SURVEYS

1.1 Introduction

Central Maine Power Company (CMP) proposes to construct the New England Clean Energy Connect Project (NECEC Project or the Project), a high voltage direct current (HVDC) transmission line and related facilities capable of delivering up to 1,200 megawatts (MW) of electric generation from the Canadian border to the New England Control Area in response to the Request for Proposals for Long-Term Contracts for Clean Energy Projects dated March 31, 2017 and issued by the Massachusetts Department of Energy Resources and the Electric Distribution Companies of Massachusetts.

The proposed NECEC Project is composed of the following components displayed on Figure 1:

- Segments 1, 2, and 3 – HVDC Components and Associated Upgrades
- Segment 4 – 345 kilovolt (kV) STATCOM Substation and 115 kV Rebuilds
- Segment 5 – New 345 kV Transmission Line and Associated Rebuilds

On September 27, 2017 CMP submitted to the Maine Department of Environmental Protection (MDEP) permit applications for the NECEC Project under the provisions of the Site Location of Development Act (SLODA) and the Natural Resources Protection Act (NRPA). On the same date, a related permit application was submitted under the provisions of Section 404 of the Clean Water Act (CWA) to the United States Army Corps of Engineers (USACE). A more detailed description and discussion of the Project can be found in these permit applications.

Section 13, Compensatory Mitigation, of the NRPA application describes in detail the extent of wetland-related impacts that are anticipated to be necessary for construction of the approximately 146.5-mile NECEC Project. These impacts are summarized in Table 1.1 (Table 13-1 of NRPA application) and the majority are temporary or secondary in nature. Several additional forms of impact have also been added below to the original table in response to subsequent discussion and input from regulatory agencies. Permanent, direct impacts to protected natural resources have been minimized to the extent practicable through the Project design process. Direct impacts are associated with permanent fill as opposed to indirect impacts such as vegetation clearing.

TABLE 1-1 SUMMARY OF RESOURCE IMPACTS

RESOURCE IMPACT	ACRES OF IMPACT
Temporary Wetland Fill	47.21 acres
Permanent cover type conversion of Forested Wetlands (Includes wetland cover type conversion within Significant Vernal Pool Habitat (SVPH) and Inland Waterfowl and Wading Bird Habitat (IWWH)	149.07 acres
Permanent upland cover type conversion of IWWH	13.31 acres
Permanent upland cover type conversion of SVPH	31.31 acres
Permanent Fill in Wetlands of Special Significance (WOSS) (Includes fill within SVPH and IWWH)	0.85 acre
Permanent Fill in Wetland (Non-WOSS)	4.47 acres
Permanent upland fill in IWWH	0.01 acre
Permanent upland fill in SVP Habitat	0.74 acre
Direct and indirect impact to USACE Jurisdictional Vernal Pools	4.7 acres in depression or within 100 ft Value: 56 high, 122 medium, 72 low

1.1.1 Wetland Compensation

When in excess of specific permanent impact thresholds, that can be as little as 15,000 square feet (0.34 acre), compensatory mitigation is typically required by the MDEP under the provisions of the NRPA and associated Wetlands and Waterbodies Protection Rules (Chapter 310) to offset loss of functions and values provided by wetlands. The USACE and United States Environmental Protection Agency (USEPA) have established similar rules for "Compensatory Mitigation for Losses of Aquatic Resources" (40 Code of Federal Regulations [CFR] Part 230) as a means of addressing the federal "*No Net Loss*" policy related to Section 404 of the CWA. In addition, *New England District* (NED) *Compensatory Mitigation Guidance* (September 7, 2016) developed by the USACE (hereafter "NED Guidance") is also relevant and provides additional clarification of compensation objectives and requirements in Maine.

Types of wetland compensation recognized by the NRPA (Ch 310 §5(C) (4)) include:

- Restoration of previously degraded wetlands.
- Enhancement of existing wetlands.
- Creation of wetland from upland.
- Preservation of existing wetlands or adjacent uplands where the site to be preserved provides significant wetland functions.

Similar forms of compensation are recognized by NED Guidance, however "Enhancement" is referred to as "Rehabilitation."

In addition to the above types of "permittee responsible mitigation," another form of compensatory mitigation recognized in Maine by the MDEP, USACE, USEPA, and other federal resource agencies is In Lieu Fee (ILF), where a compensation fee, based on area (square feet) of impact and other variables, is paid into a fund dedicated for implementation of wetland compensation (38 Maine Revised Statutes [M.R.S.] § 480(Z)).

Presented in this document are the results of field surveys augmented by a detailed assemblage of published maps and other information conducted to support the following tracts to be considered for use as Compensatory Mitigation for the NECEC Project:

- Little Jimmie Pond-Harwood Tract (LJPT)
- Flagstaff Lake Tract (FLT)
- Pooler Ponds Tract (PPT)
- Grand Falls Tract (GFT)
- Lower Enchanted Tract (LET)
- Basin Tract (BT)

The locations of the six Compensation Tracts, ranging in size from 81.24 to 831.39 acres, for an aggregate area of 2,075.90 acres, are also displayed on Figure 1.1.

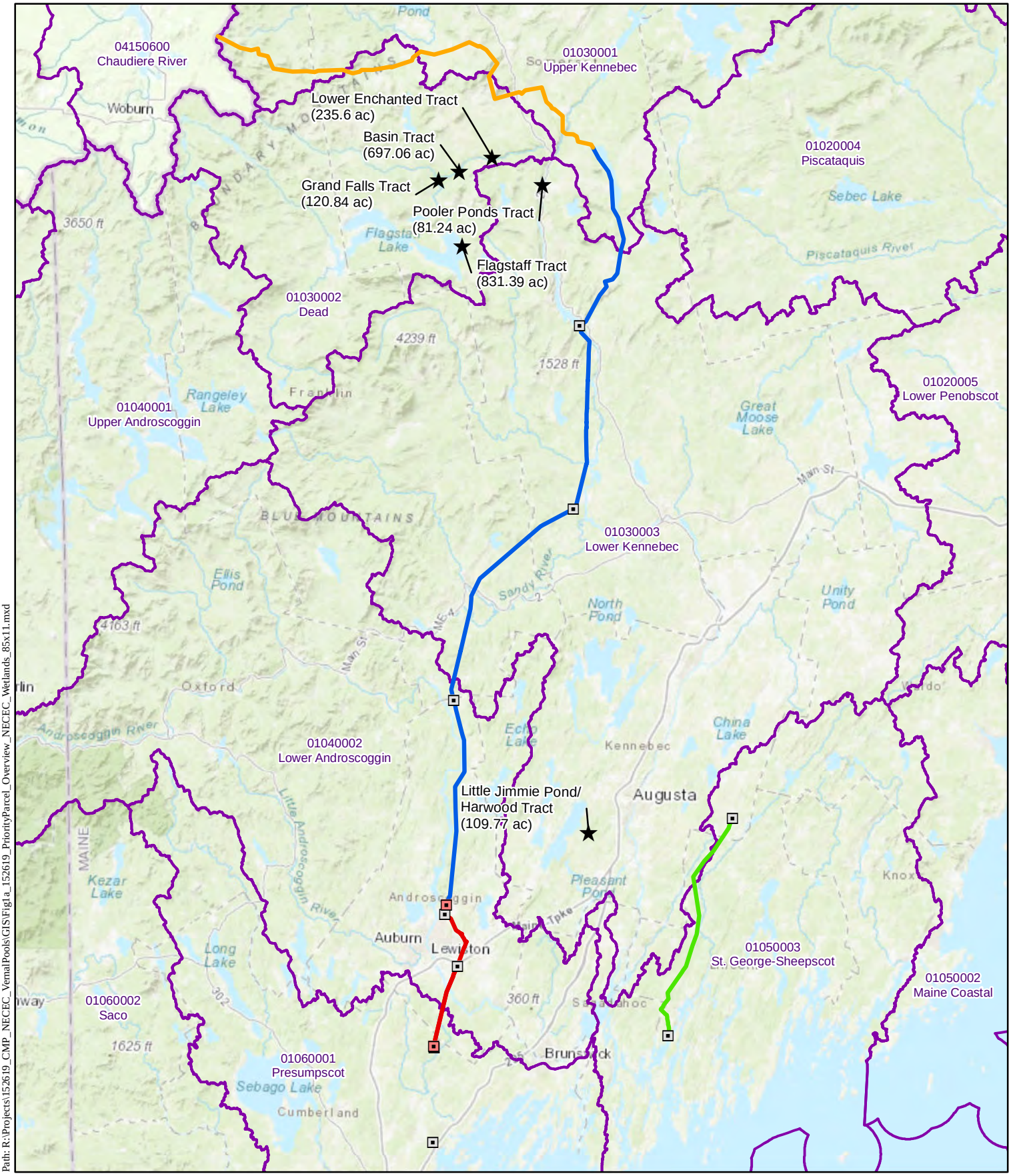

Figure 1a
Compensation Tract Location
Watershed Boundaries

Kennebec and Somerset Counties
Maine

Date:8/13/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

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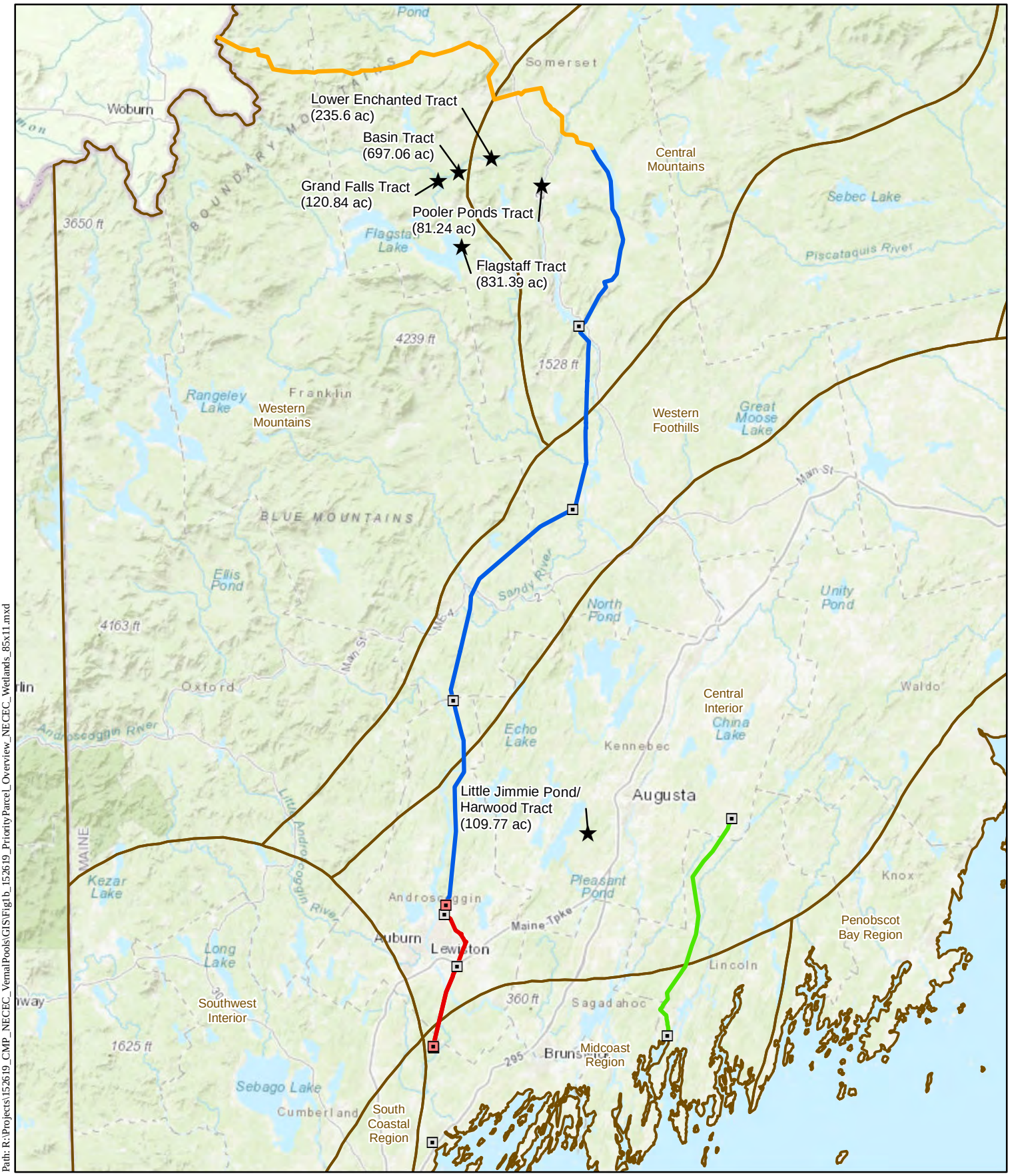

Figure 1b
Compensation Tract Location
Biophysical Regions

Kennebec and Somerset Counties
Maine

Date:8/13/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

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1.2 New England District Compensatory Mitigation Guidance

The NED Guidance establishes criteria related to observations, analyses and other considerations relevant to documenting and evaluating potential sites and forms of compensatory mitigation for the six potential NECEC Compensation Tracts. NRPA wetland compensation standards also reflect many of these criteria (Ch 310 §6 A-H). NED Guidance for Mitigation Site Selection generally encompasses:

- Ecologic suitability based on:
    - Hydrologic conditions, soil characteristics and other physical and chemical characteristics.
    - Watershed–scale features such as habitat diversity, connectivity and other landscape scale functions.
    - Size and location relative to hydrologic sources and other ecologic features.
    - Reasonably foreseeable effects on ecologically important aquatic or terrestrial resources.
    - Other relevant factors such as: development trends, anticipated land use changes, habitat status and trends, location in stream network, local or regional goals for protection of particular habitat, and water quality and floodplain management goals.
- Landscape position being of similar setting and wetland types as of the impacted aquatic resource(s).
- Resistance to disturbance by being located near refuges, buffers, green spaces and other preserved natural elements of the landscape.
- Sustainability considerations such as current and future hydrology and preference for locations in areas that will remain as open space not to be severely impacted by clearly predictable development.
- Surrounding land use/plans, including probable future land use.

For preservation as compensatory mitigation in particular, NED Guidance indicates:

- Resources to be preserved provide important physical, chemical or biological function for the watershed.
- Resources to be preserved contribute to the ecological sustainability of the watershed.
- Resources are under threat of destruction or adverse modifications.
- The preservation site will be permanently protected through an appropriate real estate or other legal instrument.

1.3 Analysis of Existing Data

Prior to the commencement of field surveys of the six potential Compensation Tracts, existing information was reviewed to determine the potential extent of wetlands within the survey areas. These source materials included:

- Maine Office of GIS data catalog for Biologic and Ecologic/Environment and Conservation (MEGIS 2018)
- Maine Department of Environmental Protection Interactive Maps and Data (MDEP 2018)

- Maine Department of Inland Fisheries and Wildlife Beginning with Habitat Maps (MDIFW 2018)
- Maine Land Use Planning Commission Land Use Guidance Maps (MLUPC 2018)
- United States Geological Survey 7.5-minute Topographic Quadrangle Maps (USGS 2018)
- United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Wetlands Mapper (USFWS 2018)
- United States Geological Survey (USGS) National Hydrography Dataset (NHD) Viewer (USGS 2018)
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) 2018 Web Soil Survey (USDA NRCS 2018)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) of Kennebec and Somerset Counties (FEMA 2018)

The information was compiled and synthesized into a geographic information system (GIS) geo-referenced database and used in the field to assist wetland scientists in the location and identification of wetland systems and other relevant natural resources on the Compensation Tracts.

1.4 Field Survey Methods

NWI Maps developed from photo-interpretation of aerial imagery are a widely used and accepted means to identify the location and general extent of wetlands throughout the United States (Benefiel and Lake 2012). Although information can be misused/misinterpreted, NWI maps are very appropriate for a variety of uses including: preliminary site assessment for development and transportation/utility corridors, environmental impact assessment reports, natural resource inventories, wildlife surveys, refuge planning and acquisition, and land appraisal (Tiner 1997).

The Maine Land Use Planning Commission (MLUPC) supported a study by the USFWS to evaluate the accuracy of NWI maps for use as regulatory wetland guidance maps (Nichols 1994). Amendments dated August 18, 2005 to the MLUPC's Land Use Guidance Maps note adoption of NWI wetlands on the Dead River, Carrying Place, Spring Lake, Lower Enchanted and Pierce Pond Townships and The Forks Plantation, where five of the NECEC Compensation Tracts (FLT, GFT, LET, BT, and PPT) are located. Similar NWI mapping appears on the Augusta 7.5-minute USGS topographic map where the Manchester Tract (LJPT) is located.

Limitations of NWI maps are recognized and attributed to a variety of well identified reasons (Tiner 1997 and 2007; Nichols 1994), some of which are particularly relevant to the NECEC Compensation Tracts. "Omission" rather than "commission" error, or the under-representation versus the over-representation, of wetlands is most common. Particularly relevant limitations responsible for omission error include: imagery scale and quality, difficulty in recognizing "drier-end" wetlands, linear (long) narrow wetlands unmapped due to dimensional scale, difficulty in mapping forested wetlands and difficulty in mapping wetlands on glacial till (Tiner 1997 and 2007); these limitations are present on one or more of the six NECEC Compensation Tracts. Field surveys, documenting the presence, extent and physical characteristics (vegetation, soils and hydrology), as well as preliminary habitat assessments, were therefore undertaken to evaluate and document the suitability of the six Tracts as compensatory mitigation for the NECEC Project.

1.4.1 Wetland Delineation

Evidence indicative of wetland from three parameters – vegetation, soils and hydrology – was used to identify and delineate wetlands in accordance with the 1987, *Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the subsequent *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE 2012). With the exception of unusual or atypical situations, evidence of wetland must be exhibited by all three parameters for an area or position to be designated as wetland.

When used in combination with evidence from the two other parameters, specific vegetation is a conspicuous and rapid means to identify the presence and extent of wetlands. The National Wetland Plant List (NWPL) issued by the USACE provides an indicator rating of a plant being indicative of wetlands or a hydrophyte. The NWPL was used to evaluate vegetation during the delineation of wetland boundaries on the six Compensation Tracts. Lists of vegetation and related NWPL indicator ratings appear as Appendix B for each Tract.

In addition to review of soil mapping by the NRCS web soil survey, throughout the course of field identification and the Global Positioning System (GPS) survey of wetlands on the six Compensation Tracts, soil characteristics including composition (organic vs mineral), texture, color (based on Munsell Soil Color Charts), and presence of redoximorphic features, were also examined in shallow soil profiles with a soil auger. Presence of hydric soils, in combination with dominance of hydrophytic vegetation and evidence of wetland hydrology were therefore used to identify the delineated wetland boundaries.

Hydrologic evidence indicative of wetlands includes a variety of primary and secondary indicators such as surface water, high water table, saturation near the surface and water stained leaves, sediment deposits, drift lines or adventitious roots. In combination with the presence of evidence from vegetation and soils, such examples of wetland hydrology were considered during mapping wetlands on the six potential Compensation Tracts.

1.4.2 National Wetland Inventory Classification

The National Wetland Inventory makes use of *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979) to differentiate types of wetlands https://www.fws.gov/wetlands/data/wetland-codes.html. As discussed in subsequent sections, wetlands on each Compensation Tract are identified and described by the NWI code. With this hierarchical classification, most freshwater wetlands on the Compensation Tracts are classified as being of the Palustrine (P) system and then to the class-level, based on dominant plant type as: Forested (PFO), Scrub-Shrub (PSS), Emergent (PEM), or Unconsolidated Bottom (PUB). Wetlands on parts of LJPT and FLT are also of the Lacustrine (L) system, and limnetic (1) subsystem, where instead of plant type, substrate is used to differentiate class-level as being Unconsolidated Bottom (L1UB). In similar fashion, wetlands on parts of GFT, LET and BT are of the Riverine (R) system, and upper perennial (3) subsystem, where substrate is also Unconsolidated Bottom (R3UB). For PPT, being located on the Kennebec River and downstream of the confluence with the Dead River, the subsystem is lower perennial (2) and riverine wetlands on this tract are therefore classified as R2UB.

Due to substrate being the basis for subsystem differentiation for the Lacustrine and Riverine systems, whereas vegetation is used to distinguish Palustrine classes, no attempts were made to capture with GPS the boundaries/areal extent of Lacustrine or Riverine wetlands. Practicality also entered into this decision from the simple basis of seasonal variability of water levels as well as, how far into the lake or river does a GPS polygon extend to arrive at corresponding acreage? Consequently, length or “frontage/river-miles,”

(measured in feet/miles), is deemed to be a more appropriate unit for uniformly quantifying Lacustrine or Riverine wetlands on the Compensation Tracts. Where a segment of Riverine wetland lies wholly within a Tract, (as is the case for a reach of the Dead River on GFT or Enchanted Stream on LET), an approximation of acreage derived from length and representative width is presented for the Riverine wetland units, chiefly for comparative purposes in relation to the size of the overall Tract as well as other delineated and GPS-surveyed palustrine wetland classes.

It is important to recognize that except where bordered by bedrock cliffs such as on LET and GFT, along essentially all Riverine system wetlands, a bordering band of PSS is present and most typically dominated by alder (*Alnus* spp.) or willows (*Salix* spp.). The width of this PSS is dependent on substrate, scour from higher stream stage and steepness of abutting slope. Although present due to mapping scale the band of PSS was not delineated or GPSed where less than approximately 30 feet in width along the river edge. Consequently, GPSed wetland acreage on PPT, LET, GFT and BT is inherently conservative and would therefore equate to an additional approximately 3.5 acres (30 feet by 5,280 feet /43,560 square feet) of PSS per river-mile along the Kennebec and Dead Rivers.

Streams of lesser size than the Kennebec and Dead Rivers or Enchanted Stream are typically not addressed by NWI mapping. The USGS National Hydrography Dataset (NHD), which is akin to NWI mapping but for rivers and streams, provides GIS-based data from which river and stream lengths on the Compensation Tracts are quantified. Unmapped smaller streams encountered in palustrine wetlands during the spring 2018 field surveys are displayed on accompanying tract resource maps (Figures 2.2, 3.3, 4.3, 5.3, 6.3 and 7.3). The mapping is supported by documentation of observed fundamental characteristics (perennial, intermittent or ephemeral flow, width/depth, substrate, fish, beaver dams, etc.). Field surveys also provide a means to reliably compare from tract to tract, the acreage of reaches of rivers or streams contained entirely within Tracts such as the Dead River and Enchanted Stream on GFT and LET respectively.

1.4.3 Wetlands of Special Significance

Under the provisions of the NRPA and related Rules (Chapter 310), certain characteristics are relevant to whether a wetland is regulated as a "freshwater wetland of special significance" (Ch 310 §4A 1-8). Characteristic of Wetlands of Special Significance (WOSS) that could potentially occur on the Compensation Tracts are listed below along with coding used in subsequent sections describing the presence of WOSS on each Tract:

- contains a "*critically imperiled* (S1)" (Ch 310 §3F) or "*imperiled* (S2)" (Ch 310 §3L) community as defined by the Natural Areas Program [**S1/S2**];
- is identified as "*significant wildlife habitat*" (38 MRS §480-B(10)) by the Maine Department of Inland Fisheries and Wildlife (MDIFW) [**SWH**] including:

    1. habitat for state or federal listed endangered or rare species,
    2. high and moderate value "*deer wintering areas*" (DWA) and travel corridors,
    3. high and moderate value *inland waterfowl and wading bird habitat*" (IWWH), and
    4. "*significant vernal pools*" (SVP);

- is located within 250 feet of a "*great pond*" (38 M.R.S. §480-B(5)) **[GP 250]**;

- contains more than 20,000 square feet of open water or aquatic or emergent marsh vegetation [**20k POW/PEM**];
- is a "*floodplain wetland*" (38 MRS §480-B(2-D)) inundated with floodwater during a 100-year flood event based on mapping by FEMA (Ch 310 §4A (6)) **[FP]**;
- is a "*peatland*" (Ch 310 §3P) [**PT**]; or
- is located within 25 feet of a "*river, stream or brook*" (38 M.R.S. §480-B(9), Ch 310 §4A (8)) [**RSB**].

1.4.4 Vernal Pools

Vernal pools are defined by the MDEP as: "a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish" (Chapter 335 §9). "Significant vernal pools" are recognized by the presence of fairy shrimp (Eubrandhipus spp.), or specific numbers of blue spotted salamander (Ambystoma laterale), spotted salamander (Ambystoma maculatum) or wood frog (Lithobates sylvaticus) egg masses; in central Maine, MDIFW guidelines recommend evidence of these species be observed between April 25th and May 25th. Vernal pools documented to be used by state-listed rare, endangered or threatened species such as Blanding's turtles (Emydoidea blanddingii), spotted turtles (Clemmys guttata), boghaunter dragonflies (Williamsoni fletcheri, W. interni), Eastern ribbon snakes (Thamnophis sauritus), wood turtles (Clemmys insculpta), four-toed salamanders (Hemidactylium scutalum), swamp darner dragonflies (Epiaeschna heros), and comet darner dragonflies (Anax longipes), are also considered to be "significant vernal pool habitat" (Ch 335 §9B 1-4).

Under the provisions of Section 404 of the federal Clean Water Act, the USACE regulates activities in "waters of the United States," which include vernal pools. Vernal pools are defined by the New England District of the USACE in the General Permit (GP) for the state of Maine reissued on October 13, 2015. The USACE definition, while very similar to the MDEP's does not reference "natural" and does not recognize or differentiate significant vernal pools based on number of certain egg masses. Instead, the GP definition indicates: "…the presence of any of the following species in any life stage in any abundance level/quantity would designate the waterbody as a vernal pool: fairy shrimp, blue spotted salamanders, spotted salamanders or wood frogs. The Corps may determine during a Category 2 Review that a waterbody should not be regulated as a vernal pool based on available evidence."

Activities in and adjacent to certain types of vernal pools are regulated by the MDEP under the provisions of the NRPA. The extent of this jurisdiction can be as far as 250 feet outward of what are referred to as "significant vernal pools" Chapter 335 §9A(7)) to encompass "critical terrestrial habitat." Under the Maine GP, the USACE also regulates activities in vernal pools and outward from the perimeter for a distance of as much as 750 feet to encompass what is referred to as the "VP management area." Therefore, the spring 2018 screening provides information relevant to amphibian habitat surrounding vernal pools as well as a preliminary indication of the potential extent of regulatory jurisdiction.

Due to these differences in definitions which result in dissimilar approaches to regulatory jurisdiction, the following classification was established for the spring 2018 survey for vernal pools and vernal pool-like features occurring at each of the six Compensation Tracts. Although several rounds of surveys took place during May through June at LJPT, the classification was also developed to account for the brief, solitary reconnaissance-level surveys conducted during early June for the substantially larger tracts in the northern region along the Kennebec and Dead Rivers.

- **SVP** – "S***ignificant Vernal Pool***": Meets MDEP definition (Ch 335 (9)) with appropriate number of indicator egg masses.
- **PSVP** – **Potentially Significant Vernal Pool**: Meets MDEP definition except with >50% required number (i.e., not 100%) of indicator egg masses.
- **VP** – **Vernal Pool**: Meets MDEP definition except <50% required number (i.e., not 100%) or no indicator species egg masses.
- **CVP** – **Corps Vernal Pool**: Occurs in "*waters of the United States*" (WOTUS), typically in areas of disturbance (i.e., not "natural" per MDEP definition) such as skidder/ATV ruts, and contains indicator species egg masses. The other above forms of vernal pools are also subject to USACE jurisdiction.
- **PVP** – **Potential Vernal Pool**: exhibits depression/basin characteristics of VP or CVP but due to brief solitary survey, no other finding made (typically PVPs are reviewed again during a second survey).
- **ABA** – **Amphibian Breeding Area**: Not a MDEP vernal pool, not in USACE WOTUS (therefore, not regulated) but feature (i.e., mud puddle, rut in upland) contains any number of indicator egg masses.

Based on the observation of qualified wetland scientists, these resources have been tentatively identified as high, medium, or low value in accordance with the USACE Mitigation Guidance, but they are not proposed to offset vernal pool impact within the Project areas because they have not been verified. For this reason, CMP's compensation plan provides compensation in the form of ILF.

The boundaries of the wetlands and location of streams/waterbodies, vernal pools, and other natural resources on the Compensation Tracts were delineated in the field with colored flagging. Flagging positions and data point locations were recorded using a Trimble Geo XT mapping-grade GPS unit with positional data post-processed to sub-meter accuracy for transfer onto GIS-based mapping of natural resources on the individual Compensation Tracts.

1.4.5 Rare, Threatened, and Endangered Species

Numerous plant and animal species in Maine are considered rare, threatened, or endangered (RTE) and are protected under the federal Endangered Species Act of 1973 (16 United States Code [U.S.C.] §§ 1531 et seq.), the Maine Endangered Species Act, and/or the Maine Natural Areas Program (MNAP) statute (12 M.R.S. §§ 544, 544-B & 544-C). Under the federal Endangered Species Act, 'endangered' means a species is in danger of extinction throughout all or a significant portion of its range; 'threatened' means a species is likely to become endangered within the foreseeable future. Under the Maine Endangered Species Act, species of 'special concern' are administrative categories established by policy, not regulation, and are for planning and informational purposes (MDIFW 2009). Updated records of federally- and state-listed RTE species are maintained by the USFWS and MNAP, respectively. The online tool created by the USFWS, Information for Planning and Consulting (IPaC), generates a register of any listed species, critical habitat, migratory birds, or other natural resources that occur within the roject boundaries provided by the user. MNAP assesses rareness of plants and animals through analysis of historical research, field surveys, and evaluation by professionals; these assessments are updated biennially.

Regarding the compensation parcels evaluated within the scope of this Project, five of six tracts (FLT, PPT, GFT, LET, and BT) occur in Somerset County, and the remaining tract (LJPT) is in Kennebec

County. Lists of the RTE plant species currently and/or historically known to occur in Somerset and Kennebec Counties were compiled using publicly available information from the MNAP Rare Plant List and Rare Plant Fact Sheet. Of the 347 RTE plant species currently tracked in Maine, a total of approximately 87 species are found or have been found in Somerset County, and a total of approximately 36 are found or have been found in Kennebec County. Given that RTE plant species often have high coefficients of conservatism (a 0 through 10 metric of the Floristic Quality Index of plants native to a region) and are thus associated with specific ecological niches, each of these species was filtered by habitat preference to estimate potential of occurrence. Plants found in habitats not present on any of the tracts (such as, but not limited to, alpine, estuarine, and coastal environments) were disregarded. While surveys for rare species were not formally conducted, species with phylogenetic affinity to those on the RTE list were given appropriate scrutiny. Preliminary observations of plants were noted and appear in Appendix B for each tract. Due to the scope and the schedule of the Project, as well as to variations in phenology and time limitations, identification of all plants on the tracts was not possible.

An informal list of endangered animals was compiled for each tract (Appendix A) using the IPaC program from the USFWS website. Although not considered an official list for the purposes of permitting, the list provided a guideline for surveyors to look for evidence of these species. Observations of animal signs were documented, and details are included in the wildlife section of each tract. Migratory birds and songbirds were identified based on sight or auditory call.

1.5 Functional Assessments

A *Descriptive Approach* to assessing wetland functions and values, described in a September 1999 supplement (the Supplement) to *The Highway Methodology Workbook* by the New England Division of the USACE (USACE-NED 1999), is an assessment method recognized and accepted by the MDEP. Functions and values of wetlands on Compensation Tracts have been evaluated by this method and are summarized below. As described in Section 12 of the September 27, 2017 NRPA permit application, the same assessment method was used to evaluate all wetland areas under state or federal jurisdiction that may be impacted by the NECEC Project. Specific functions and values determined to be provided by wetlands at individual Compensation Tracts are discussed in subsequent sections.

The Supplement indicates "*Wetland functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society.*" Wetland functions relate to the ecological significance of wetland properties without regard to subjective values. Wetland functions are generally considered to be the result of biologic, geologic, hydrologic, biogeochemical, and/or physical processes that occur or take place in a wetland. Functions and values of wetlands are dependent on, and influenced by, various physical characteristics at the site, which are indicative of relative levels of function and value. These include: size and proximity of wetlands to ongoing development activity, geologic setting, soil characteristics, presence and duration of hydrology, landscape position, and wetland cover type. Consequently, the effects of changes to these physical characteristics are evaluated in assessing whether an activity or project impacts wetland-specific functions and values.

Functions attributed to wetlands include the following:

- Groundwater Recharge/Discharge (**GW**) – considers the potential for a wetland to serve as a groundwater recharge or discharge area.
- Floodflow Alteration (Storage & Desynchronization) (**FS**) – considers the effectiveness of a wetland in reducing flood damage by water retention for prolonged period following precipitation event and the gradual release of floodwaters. It adds to the stability of the wetland ecological

system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

- Fish and Shellfish Habitat (**FH**) – considers the effectiveness of seasonal or permanent watercourses associated with the subject wetland for fish and shellfish habitat.
- Sediment/Toxicant/Pathogen Retention (**STPR**) – considers the effectiveness of a wetland as a trap for sediments, toxicants or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas such as preventing ill effects of nutrients entering aquifers or downstream surface waters.
- Nutrient Removal/Retention/Transformation (**NR**) – considers the effectiveness of a wetland as a trap for nutrients in runoff water from surrounding uplands or upstream eroding wetland areas the ability of the wetland to process these nutrients in other forms or trophic levels and thereby functioning to reduce or prevent degradation of water quality.
- Production (Nutrient) Export (**PE**) – evaluates the effectiveness of a wetland to produce food or usable products for humans or another living organism.
- Sediment/Shoreline Stabilization (**SS**) – considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.
- Wildlife Habitat (**WH**) – considers the effectiveness of a wetland to provide habitat for various types and populations of animals (resident and migratory) typically associated with wetlands and the wetland edge.

Wetland values are generally considered to be benefits derived from either these functions or other characteristics of a wetland. Perceived values arise from the functional ecological processes exhibited by wetlands but are determined also by human perceptions, the location of a particular wetland, the human pressures on a wetland, and the extent of the resource (Mitsch and Gosselink 1993). The value of a particular function, or combination thereof, is based on human judgment of the worth, merit, quality, or importance attributed to those functions. Values attributed to wetlands include the following:

- Recreation (**REC**) – considers the suitability of a wetland and associated water courses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting and other active or passive recreational activities.
- Education/Scientific Value (**ED**) – considers the suitability of the wetland as a site for an "outdoor classroom," or as a location for scientific study or research.
- Uniqueness/Heritage (**UQ**) – considers the effectiveness of a wetland or its associated waterbodies to provide certain special values, that may include archaeological sites, critical habitat for endangered species, and its overall health and appearance, role in the ecological system of the area, and relative importance as a typical wetland class for this geographic location whereby these functions are clearly valuable attributes relative to aspects of public health, recreation and habitat diversity.
- Visual Quality/Aesthetics; and (**VQ**) – considers the visual and aesthetic quality and usefulness of a wetland.
- Threatened or Endangered Species Habitat (**ES**) – considers the suitability of a wetland to support threatened or endangered species.

The functions and values identified above may vary slightly in terminology, but encompass all the functions identified in, and addressed by, the NRPA Wetland Protection Rules. As defined in these Rules, "functions" are:

The roles wetlands serve which are of value to society or the environment, including but not limited to, flood storage, flood water conveyance, ground water recharge and discharge, erosion control, wave attenuation, water quality protection, scenic and aesthetic use, food chain support, fisheries, wetland plant habitat, aquatic habitat and wildlife habitat (Chapter 310 §3J).

A basic concept presented by the Supplement is an identification of "Considerations/Qualifiers" that can be used as indicators or descriptors of the presence of particular functions or values. From as few as three to as many as 32 of these "Considerations/Qualifiers" are identified in Appendix A of the Supplement for each of the respective wetland functions and values. These "Considerations/Qualifiers" therefore become a checklist or outline of indicators of functions and values for wetland scientists to observe, compare against, and structure assessments. The Supplement indicates these "Considerations" are intended to be flexible and are ultimately based on "best professional judgment." Consequently, as described in Section 12 of the September 27, 2017 NRPA permit application, the effects of changes to these physical characteristics have also been evaluated for these same wetland-specific functions and values by the NECEC Project.

2.0 LITTLE JIMMIE POND–HARWOOD TRACT

2.1 Site Location Information

Municipality: Manchester **County:** Kennebec

Biophysical Region: Central Interior

Watershed (HUC 12): Upper Cobbosseecontee Stream (010300032308)

NECEC Components within HUC 8 (01030003) Watershed: HVDC, Existing Right-of-Way

Closest NECEC Component: Corridor Expansion Site (Livermore Falls)

Coordinates of Site Centroid (Lat/Long WGS 84): 44°16'18.21"N, 69°52'23.75"W

2.2 Natural Resource Inventory Summary **(quantities are +/-):**

Total Site Area .....109.77 acres

NWI Palustrine Wetland Area.....75.01 acres

Delineated and GPS-surveyed Palustrine Wetland Area..... .....68.08 acres

NHD Rivers and Streams..... 2,410 feet (0.46 mile)

Delineated and GPS-surveyed Rivers and Streams.....3,030 feet (0.58 mile)

Upland Area.....41.69 acres

Inland Waterfowl and Wading Bird Habitat (Moderate Value)……....71.92 acres

Significant Vernal Pools.....none

Other Vernal Pool Types……...2 high value PSVPs, 6 medium value VPs, 1 low value VP

Vernal Pool Critical Terrestrial Habitat (750 feet)..... 81.84 acres

Deer Wintering Area……..…….0.5 acre

2.3 Site Description

The approximately 109.77-acre Little Jimmie Pond-Harwood Tract (hereafter "LJPT" or "the Tract") is in Manchester, Maine approximately 4.7 miles from the state capitol in Augusta. LJPT is comprised of distinct western and eastern parcels. The Tract has about 710 feet of frontage on the south side of Collins Road that borders the north end of Hutchinson Pond and extends to the west toward Benson Road (Figure 2.1).

The northern side of the western parcel shares an approximately 1,200-foot boundary with the MDIFW 886-acre Jamie's Pond Wildlife Management Area (WMA) which in addition to hunting and fishing opportunities, provides a network of trails that are quickly accessed by the daily commuters and citizens in surrounding communities (Capital Walks 2008).

With approximately 900 feet of frontage on Hutchinson Pond, the east parcel is located approximately 800 feet north of the 81-acre Hutchinson Pond property that was protected and preserved as compensatory

mitigation for Central Maine Power Company's Maine Power Reliability Program (MPRP) Project and is now managed by the Kennebec Land Trust (KLT 2018). Wetlands on the eastern parcel extend southward along the intervening distance between the LJPT and the KLT properties.

2.4 Surrounding Land Use, Protected Open Space and Focus Areas

Surrounding lands in the general vicinity of the LJPT are primarily forested, with residential homes, small fields, and secondary roads scattered throughout the area. The Tract frontage on Collins Road would provide an access point to the property for future development. The property is approximately 12.7 miles from Exit 109 on Interstate 95 (I-95) in Augusta, and therefore is at risk for future development given its relatively close proximity to the greater capital area. The developable land is field-verified, forested upland in and around wetland areas of various cover types. Approximately 20 acres (18%) of the Tract harbors the potential for Rural/Residential (R1) housing development (Figure 2.2). The minimum lot size for the R1 zone in Manchester is about two acres (Town of Manchester 2017), allowing for an estimated 10 homes to be built.

LJPT is hydrologically connected via the outlet of Hutchinson Pond to Cobbosseecontee Stream and ultimately the Kennebec River. Immediately to the east of the tract on the opposite side of Benson Road is Beginning with Habitat's Cobbossee–Annabessacook Focus Area (BWH 2018a). The focus area is comprised of extensive areas of wetlands that provide habitat for wintering deer, rare species, and outstanding habitat for wading birds and waterfowl. Rare plants and animals noted in the focus area include water stargrass (*Heteranthera dubia*), least bittern (*Ixobrychus exilis*), and ribbon snake (*Thamnophis sauritus*).

The location of the LJPT in proximity to ecological focus areas, conservation lands, and protected wildlife areas provide enhanced value to the property from a protected land standpoint, primarily due to connectivity with these other parcels that will provide greater habitat functionality at a landscape scale. The current lack of development in the surrounding landscape and proximity to protected lands provides large buffer areas which augment the overall ecological functions of the property, specifically the diverse set of wetland systems located on site.

2.5 Wildlife Use

Evaluations of the landscape (i.e., aerial photo interpretation) and on-site investigations were performed to document both wildlife use and available habitat on the Tract. The presence of variable habitat types across the Tract makes it an attractive landscape for a wide variety of fauna. Habitat types found on LJPT include forested uplands comprised of mixed vegetation, emergent wetland marsh (Photos 2.1 and 2.2), scrub-shrub wetlands (Photo 2.3), forested wetlands (Photo 2.4), black spruce bog (Photo 2.5), streams, and seasonally flooded wetlands.

The variable habitat on LJPT, such as mixed forests, scrub-shrub, emergent marsh, forested wetlands, and uplands, provides opportunity for a wide variety of bird species that are typically found in the greater central Maine region. Game birds such as ruffed grouse (*Bonasa umbellus*) and wild turkeys (*Meleagris gallopavo*) were both heard and observed on the Tract. Variation in cover types provides habitat for a variety of raptors, owls, woodpeckers and passerine species. During site survey efforts, a bald eagle (*Haliaeetus leucocephalus*) was observed in flight over Hutchinson Pond near the southeastern end of the east parcel. Mapped IWWH is available in the large marsh on the north end of Hutchinson Pond (Figure 2.2). Two American bitterns (*Botaurus lentiginosus*) were observed and heard calling from the marsh during field surveys. In the open water sections of the marsh, common loon (*Gavia immer*), mallard (*Anas platyrhynchos*) and black ducks (*Anas rubripes*) were noted. Beaver (*Castor canadensis*) activity was

observed in the marsh with recent tree cuttings, dam building activity and an active lodge (Photo 2.2). An adult barred owl (*Strix varia*) with two fledglings was also observed in the forested upland along the western edge of the marsh. Other birds observed or heard calling during field surveys included oven bird (*Seiurus aurocapilla*), winter wren (*Troglodytes hiemalis*), black capped chickadee (*Poecile atricapillus*), white-breasted nuthatch (*Sitta carolinensis*), pileated woodpecker (*Hylatomus pileatus*), hairy woodpecker (*Leuconotopicus villosus*), downy woodpecker (*Picoides pubescens*), red wing blackbird (*Agelaius phoeniceus*), great blue heron (*Ardea herodias*), and multiple warbler species.

There are numerous vernal pools of varying sizes, depths, and types located on LJPT. Some of these pools fit the classic definition of a vernal pool (i.e., isolated depressions surrounded by upland forest) while others are topographic depressions within larger wetland complexes. For instance, numerous depressional vernal pools (Photos 2.7 and 2.8) are located within topographic lows of the black spruce bog on the west parcel. During springtime vernal pool investigations, wood frogs (*Lithobates sylvaticus*) and spotted salamander (*Ambystoma maculatum*) were noted as actively breeding in pools on site, as per the presence of their respective egg masses. Two were rated as high value PVPs, six as medium value VPs and one as a low value VP. Other herptiles observed at LJPT include garter snakes (*Thamnophis* spp.), green frog (*Lithobates clamitans*), bull frog (*Lithobates catesbeianus*), American toad (*Anaxyrus americanus*) and northern leopard frog (*Lithobates pipiens)* were also noted.

There are approximately 3,030 linear feet of stream and two beaver impoundments on the Tract. Two of the streams (totaling 620 feet in length) are relatively small, approximately two to three feet wide, with intermittent flow. Each stream drains through forested wetlands into the large emergent marsh in the east parcel. The remaining length is a larger perennial stream that flows beneath Collins Road onto the Tract's east parcel and then through the emergent marsh into Hutchinson Pond at the southeastern corner of LJPT. This approximately 20 feet wide, straightened stream is ponded in areas by beaver impoundments (Figure 2.3).

Due to the diverse range of habitats on the LJPT along with its direct connection and close proximity to other conserved lands in the area, a wide range of mammal species typically found in the central Maine region can utilize the Tract. On site surveys noted the presence of snowshoe hare (*Lepus americanus*), beaver, porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), white-tail deer (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), and red squirrel (*Sciurus vulgaris*). A preliminary review of the property using the USFWS online IPaC system was conducted to evaluate potential presence of federally threatened or endangered species. The results of the IPaC review appear in Appendix 2A.

2.6 Vegetation

LJPT consists of a variety of vegetative communities (Appendix 2B) which provide different cover types and habitat characteristics. The property is primarily composed of mature wetland and upland forests, portions of which include predominantly coniferous and mixed coniferous-deciduous forest. There are large areas of emergent marsh located in the east parcel. Of note is a black spruce (*Picea mariana*) bog on the eastern area of the west parcel.

Dominant tree species in the mixed evergreen-deciduous upland forests of the west parcel are eastern hemlock (*Tsuga canadensis)* and American beech (*Fagus grandifolia*). The shrub stratum contains saplings of the above-mentioned tree species, as well as American witch hazel (*Hamamelis virginiana*) and striped maple (*Acer pensylvanicum*). Common herbaceous plants in the understory consist of violet (*Viola* spp.), wood sorrel (*Oxalis montana*), starflower (*Lysimachia borealis*), Canada mayflower

(*Maianthemum canadense*), evergreen wood fern (*Dryopteris intermedia*), and prickly tree club-moss (*Dendrolycopodium dendroideum*).

Dominant tree species in the mixed evergreen-deciduous upland forest enveloped by the emergent marsh (PEM) of the east parcel include red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), balsam fir (*Abies balsamea*), ironwood (*Carpinus carolinianus*), gray birch (*Betula populifolia*), and white ash (*Fraxinus americana*). The shrub stratum in this area consists of saplings of the aforementioned tree species. The understory consists primarily of New York fern (*Parathelypteris novaboracensis*), brackenfern (*Pteridium aquilinum),* sarsaparilla (*Aralia nudicaulis*), Canada mayflower, and starflower.

The emergent marsh (PEM) on the eastern section of the east parcel is predominantly composed of tussock sedge (*Carex stricta*) and bluejoint grass (*Calamagrostis canadensis*). The shrub stratum occurs in the ecotone between open wetland and upland forest and consists primarily of meadowsweet (*Spiraea alba* var. *latifolia*), smooth arrow-wood (*Viburnum dentatum*), and speckled alder (*Alnus incana* ssp. *rugosa*).

In the black spruce bog (PFO4/1), the dominant tree species are black spruce and red maple. The shrub layer consists of Labrador tea (*Rhododendron groendlandicum*) and common winterberry (*Ilex verticillata*), along with a mix of eastern hemlock, black spruce, and eastern white pine saplings. The herbaceous layer is comprised predominantly of barber-pole bulrush (*Scirpus microcarpus*), cinnamon fern (*Osmundastrum cinnamomeum*), common woolsedge (*Scirpus cyperinus*), three-seeded sedge (*Carex trisperma*), rough bedstraw (*Galium asprellum*), marsh fern (*Thelypteris palustris*), and poison ivy (*Toxicodendron radicans* ssp. *radicans*). Common nonvascular plants present include various species of *Sphagnum* mosses.

Forested wetlands (PFO1) are dominated by eastern hemlock, red maple, balsam fir, and yellow birch (*Betula alleghaniensis*). The typical shrub understory includes yellow birch saplings. Dominant herbs, grasses, and graminoids are sensitive fern (*Onoclea sensibilis*), cinnamon fern, interrupted fern (*Osmunda claytonia*), violet, bladder sedge (*Carex intumescens*), and silvery sedge (*Carex canescens*).

Along the northwestern corner of the western parcel, there is a beaver impounded open water area with a mix of live and standing dead snags of red maple. The herbaceous layer consists primarily of three-seeded sedge, common wool sedge, common soft rush (*Juncus effusus*), broadleaf cattail (*Typha latifolia*), and bur-reed (*Sparganium* spp.). Floating aquatic plants present are common duckweed (*Lemna minor*).

There were no observations of invasive plant species within the wetlands located on the LJPT. The lack of invasive species within the wetlands on site generally increases the overall functions of each wetland system.

2.7 Wetland Characteristics, Functions and Values

Approximately 68.08 acres (62%) of the 109.77-acre LJPT were identified as wetland during the field survey effort. The primary wetland system on the eastern parcel (Photos 2.1, 2.2, and 2.3) is a large emergent marsh (PEM) located on the northern end of Hutchinson Pond at the southeast corner of the parcel. The portion of the marsh located on the LJPT totals approximately 50.5 acres. A perennial stream flows from the northern property boundary through the large marsh and into Hutchinson Pond (L1UB). The stream flow is relatively low velocity that has further slowed to a ponded condition by an active beaver dam. This creates outstanding wildlife habitat for inland wading birds and waterfowl (IWWH) rated as moderate value by MDIFW. The marsh is surrounded by a perimeter of scrub-shrub wetland (PSS) that transitions into forested wetland in most locations before ultimately becoming upland forest

both along the western marsh edge and within the large section of upland in the center of the marsh. The transitional habitat between open water, emergent marsh, scrub-shrub, forested wetland, and upland forest provides a high degree of vertical stratigraphy in vegetation that further enhances wildlife function for numerous species of amphibians, reptiles, birds, and mammals.

A deer wintering area is located between the west and east parcels and the based on the exent of confierous cover the approximately one-half acre mapped to occur on the west parcel (Figure 2.3) is likely to be larger. Numerous established hunting tree stands were noted along the edge of the emergent marsh in the east parcel. Hunting stands were also observed in the upland areas around the marsh to the west. Established game trails along with tracks, droppings, and tree rubs from white tail deer suggest that the east parcel is a productive location for hunting activities. Other hunting activities would include turkey, grouse, and waterfowl due to the proximity to Hutchinson Pond and the open water sections of the emergent marsh.

In addition to hunting, the frontage along the northern end of Hutchinson Pond in the east parcel would provide opportunity for other recreational activities such as canoeing or fishing. According to MDIFW, Hutchinson Pond is a warm water fishery with principal species of largemouth bass (*Micropterus salmoides*) and chain pickerel (*Esox niger*). In addition to warm water species, MDIFW annually stocks brook trout (*Salvelinus fontinalis*) in Jimmie Pond to the north of LJPT. During spring and fall seasons when water temperatures are adequate, it is likely that brook trout migrate south through the perennial stream connecting Jimmie Pond to Hutchinson Pond, offering an opportunity for trout fishing both in the stream and Hutchinson Pond.

The primary wetland system on the west parcel is an approximately eight-acre black spruce bog (Photo 2.5). The bog is comprised of a mix of deciduous and coniferous trees, primarily black spruce and red maple, with dense shrub and herbaceous layers. The dense understory provides habitat for various birds, amphibians, and mammals.

The soils in the lowland portions of the site are comprised primarily of organic materials underlain with glaciomarine sediment. Organic soils (Togus fibrous peat) are located in both the emergent marsh and the black spruce bog. Mineral soils (Paxton-Charlton very stony fine sandy loams and Ridgebury very stony fine sandy loam) are found in the remaining wetlands on site and are primarily derived from very stony glacial till that has a dense restrictive layer which impedes stormwater penetration and perches runoff. Portions of the site at higher elevations are derived from moderately deep glacial tills (Woodbridge very stony fine sandy loam) which are moderately well drained.

There were no observations of invasive plant species within the wetlands located on the LJPT. The lack of invasive species within the wetlands on site generally increases the overall functions of each wetland system.

The principal functions and values of the wetlands located on LJPT are wildlife habitat, nutrient removal, sediment/toxicant retention, recreation, flood flow alteration, groundwater recharge/discharge, and production export. The primary wetland systems in the east and west parcels both function to maintain/improve water quality. Both ultimately drain to the Kennebec and attenuate floodwaters by temporarily storing storm water runoff resulting in enhanced sediment and shoreline stabilization as well as nutrient removal and sediment retention. A summary of the functions and values for the wetlands on LJPT appears in Table 2.1.

TABLE 2-1 SUMMARY OF FUNCTIONS AND VALUES OF WETLANDS ON THE 109.77-ACRE LITTLE JIMMIE POND-HARWOOD TRACT

FUNCTION / VALUE	EXPLANATION
Groundwater Recharge/Discharge (GW)	Groundwater recharge was noted as a primary function for the black spruce bog in the west parcel of LJPT as well as in the smaller isolated, seasonally flooded wetlands located throughout the Tract. Groundwater discharge was noted in the forested wetlands that are connected to the large emergent marsh in the east parcel as well as the black spruce bog and larger wetland system off-site to the west of LJPT.
Flood flow Alteration (FF)	The most recent FIRM for this part of Manchester (Community Panel Nos. 23011 C0494D, C0513D effective date June 6, 2011), prepared FEMA identify a 100-year floodplain associated with Inlet Stream that encompasses the wetland southward from Collins Road to Hutchinson Pond (HP). On the west side of the parcel, wetlands are hydrologically connected to HP, and therefore also contribute to the function of flood flow alteration.
Fish and Shellfish Habitat (FH)	Surveys conducted by MDIFW indicate HP has abundant warm water fish habitat, principally for not only chain pickerel but also as a sport fishery for largemouth bass. Other species reported to occur in HP include white and yellow perch, pumpkinseed sunfish, baitfish and American eel. Brook trout are also stocked annually in Jimmie Pond to the north of the parcel and likely migrate south into Hutchinson Pond during spring and fall when water temperatures are adequate.
Production Export (PE)	The diverse vegetation observed on site provides plentiful seed and fruit sources for various species of wildlife. The eight vernal pools identified on site are also an important source of nutrient production and export within the local ecological system.
Sediment/Toxicant/ Pathogen Retention (STPR)	Open water and emergent marsh habitats in the west parcel have suitable organic and/or fine grain soils, slow moving water, variable water depths, flood storage capacity, and dense vegetation that are important and effective aspects of sediment, toxicant, and pathogen retention. The organic soils and long duration water retention time present in the black spruce bog in the west parcel also are important factors in sediment, toxicant, and pathogen reduction.
Nutrient Removal (NR)	Organic soils and dense vegetation in both the emergent marsh and black spruce bog on the LJPT are effective in performing this function. Storm water runoff from uplands and small ephemeral streams that drain into the wetlands is dissipated within the organic soils and dense vegetation where nutrients carried with the runoff are processed into other forms and transferred to higher trophic levels in the ecosystem.
Sediment/Shoreline Stabilization (SS)	The emergent marsh in the east parcel is in a mapped floodplain and contains a riparian buffer area comprised of scrub-shrub wetland that transitions into forested wetland. The wetlands around the perimeter of the marsh are an important component of floodwater attenuation and help to provide overall stability for downstream water resources such as HP.
Wildlife Habitat (WH)	Wetlands on the LJPT are comprised of a diverse mix of vegetative communities, wetland classes, and water regimes. The variety and lifeforms of vegetation provide suitable habitat for a multitude of birds, reptiles, amphibians, insects, and mammals. Moderate value IWWH (ID 031056) in the large marsh on the east parcel provides outstanding habitat for these species of birds. DWA is also identified on BWH maps in the forested area between the east and west parcels (Figure 2.2). Upland areas associated with the wetlands provide additional habitat for various species which utilize a mix of wetland and upland habitats or those that typically utilize uplands as their primary habitat.
Educational/ Scientific Value (ED)	Wetlands on the LJPT are diverse and would therefore provide ample opportunities for ecological education and learning. The property is close to the greater Augusta area, as well as WMA to the north and an existing conservation land parcel to the south. The quality and type of wetlands on the property, soil types, diverse vegetation communities, and presence of numerous vernal pools would provide a vast array of educational opportunities for the public.
Recreation (REC)	LJPT has access opportunities from Collins Road. Numerous recreational opportunities are available on the property including, fishing, hunting, hiking, boating, and bird watching

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2.8 Compensation

As part of the compensation package for NECEC, the approximately 109.77-acre Little Jimmie Pond Tract will be permanently protected by a conservation easement or similar instrument. Preservation of this property will include 66.97 acres of diverse wetland habitat, 3,030 linear feet of streams, nine vernal pools, and 81.24 acres of vernal pool critical terrestrial habitat (Figure 2.3). Considering the Tract's proximity to Augusta, current zoning, road frontage, and available upland area, LJPT is at risk of development for residential housing and the potential associated adverse impacts. Preservation of the Tract will allow for permanent protection from development and will preserve the existing recreational opportunities, wildlife habitat, water quality benefits, vernal pool habitat, and educational opportunities of LJPT.

2.9 Photographs

PHOTO 2-1 THE EMERGENT MARSH (PEM) ON THE EASTERN SIDE OF PARCEL IS PART OF THE IWWH

PHOTO 2-2 RECENT BEAVER ACTIVITY FLOODS THIS SECTION OF EMERGENT MARSH

PHOTO 2-3 WESTWARD VIEW OF EMERGENT/SCRUB-SHRUB WETLAND (PEM/PSS), ANOTHER WETLAND COVER TYPE OF THE IWWH ON THE EAST PARCEL

PHOTO 2 A FORESTED WETLAND (PFO4/1) IS LOCATED WEST OF THE LARGE PEM

PHOTO 2-5 A BLACK SPRUCE BOG (PFO4/1) IS LOCATED ON THE WEST PARCEL OF LJPT

PHOTO 2-6 THIS FLOODED SECTION OF FORESTED WETLAND OCCURS ALONG THE WESTERN PROPERTY BOUNDARY

PHOTO 2-7 THIS POTENTIALLY SIGNIFICANT VERNAL POOL (PSVP-1) OCCURS ON THE NORTH SIDE OF THE WEST PARCEL.

PHOTO 2-8 THIS POTENTIALLY SIGNIFICANT VERNAL POOL (PSVP-2) IS LOCATED ON THE EAST PARCEL

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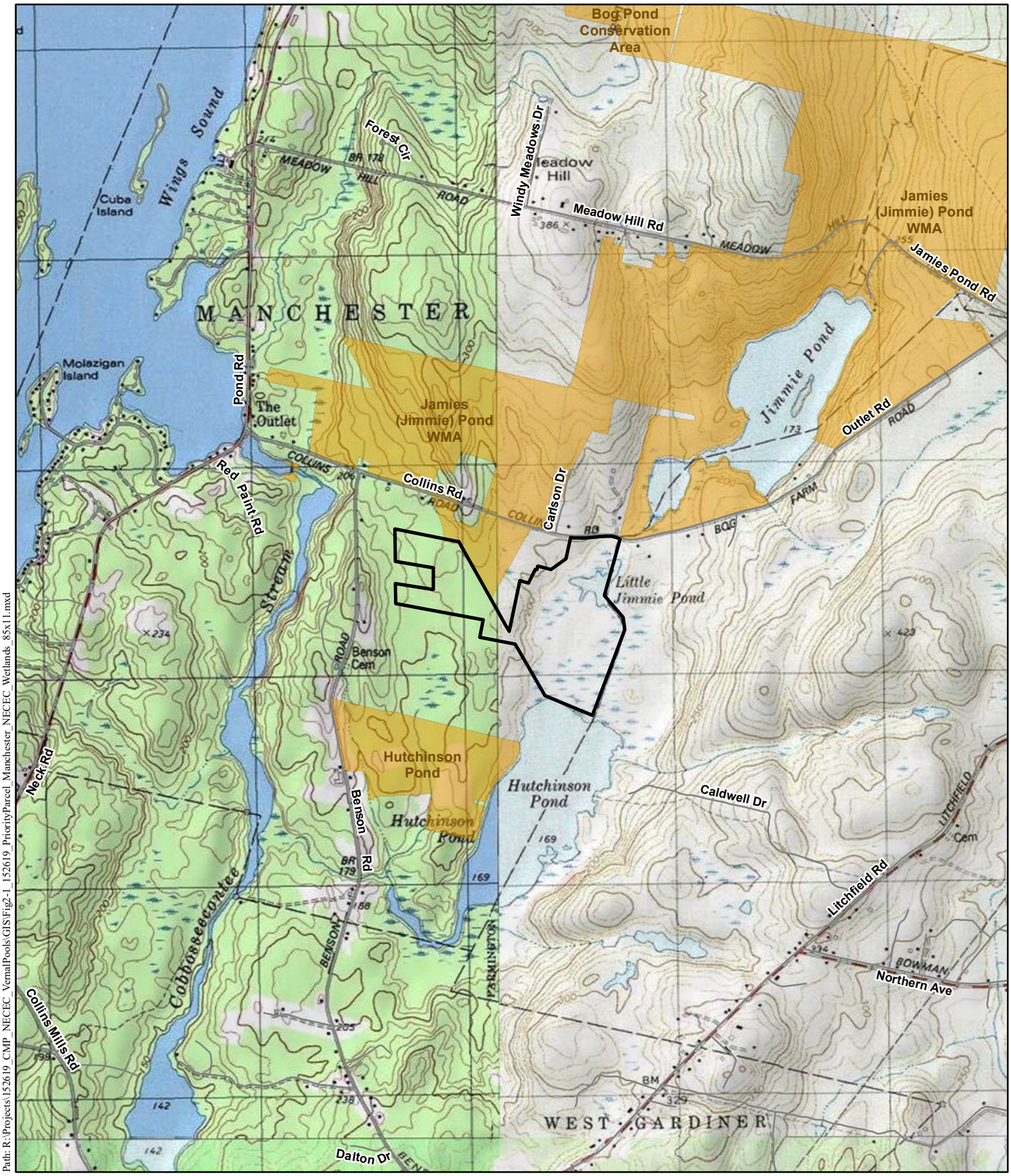

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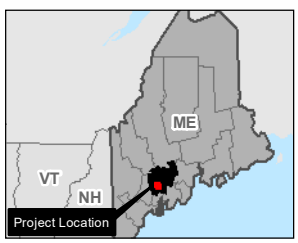

Road
Conserved Lands
Survey Boundary

N
W E
S

SCALE: 1 " = 2,000 '

0 1,000 2,000
Feet

Figure 2.1: Locus
Little Jimmie Pond
Harwood Tract

Kennebec County
Maine

Date:8/6/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER
POWER ENGINEERS

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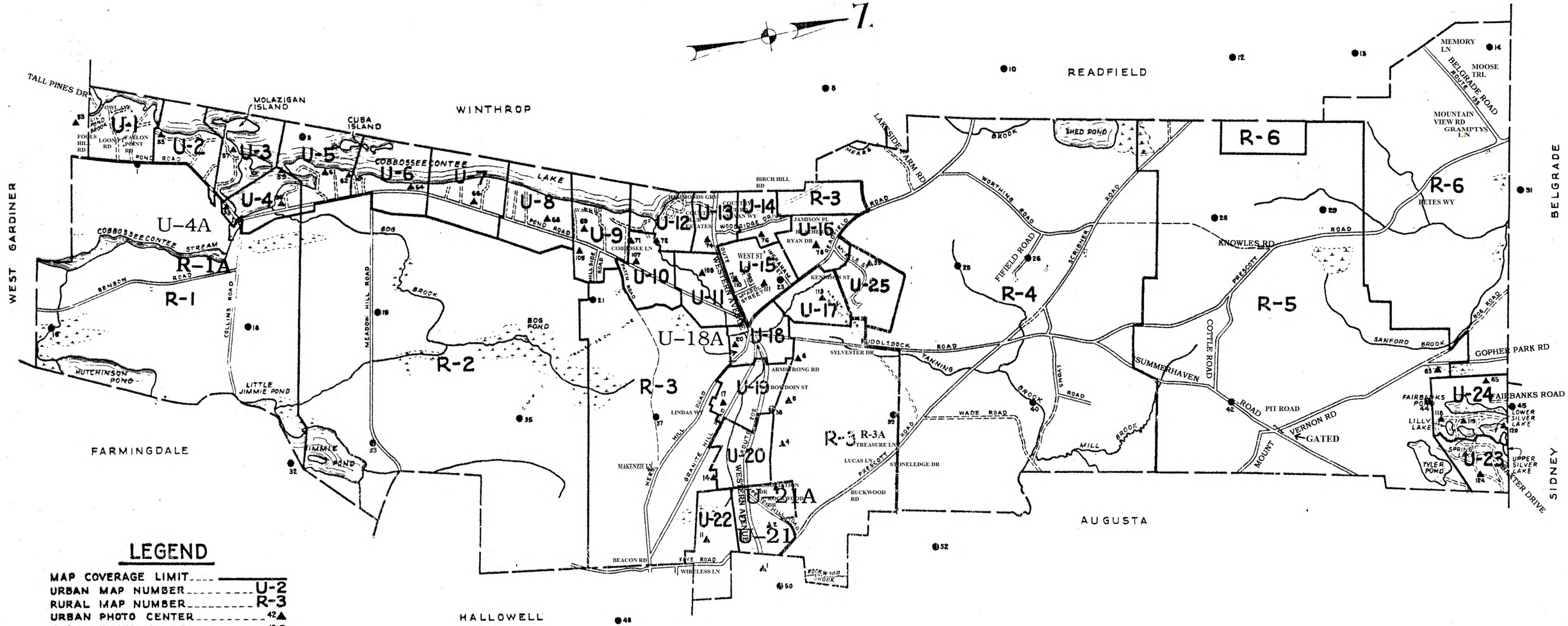

MANCHESTER
MAINE

PREPARED BY
WRIGHT & PIERCE
CONSULTING ENGINEERS
TOPSHAM, MAINE
1968

PROPERTY MAP
MANCHESTER, MAINE
APRIL 1, 2016

INDEX

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Jamies (Jimmie) Pond WMA

Collins Rd

Jamies (Jimmie) Pond WMA

Outlet Rd

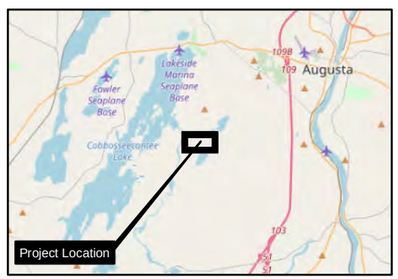
Buck Trl

Benson Rd

Buck Trl

Hutchinson Pond

Hutchinson Pond



- Wetland Data Point
- Upland Data Point
- Potential Significant Vernal Pool
- Vernal Pool
- Photograph
- Delineated Ephemeral Stream
- Stream (NHD)
- Critical Terrestrial Habitat (750')
- DeerWinteringAreas
- Inland Waterfowl and Wading Bird Habitat
- Survey Area
- Road
- Delineated Wetland
- Conservation Land

Figure 2.3: Natural Resources
Little Jimmie Pond - Harwood Tract

Manchester Township, Kennebec County, Maine

0 175 350 700
Feet

1 " = 350 '

Page 1 of 1

Central Maine Power
NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

Date: 8/8/2018; Author: KK; Project: 152619

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APPENDIX 2A IPAC RESULTS: LITTLE JIMMIE POND–HARWOOD TRACT

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Compensatory Mitigation

LOCATION

Kennebec County, Maine

DESCRIPTION

Manchester

Local office

Maine Ecological Services Field Office

(207) 469-7300
(207) 902-1588

MAILING ADDRESS
P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS
306 Hatchery Road
East Orland, ME 04431

http://www.fws.gov/mainefieldoffice/index.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon Salmo salar There *is* **final** critical habitat for this species. Your location *is outside the* critical habitat. https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act [1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

Canada Warbler Cardellina canadensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Evening Grosbeak Coccothraustes vespertinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

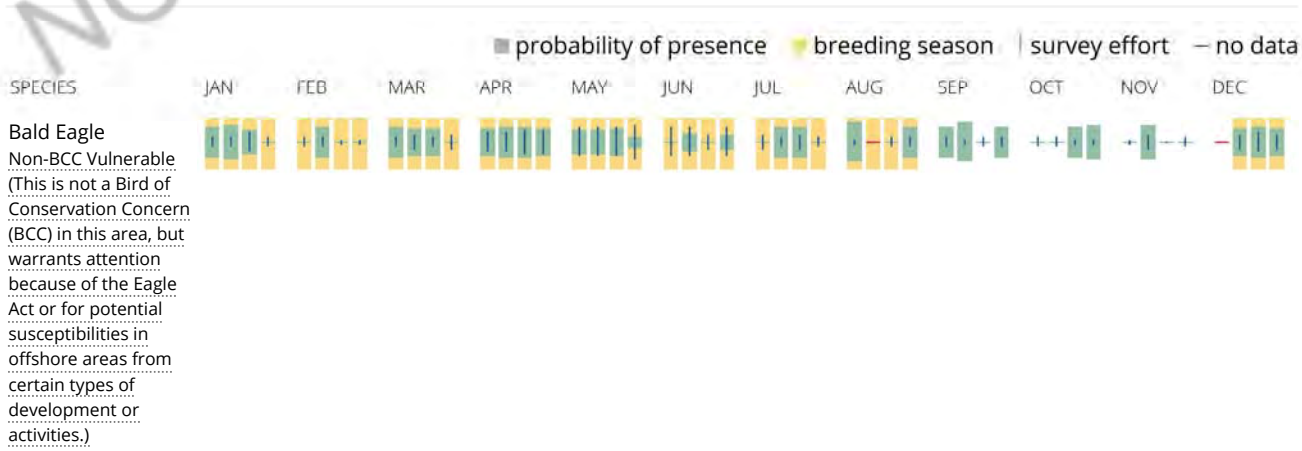
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

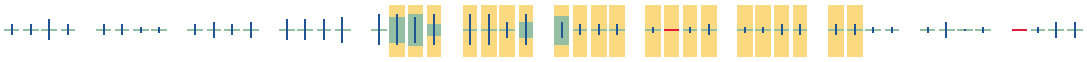
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

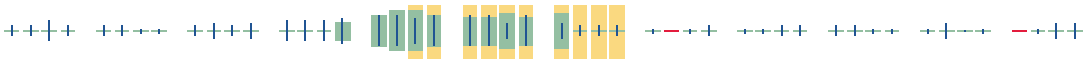
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Black-billed Cuckoo
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

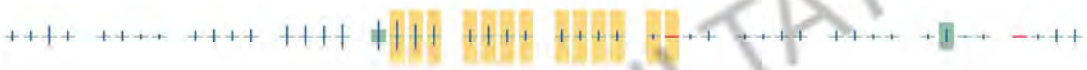


Bobolink
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Canada Warbler
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

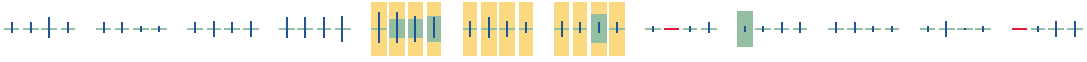
Evening Grosbeak
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Lesser Yellowlegs
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

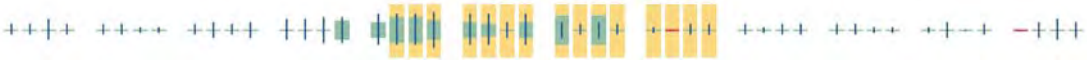
Olive-sided Flycatcher
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Prairie Warbler
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Semipalmated Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in

knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1E

FRESHWATER FORESTED/SHRUB WETLAND

- PFO4E
- PFO4/1B
- PSS1E
- PFO1E
- PFO4/1E

FRESHWATER POND

PUBHh

LAKE

L1UBH

RIVERINE

R2UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX 2B VEGETATION LIST: LITTLE JIMMIE POND–HARWOOD TRACT

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Abies balsamea	Balsam Fir	Pinaceae	FAC
Acer pennsylvanicum	Striped Maple	Aceraceae	FACU
Acer rubrum	Red Maple	Aceraceae	FAC
Alnus incana ssp. *rugosa*	Speckled Alder	Betulaceae	FACW
Aralia nudicaulis	Sarsaparilla	Araliaceae	FACU
Betula alleghaniensis	Yellow Birch	Betulaceae	FAC
Betula papyrifera	Paper Birch	Betulaceae	FACU
Betula populifolia	Gray Birch	Betulaceae	FAC
Calamagrostis canadensis	Bluejoint	Poaceae	OBL
Carex canescens	Silvery Sedge	Cyperaceae	OBL
Carex crinita	Fringed Sedge	Cyperaceae	OBL
Carex flava	Yellow Sedge	Cyperaceae	OBL
Carex intumescens	Bladder Sedge	Cyperaceae	FACW
Carex stricta	Tussock Sedge	Cyperaceae	OBL
Carex tribuloides	Blunt Broom Sedge	Cyperaceae	FACW
Carex trisperma	Three-seeded Sedge	Cyperaceae	OBL
Carpinus carolinianus	Ironwood	Betulaceae	FAC
Coptis trifolia	Three-Leaf Goldthread	Ranunculaceae	FACW
Dendrolycopodium dendroideum	Prickly Club-Moss	Lycopodiaceae	FACU
Dryopteris intermedia	Evergreen Wood Fern	Dryopteridaceae	FAC
Eleocharis erythropoda	Red-Footed Spike sedge	Cyperaceae	OBL
Equisetum fluviatile	Water Horsetail	Equisetaceae	OBL
Equisetum sylvaticum	Woodland Horsetail	Equisetaceae	FACW
Fagus grandifolia	American Beech	Fagaceae	FACU
Fraxinus americana	White Ash	Oleaceae	FACU
Fraxinus pennsylvanica	Green Ash	Oleaceae	FACW
Galium asprellum	Rough Bedstraw	Rubiaceae	OBL
Galium palustris	Marsh Bedstraw	Rubiaceae	OBL
Glyceria striata	Fowl Manna Grass	Poaceae	OBL
Hamamelis virginiana	American Witch-Hazel	Hamamelidaceae	FACU
Ilex verticillata	Common Winterberry	Aquifoliaceae	FACW
Impatiens capensis	Jewelweed	Balsaminaceae	FACW
Iris versicolor	Blue-Flag Iris	Iridaceae	OBL
Juncus effusus	Common Soft Rush	Juncaceae	OBL
Lemna minor	Common Duckweed	Lemnaceae	OBL
Lysimachia borealis	Starflower	Myrsinaceae	FAC

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Maianthemum canadense	Canada Mayflower	Ruscaceae	FACU
Medeola virginiana	Indian Cucumber-Root	Liliaceae	FACU
Onoclea sensibilis	Sensitive Fern	Onocleaceae	FACW
Osmunda claytonia	Interrupted Fern	Osmundaceae	FAC
Osmunda regalis var. *spectabilis*	Royal Fern	Osmundaceae	OBL
Osmundastrum cinnamomeum	Cinnamon Fern	Osmundaceae	FACW
Oxalis montana	Northern Wood Sorrel	Oxalidaceae	FACU
Parathelypteris novaboracenis	New York Fern	Thelypteridaceae	FAC
Picea mariana	Black Spruce	Pinaceae	FACW
Pinus strobus	Eastern White Pine	Pinaceae	FACU
Pteridium aquilinum	Bracken Fern	Dennstaeditaceae	FACU
Quercus rubra	Red Oak	Fagaceae	FACU
Rhododendron groenlandicum	Labrador Tea	Ericaceae	OBL
Rubus pubescens	Dwarf Red Raspberry	Rosaceae	FACW
Salix nigra	Black Willow	Salicaceae	OBL
Scirpus cyperinus	Common Woolsedge	Cyperaceae	OBL
Sparganium sp.	Bur-reed	Typhaceae	OBL
Spiraea alba var. *latifolia*	Meadowsweet	Rosaceae	FACW
Spiraea tomentosa	Steeplebush	Rosaceae	FACW
Streptopus lanceolatus	Rose Twisted Stalk	Liliaceae	FACU
Symphyotrichum sp.	American Aster	Asteraceae	N/A
Thelypteris palustris	Marsh Fern	Thelypteridaceae	FACW
Tsuga canadensis	Eastern Hemlock	Pinaceae	FACU
Toxicodendron radicans ssp. *radicans*	Poison-Ivy	Anacardiaceae	FAC
Ulmus americana	American Elm	Ulmaceae	FACW
Viburnum dentatum	Smooth Arrowwood	Adoxaceae	FAC
Viburnum lantanoides	Hobblebush	Adoxaceae	FACU
Viola sp.	Violet	Violaceae	N/A

INDICATOR STATUS	OCCURRENCE IN WETLANDS (% per Reed, 1998)
Obligate (OBL)	Almost always occurs in wetlands under natural conditions (99%)
Facultative Wetland (FACW)	Usually in wetlands, occasionally found in non-wetlands (67- 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands. (33-67%)
Facultative Upland (FACU)	Usually in non-wetlands, occasionally found in wetlands (1-33%)
Upland (UPL)	Almost always in non-wetlands under natural conditions (1%)

[1] Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17.USACE National Wetland Plant List. Web.20 June 2018.

[2] Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. ERDC/CRREL TN-12-1, USACE Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH. Available at https://www.fws.gov/wetlands/documents/national-wetland-plant-list-indicator-rating-definitions.pdf [Verified 20 June 2018]
*Reed, P. B., Jr. 1988. *National List of Plant Species that Occur in Wetlands.* Washington, DC, USFWS.

3.0 FLAGSTAFF LAKE TRACT

3.1 Site Location Information

Municipalities: Carrying Place and Dead River Townships **County:** Somerset

Biophysical Region: Western Mountains

Watershed (HUC 12): West Carry Pond-Flagstaff Lake (010300020304)

NECEC Components within HUC 8 (01030000) Watershed: HVDC, New ROW

Closest NECEC Component: HVDC, Existing Right of Way

Coordinates of Site Centroid (Lat/Long WGS 84): 45°11'11.48"N, 70°9'42.41"W

3.2 Natural Resource Inventory Summary **(quantities are +/-):**

Total Site Area .....831.39 acres

NWI Palustrine Wetland Area.....82.48 acres

Delineated and GPS-surveyed Palustrine Wetland Area….....423.96 acres

NHD Rivers and Streams.....10,580 feet (2.00 miles)

Delineated and GPS-surveyed Rivers and Streams..... .....10,790 feet (2.04 miles)

Upland Area..... 407.43 acres

Inland Wading Bird and Waterfowl Habitat (High Value) ……. 28.88 acres

Significant Vernal Pools……... None

Non-Significant Vernal Pool Types…… 4 medium value VPs; 3 medium value, 4 medium/low value and 2 low value CVPs; 39 PVPs (hundreds in skidder ruts not GPS-surveyed)

Vernal Pool Critical Terrestrial Habitat……..... 232.28 acres

3.3 Site Description

The approximately 831.39-acre Flagstaff Lake Tract (hereafter “FLT” or “the Tract”) is located along approximately 8.5 miles of the east shore of Flagstaff Lake (Photo 3.1) where the boundary corresponds to the 1,050 feet mean sea level (MSL) topographic contour. The east boundary is the paved, Long Falls Dam Road. Most of the Tract occurs in Carrying Place Township; however, the northern tip and west side of the central and southern peninsulas are located in Dead River Township (Figure 3.1).

With the exception of a shore side, seasonal cabin located where the shoreline is closest to Long Falls Dam Road (Photo 3.2) and the Maine Huts & Trail (MHT) lodge on the central peninsula that supports and lodges hikers over the approximately 3.0-mile MHT network crossing the property, the Tract is essentially undeveloped. FLT lies between, and therefore links, the Maine Bureau of Parks and Land (MBPL) 854-acre Dead River Peninsula property with its public boat ramp on the north and 3,600 acres of public land making up the Bigelow Preserve on the south and the opposite shore of Flagstaff Lake. The

view focal point from the Tract is Bigelow Mountain (elevation of 4,150 feet), which is designated as a National Natural Landmark by the United States Department of Interior.

3.4 Surrounding Land Use, Protected Open Space and Focus Areas

FLT is displayed on Figure 3.2, MLUPC's Land Use Guidance Map for Carrying Place Town Twp. (T2 R3 BKP WKR). Most of FLT is designated as the Management Subdistrict General (M-GN). In addition, the following Protection Subdistricts occur at FLT:

- P-AL – Accessible Lake
- P-GP – Great Pond
- P-SL1 – Shoreland Areas within 250 feet of the normal high-water mark
- P-SL2 – Shoreland Areas within 75 feet of the normal high-water mark
- P-UA – Unusual Area
- P-WL2 – scrub shrub and other nonforested wetlands
- P-WL3 – forested wetlands (excluding those covered under PWL-1, PWL-2)

Although not subject to formal protective instruments, FLT lies wholly within the 50,000 acre Bigelow Mountain-Flagstaff Lake-North Branch Dead River Focus Area of Statewide Ecological Significance (https://www.maine.gov/dacf/mnap/focusarea/bigelow_mountain_focus_area.pdf) as identified by MNAP, MDIFW, MDMR, USFWS, TNC, Maine Audubon, and the Maine Coast Heritage Trust. This classification is based on the abundance of recreational opportunities, natural features and landscapes of exceptional ecological value.

Historical significance on and around FLT include The Great Carrying Place, Benedict Arnold's expedition portage route from The Kennebec, through East, Middle, and West Carry Ponds to Flagstaff Lake. This trail was made and used by Native Americans thousands of years before the 1775 expedition led by Arnold. Early in the Revolutionary War his 1,100-man army carried boats weighing hundreds of pounds along with food and supplies over this portage for an ill-fated sneak attack on Quebec. The trail adds uniqueness and historic value to the already existing beauty of the Flagstaff Lake region (http://matlt.org/hike/arnold-expedition-appalachian-trail-hike).

3.5 Wildlife Use

Wildlife usage and habitat evaluations on FLT were conducted based on field surveys, aerial photograph interpretation of landscape and terrain, and research of IPaC results from the USFWS for endangered species, critical habitat, migratory birds, and fisheries (Appendix 3A). FLT's size and wide variety of habitat makes it an ideal home for many species of fauna to thrive. The tract contains an abundance of mixed coniferous-deciduous forest suitable for many mammals, birds, and amphibians. FLT provides numerous palustrine wetland habitats including forested (PFO), emergent (PEM), and scrub-shrub (PSS) wetlands, intermittent and perennial streams flowing to Flagstaff Lake, as well as the Lake itself. As mentioned above, the entirety of FLT is within the Bigelow Mountain-Flagstaff Lake-North Branch Dead River Focus Area, an acclaimed recreational destination that encompasses a wide range of natural features and exceptional ecological value.

Rare animals within the Bigelow Mountain-Flagstaff Lake-North Branch Dead River Focus Area likely to be found on FLT include: bald eagle (*Haliaeetus leucocephalus*), the mussel commonly known as creeper (*Strophitus undulates*), and Canada lynx (*Lynx canadensis*) (BWH 2018b). FLT is an attractive site for a variety other of mammals including, but not limited to: beaver (*Castor canadensis*), white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), black bear (*Ursus americanus*), red fox (*Vulpes vulpes*), Eastern gray squirrel (*Sciurus carolinensis*) and red squirrel (*Sciurus vulgaris*). Coyote (*Canis latrans*), mink (*Neovison vison*), river otter (*Lontar canadensis*), fisher (*Pekania pennanti*) and pine marten (*Martes americana)* are other furbearers that inhabit or traverse the Tract.

Several Birds of Conservation Concern (BCC) listed in the IPaC report are present in and around FLT; these BCCs are the Canada warbler (*Cardellina canadensis*), the Cape May warbler (*Setophaga tigrina*), evening grosbeak (*Coccothraustes vespertinus*), olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), wood thrush (*Hylocichla mustelina*) and peregrine falcon (*Falco peregrinus*). FLT is an ideal habitat area for bald eagles (*Haliaeetus leucocephalus*) with an abundance of food sources in Flagstaff Lake and tall trees for perching and nesting. The Tract contains a 35-acre high value IWWH (ID UMO-9951) comprised of scrub-shrub and emergent sedge wetlands with several beaver dams creating open water areas. In addition, the IWWH is also a highly productive habitat for other species of birds as well as mammals, fish, and amphibians.

Several other bird species were observed on the Tract during field surveys including common raven (*Corvus corax*), black-capped chickadee (*Poecile atricapillus*), American woodcock (*Scolopax minor*), and wild turkey (*Meleagris gallopavo*). Common loons (*Gavia immer*) were observed swimming and fishing near the shore of Flagstaff Lake and a constructed, protective loon nesting raft was found washed ashore near the tip of the northernmost peninsula on the southern third of the Tract. Previously logged areas are abundant with red and black raspberry (*Rubus* spp.) and low bush blueberry *(Vaccinium angustifolium*) providing soft mast for many passerine bird species and mammals.

A variety of amphibian species inhabit FLT wetlands. During field surveys, adult and juvenile American toads (*Anaxyrus americanus*), green frogs (*Lithobates clamitans*), and wood frogs (*Lithobates sylvaticus*) were observed. Spotted salamander (*Ambystoma maculatum*) egg masses were observed throughout the Tract, generally in hundreds of man-made pools such as skidder ruts and borrow pits (identified as CVPs 9 of which are of medium to low value). Four, medium values natural vernal pools (VP) and at least 39 potential vernal pools (PVP) with and without wood frog and salamander egg masses were found on the Tract.

3.6 Vegetation

The Tract consists of a variety of vegetative communities which provide different cover types, habitat characteristics, and ecological functions. The property is primarily composed of forest, portions of which include mature mixed coniferous-deciduous forests and early successional forest regeneration. There are also large areas of scrub-shrub swamps, emergent marshes, and beaver-impounded open water areas.

Wetlands and uplands were identified in the mixed coniferous-deciduous forests on the Tract, and their natural community types were identified as evergreen seepage forest, spruce-fir wet flats, and low elevation spruce-fir forest respectively. Dominant tree species in the evergreen seepage forests are northern white cedar (*Thuja occidentalis*) with occasional frequency of red spruce (*Picea rubens*). Common understory species include goldthread (*Coptis trifolia*), bunchberry (*Chamaepericlymenum*

canadense), and twinflower (*Linnaea borealis*). Dominant tree species in the spruce-fir wet flats are balsam fir (*Abies balsamea*) and red spruce with the occasional frequency of red maple (*Acer rubrum*) and yellow birch (*Betula alleghaniensis*). Common understory plants found are cinnamon fern (*Osmundastrum cinnamomeum*), three-seeded sedge (*Carex trisperma*), bunchberry, and Canada mayflower (*Maianthemum canadense*). Common bryophytes are *Sphagnum* mosses. Dominant tree species in the upland forest are balsam fir, red spruce, and eastern white pine (*Pinus strobus*). The shrub stratum contains saplings of the above mentioned tree species and dwarf shrub low-bush blueberry (*Vaccinium angustifolium*).

Early successional forest regeneration on site corresponds with impacts related to historic commercial timber harvest. Often these impacted areas include dense regeneration stands of balsam fir, red spruce, quaking aspen (*Populus tremuloides*), red maple, and paper birch (*Betula papyrifera*) with occasional residual overstory. The shrub layer in this system is dominated by the above mentioned tree saplings and includes sporadic populations of striped maple (*Acer pennsylvanicum)*. The herbaceous stratum in this zone is dominated by red raspberry (*Rubus idaeus*), an opportunistic species quick to colonize after disturbance, nodding sedge (*Carex gynandra*) (typically more abundant in the pooled-up water areas associated with skidder ruts), and bracken fern (*Pteridium aquilinum*).

Scrub-shrub swamps (PSS) on the property are associated with stream banks and the shoreline of the lake, typically most abundant where these two types of systems converge. Dominant woody species include speckled alder (*Alnus incana* ssp. *rugosa*) and meadowsweet (*Spiraea alba* var. *latifolia*), as well as balsam fir, northern white cedar and red maple saplings. Dominant woody vegetation along the shoreline of the lake includes speckled alder, meadowsweet, and sweet gale (*Myrica gale*). Dominant understory plants include sensitive fern (*Onoclea sensibilis*), Canada mayflower, tall meadow-rue (*Thalictrum pubescens*), swamp dewberry (*Rubus hispidus*), and violets (*Viola* spp.).

At several locations throughout this property are open-water beaver impounded areas. As a result of the hydrologic modification from the beaver activity, standing dead red spruce and northern white cedar snags occupy the flooded area. On the periphery of the open water, speckled alder is the dominant shrub. Emergent vegetation includes a suite of sedges (*Carex* spp.), bulrushes (*Scirpus* spp.), and other graminoids.

3.7 Wetland Characteristics, Functions and Values

Adjoining the approximately 32-square-mile Flagstaff Lake (L1UB), approximately 424 acres (51%) of the 831.39-acre FLT were identified as palustrine wetland during field surveys (Figure 3.3). The primary wetland type on this Tract is palustrine forested (PFO) with a mix of evergreen (4) and deciduous vegetation (1) (Photo 3.3). Variations of forested wetland occur across FLT such as ones dominated by dead snags (PFO5) readily conspicuous along Lower Falls Dam Road to the north of Pond Stream and in large areas impounded by beaver dams (Photo 3.4). PFO also occurs as discrete relatively undisturbed stands in areas selectively harvested for timber resulting in localized ponding of water and establishment of associated herbaceous emergent dominated (PEM) wetlands (Photo 3.5). The second most abundant wetland type at FLT is palustrine scrub-shrub (PSS1) and occurs in areas regenerating from timber harvesting, beaver flowages and along the lake edge and riparian areas (Photo 3.6).

The third most abundant wetland type at FLT are differing forms of PEM which, as previously noted, occur in localized areas harvested for timber around ponded skidder ruts as well as in less disturbed settings (Photo 3.7). The PEM dominated wetland along an unnamed stream south of Pond Stream (Photo 3.8) is also the primary reason this wetland is designated as a high value IWWH (Figure 3.3) by MDIFW.

Presence of emergent wetland also contributes to vegetative diversity in the widespread, smaller scale vernal pools (Photo 3.9) and in the hundreds of PVPs, CVPs or ABAs associated with skidder ruts.

Mineral soils at FLT are generally derived from dense lodgment or basal till parent material, however as displayed in eroding bluffs along segments of the east shore of Flagstaff Lake, well sorted fine sands suggest there are localized areas of the Tract where soils originate from a cap of eolian sediments most likely wind deposited after glacial retreat and prior to establishment of vegetation. Organic soils originated from accumulation of vegetation in water such as along the major stream courses and in larger, somewhat isolated wetlands such as the PFO that dominates the south side of FLT's central peninsula.

As mapped by the USDA NRCS on Web Soil Survey, approximately 25 to 29 percent or between 205 to 240 acres of FLT is underlain by poorly drained (PD), or very poorly drained (VPD) hydric soils that are characteristic of wetlands. Map Unit Name and Symbols for hydric soils at FLT include:

- Bucksport and Wonsqueak mucks (WO) – VPD organic soils derived from vegetation deposited in water.
- Pillsbury-Peacham association (PPB) – PD fine to coarse loams derived from lodgment till.

Bucksport and Wonsqueak mucks are the hydric soils mapped to be most extensive and predominantly occur along the main drainages of the site (e.g., Pond Stream and Jerome Brook).

The sensitively sited, well maintained and highly used Maine Huts and Trails network enables all wetland types on FLT and their related functions and values to be observed and enjoyed by the public (Photo 3.10).

TABLE 3-1 SUMMARY OF FUNCTIONS AND VALUES OF WETLANDS ON THE 831.39-ACRE FLAGSTAFF LAKE TRACT

FUNCTION/VALUE	EXPLANATION
Groundwater Recharge/Discharge (GW)	Although there are no MGS mapped sand and gravel aquifers on FLT proper, an esker at the south end of the Lake is identified as a Significant Sand and Gravel Aquifer (MGS OF No. 01-132). Being part of the surface hydrologic system, wetlands on FLT draining into the Lake therefore recharge this down gradient aquifer.
Flood flow Alteration (FF)	Dead River and Carrying Place Twps are designated as "no data/No Specific Flood Hazard Area" (USGS OF Rpt 2006-1100), however water levels along the Dead River are actively managed at the Long Falls Dam outlet of Flagstaff Lake by Brookfield Renewable Energy. In relation to these fluctuating water levels, a principal function of wetlands on the Flagstaff Lake parcel that are along and hydrologically connected to the Flagstaff Lake is Floodflow Alteration.
Fish and Shellfish Habitat (FH)	Landlocked salmon, brook trout, yellow perch, chain pickerel and an assortment of baitfish inhabit Flagstaff Land and although marginal for cold water gamefish (MDIFW 1988) in 2017 it was stocked with approximately 3,400, 7- to 8-inch landlocked salmon and brook trout to support the Lake fishery for recreational anglers (MDIFW 2018). Freshwater mussels observed downstream along muddy shorelines of the Dead River are also likely to inhabit similar substrate in Flagstaff Lake.
Production Export (PE)	As evidenced by browse, droppings and other sign, woody vegetation in FLT wetlands is a fundamental food source for all herbivorous and omnivorous wildlife inhabiting the Tract. Seeds, roots and stems from herbaceous vegetation in not only PEM but PSS and PFO wetlands on FLT are also food sources for not only mammals, but the wide variety of birds, amphibians, reptiles, fish and insects that inhabit or traverse the Tract.
Sediment/Toxicant/ Pathogen Retention (STPR)	Micro-topography as well as woody and herbaceous vegetation throughout FLT wetlands physically slow surface water transport and retain these degraders of water quality to Flagstaff Lake as well as lesser tributaries. Sediments/toxicants/pathogens trapped with accumulation of vegetative remains as peat or other forms of hydric soils is another form of FLT wetlands protecting water quality of tributary streams and Flagstaff Lake.
Nutrient Removal (NR)	Micro-topography as well as woody and herbaceous vegetation throughout FLT wetlands slow surface water transport of phosphorus adhering to sediment protecting Flagstaff Lake as well as lesser tributaries from eutrophication water quality degradation . Direct uptake of nutrients by wetland vegetation and subsequent accumulation of dead vegetation in organic soils and peat is another pathway of FLT wetlands protecting water quality.
Sediment/Shoreline Stabilization (SS)	Due to the large westward fetch of Flagstaff Lake, lacustrine and palustrine vegetated wetlands aligned along the east shore of the lake buffer and protect the adjoining shoreline from prevailing wind generated waves. Palustrine wetlands along named as well as unnamed streams crossing FLT also stabilize adjoining upland and uplands thereby limiting and protecting lake degradation.
Wildlife Habitat (WH)	In addition to direct observation as well as tracks, droppings and other sign, moose, bear, deer, beaver, otter, mink and other smaller mammals are abundant on FLT that is further enhanced by the presence of a high rated IWWH (ID UMO-9951) near the center (Photo 3.8) of the Tracts. As described in detail above, FLT provides high quality habitat for a wide variety of raptors, waterfowl, gamebirds, passerines songbirds, amphibians, reptiles and insects.
Educational/ Scientific Value (ED)	FLT recognized for its research and educational opportunities as an integral component of the Bigelow Mountain-Flagstaff Lake-North Branch Dead River Focus Area of Statewide Ecological Significance (https://www.maine.gov/dacf/mnap/focusarea/bigelow_mountain_focus_area.pdf) including being crossed by a segment of the Great Carrying Place/Arnold's Trail.
Recreation (REC)	FLT is at the crossroads of the MHT, Appalachian and Northern Forest Canoe Trail network traveled by day, and through hikers and is also used for camping, cross country skiing and snowshoeing (Photo 3.10). Fishing and boating are a widely used offering of Flagstaff Lake, and hunting opportunities are also provided by FLT.

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3.8 Compensation

As part of the compensation package for NECEC, the approximately 831.39-acre Flagstaff Lake Tract will be permanently protected by a conservation easement or similar instrument. Preservation of FLT along approximately 8.5 miles of the east shore of Flagstaff Lake will protect a currently unprotected link between the conserved Bigelow Preserve to the south and the Dead River Peninsula to the north (Figure 3.1). In addition, approximately half (424 acres) of FLT is comprised of a diverse mix of wetland types (PFO, PSS, PEM), at the center of which is a 28.88-acre high value IWWH. In addition to the lacustrine shoreline, approximately 10,790 linear feet of named and unnamed perennial and intermittent streams cross the Tract and are tributaries to Flagstaff Lake (Figure 3.3).

Notably, the well sited Maine Huts and Trails facility and a solitary cabin are presently the limit of residential type development at FLT. Considering that most of the Tract is zoned M-GN, with upland chiefly concentrated as sizable islands along the lake shore, FLT is therefore potentially easily accessible for other camp lots from the paved Long Falls Dam Road that forms the eastern boundary. Preservation of FLT will allow for permanent protection from development and will preserve the existing recreational opportunities, wildlife habitat, water quality benefits, vernal pool habitat, and educational opportunities of an integral component of the Bigelow Mountain-Flagstaff Lake-North Branch Dead River Focus Area of Statewide Ecological Significance.

3.9 Photographs

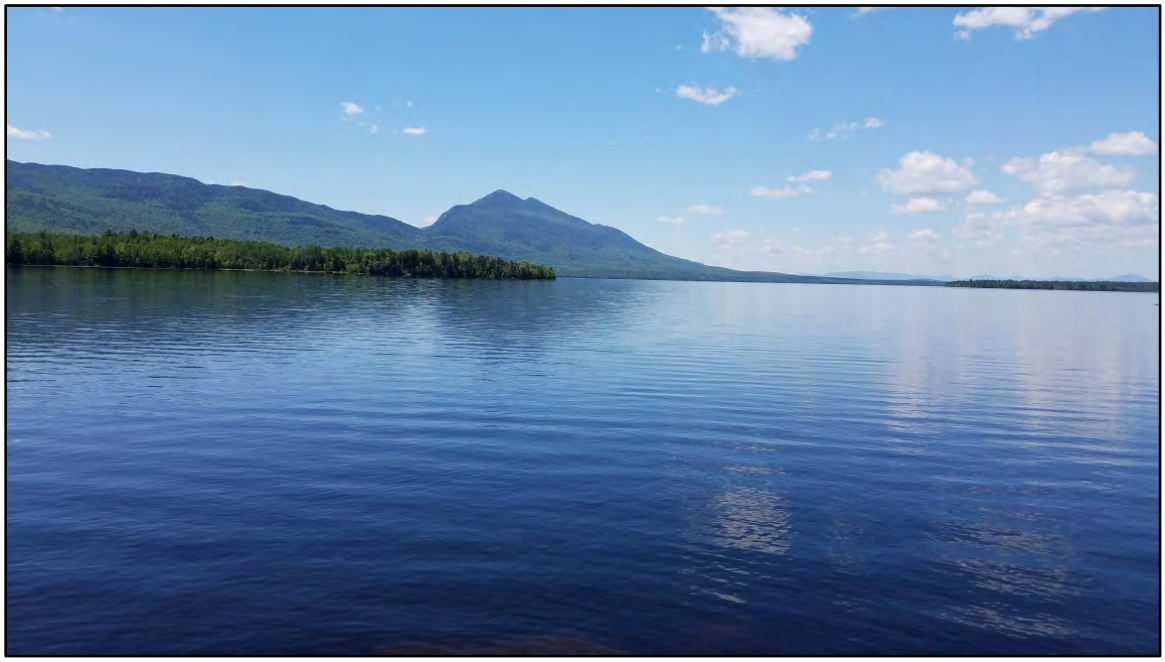

PHOTO 3-1 THE WESTWARD FOCAL POINT FROM FLT ACROSS FLAGSTAFF LAKE IS BIGELOW MOUNTAIN

PHOTO 3-2 THIS PRIVATELY-OWNED CABIN IS LOCATED ABOUT 125 FEET FROM WATER'S EDGE WHERE FLAGSTAFF LAKE IS APPROXIMATELY 450 FEET FROM LONG FALLS DAM ROAD

PHOTO 3-5 SKIDDER RUTS IN LOGGED AREAS COLLECT WATER BECOMING POTENTIAL VERNAL POOL HABITATS AND ALLOW EARLY SUCCESSIONAL REGENERATION

PHOTO 3-6 SCRUB-SHRUB WETLANDS (PSS) OCCUR THROUGHOUT FLT, ESPECIALLY NEAR THE LAKE EDGE AND IN RIPARIAN AREAS

PHOTO 3-3 FORESTED WETLANDS (PFO1/4) OF NORTHERN WHITE CEDAR (*THUJA OCCIDENTALIS*) AND SPHAGNUM MOSSES ARE THE DOMINANT FOREST TYPE ACROSS FLT

PHOTO 3-4 STANDING DEAD SNAGS (PFO5) RESULT FROM A BEAVER FLOWAGE ALONG THE SOUTHERN EDGE OF FLT

PHOTO 3-7 EMERGENT WETLANDS (PEM) HARBOR HIGH GRAMINOID DIVERSITY AND PROVIDE HABITAT FOR A WIDE VARIETY OF WILDLIFE

PHOTO 3-8 PONDED OPEN WATER AREAS WITHIN THE IWWH PROVIDE WILDLIFE HABITAT FOR A VAST RANGE OF WETLAND DEPENDENT BIRDS AND MAMMALS INCLUDING BEAVER

PHOTO 3-9 SPOTTED SALAMANDER EGG MASSES (ARROW) OCCUR IN A VERNAL POOL

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PHOTO 3-10 THE MAINE HUTS AND TRAILS NETWORK TRAVERSES THE FLT AND CONNECTS WITH THE ARNOLD TRAIL, NORTHERN CANOE TRAIL AND THE APPALACHIAN TRAIL

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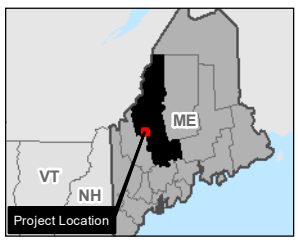

Road
Conserved Lands
Survey Boundary
Approximate Maine Huts and Trails Lease

N
W E
S

SCALE: 1 " = 3,000 '

0 1,500 3,000
Feet

Figure 3.1: Locus
Flagstaff Lake Tract

Somerset County
Maine

Date:8/6/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER
POWER ENGINEERS

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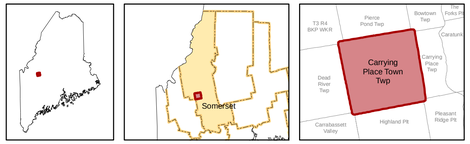
Carrying Place Town Twp.

T2 R3 BKP WKR

Somerset County



Land Use Guidance Map

Department of Agriculture, Conservation and Forestry

Maine Land Use Planning Commission

Legend

DEVELOPMENT SUBDISTRICTS

- D-RS: Residential

MANAGEMENT SUBDISTRICTS

- M-GN: General

PROTECTION SUBDISTRICTS

- P-AL: Accessible Lake
- P-GP: Great Pond
- P-RR200: Recreation - 200'
- P-SL2: Shoreland - 75'
- P-UA: Unusual Area
- P-WL1: Wetlands of Special Significance
- P-WL2: Scrub-shrub Wetlands
- P-WL3: Forested Wetlands

For complete descriptions of those areas included within the various subdistricts, and the associated regulations, refer to the Commission's Chapter 10 rules: Land Use Districts and Standards. Where any inconsistencies exist between the district boundaries, as shown on this map, and those described by the Commission's Land Use Districts and Standards, the latter shall govern.

For simplicity, this map does not show all the Wetland Protection Subdistricts for areas identified pursuant to Section 10.23,N.2 such as the beds of rivers, lakes, and other water bodies, and freshwater wetlands within 25 feet of stream channels. Nevertheless, these areas are within P-WL Subdistricts. In addition, this map does not show the Shoreland Protection Subdistricts along stream channels flowing through wetlands. Nevertheless, these areas are within P-SL2 Protection Subdistricts. If the locations of flowing waters or bodies of standing water existing on the ground differ from those shown on the map, then, pursuant to 12 M.R.S., Section 685-A(2)(G), P-GP, P-RR, P-SL, P-WL, and other subdistrict boundaries that are based upon the location of such waters shall, as appropriate, be deemed to follow the flowing water or body of standing water existing on the ground.

This Land Use Guidance Map was adopted by the Maine Land Use Planning Commission on **08/03/2005**, and became effective on **08/18/2005**.

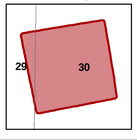
This map is certified to be a true and correct copy of the Official Land Use Guidance Map of the Maine Land Use Planning Commission.

By: Catherine M. Carroll, Director, Maine Land Use Planning Commission.

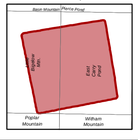
Amendments			
Location #	Zoning Permit	Effective Date	Remarks
1	ZP759	08/18/2005 06/29/2017	Adoption of digital NWI wetlands

NOTE: P-UA established to protect the Arnold Trail.

DeLorme map locus



USGS 7.5' quad index



(1) Map amendment location

▲ Point at which a river drains 25 square miles - symbol points upstream (12 M.R.S. Sec. 682-B(4))

9999 MIDAS number: Unique number assigned to each standing body of water in Maine.

WQLL Water Quality Limiting Lake - Refer to Section 10.23.E.3.g of the Commission's Land Use Districts and Standards.

MC# Lake Management Classes - Refer to Section 10.02 (Definitions) of the Commission's Land Use Districts and Standards.

0 0.5 1 1.5 2 Miles

0 1,000 2,000 3,000 4,000 Meters

0 2,000 4,000 6,000 8,000 Feet

SOURCES: Maine Land Use Planning Commission, USGS

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Dead River
Black Brook
Ratchet Rd
Axle Dr
N Bowtown Rd
Black Brook Flowage WMA
Dead River Peninsula
N Flagstaff Rd
Gateway Dr
Carrying Place Rd
Flo Rd
Bigelow Mountain View Rd
Pond Stream
1150 ft contour
Dead River
Flagstaff Lake
Long Falls Dam Rd
Jerome Brook
Spring Rd
Boise Rd
Bigelow Preserve
Dead River Trail and Conservation Corridor
Appalachian Trail Corridor
E Flagstaff Rd
Bigelow Preserve

Path: R:\Projects\152619_CMP_NECEC_VernalPools\GIS\Fig3-3_152619_PriorityParcel_Flagstaff_NECEC_Wetlands_11x17.mxd

- Wetland Data Point
- Upland Data Point
- Corps Vernal Pool
- Vernal Pool
- Potential Vernal Pool
- Amphibian Breeding Area
- Stream (NHD)
- Maine Huts & Trails Hut
- Maine Huts & Trails Main Trail
- Delineated Intermittent Stream
- Delineated Perennial Stream
- Road
- Delineated Wetland/ Wetland Island
- Vernal Pool
- Critical Terrestrial Habitat (750')
- Inland Waterfowl and Wading Bird Habitat
- Conservation Land
- Survey Area
- Approximate Maine Huts and Trails Lease

1 " = 2,000 '

0 1,000 2,000

Feet

Project Location

Figure 3.3: Natural Resources Flagstaff Lake Tract

Somerset County Maine

NAD 1983 HARN StatePlane Maine West FIPS 1802 Feet
Foot US
Transverse Mercator
North American 1983 HARN

Date: 8/6/2018
Author: KK
PEI: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

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APPENDIX 3A IPAC RESULTS: FLAGSTAFF TRACT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Compensatory Mitigation

LOCATION

Somerset County, Maine

DESCRIPTION

FLT

Local office

Maine Ecological Services Field Office

(207) 469-7300
(207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road
East Orland, ME 04431

http://www.fws.gov/mainefieldoffice/index.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Canada Lynx Lynx canadensis — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/3652

Northern Long-eared Bat Myotis septentrionalis — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the

Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Canada Warbler Cardellina canadensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Cape May Warbler Setophaga tigrina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Jul 31
Evening Grosbeak Coccothraustes vespertinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31

Rusty Blackbird Euphagus carolinus — Breeds May 10 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

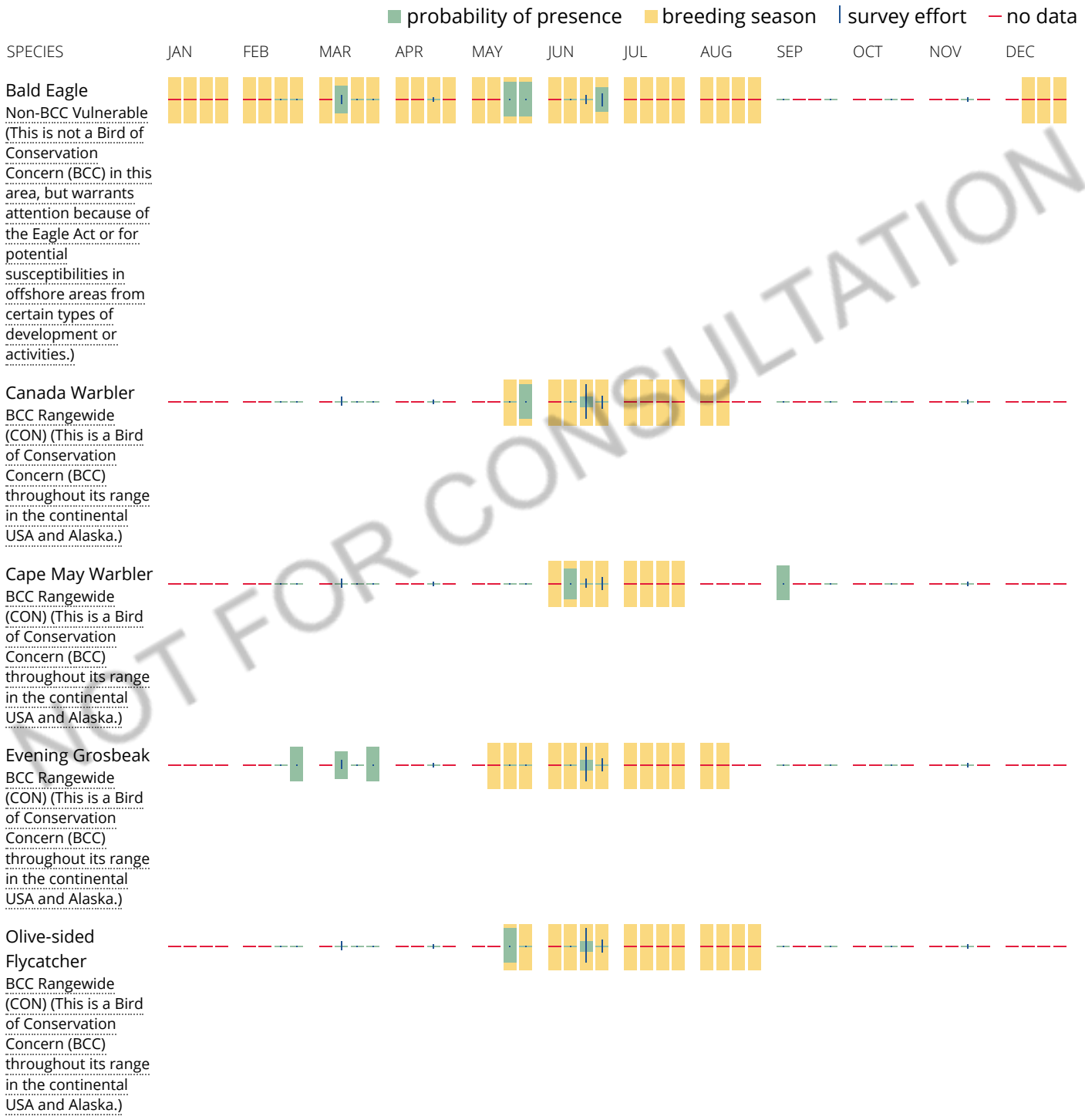
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

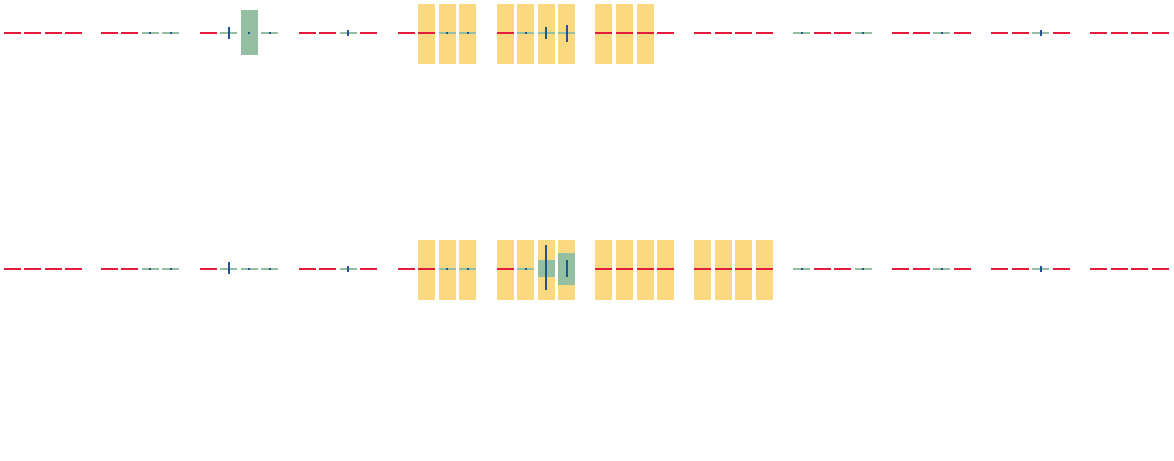
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Rusty Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds

guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize

potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Fh
- PEM1Eh
- PEM1Eb
- PEM1E

FRESHWATER FORESTED/SHRUB WETLAND

- PFO4E
- PSS1E
- PSS1Eh

PFO5Fb
PSS1Eb
PSS4E
PSS1F

FRESHWATER POND
PUBFb

LAKE
L1UBHh

RIVERINE
R3UBH
R4SBC
R5UBH
R2UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX 3B VEGETATION LIST: FLAGSTAFF TRACT

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Abies balsamea	Balsam Fir	Pinaceae	FAC
Acataea pachypoda	White Baneberry	Ranunculaceae	FACU
Acer pennsylvanicum	Striped Maple	Sapindaceae	FACU
Acer rubrum	Red Maple	Sapindaceae	FAC
Acer saccharum	Sugar Maple	Sapindaceae	FACU
Alnus incana ssp. *rugosa*	Speckled Alder	Betulaceae	FACW
Anemone quinquefolia	Nightcaps	Ranunculaceae	FACU
Aralia nudicaulis	Wild Sarsaparilla	Araliaceae	FACU
Betula alleghaniensis	Yellow Birch	Betulaceae	FAC
Betula papyifera	White Birch	Betulaceae	FACU
Betula populifolia	Gray Birch	Betulaceae	FAC
Calamagrostis canadensis	Bluejoint	Poaceae	OBL
Carex arctata	Drooping Wood Sedge	Cyperaceae	N/A
Carex brunnescens	Brownish Sedge	Cyperaceae	FACW
Carex crinita	Fringed Sedge	Cyperaceae	OBL
Carex debilis	White Edge Sedge	Cyperaceae	FACW
Carex echinata	Star Sedge	Cyperaceae	OBL
Carex gracillima	Graceful Sedge	Cyperaceae	FACU
Carex gynandra	Nodding Sedge	Cyperaceae	OBL
Carex intumescens	Greater Bladder Sedge	Cyperaceae	FACW
Carex stipata	Stalk-Grain Sedge	Cyperaceae	OBL
Carex stricta	Tussock Sedge	Cyperaceae	OBL
Carex trisperma	Three-Seed Sedge	Cyperaceae	OBL
Chamaedaphne calyculata	Leatherleaf	Ericaceae	OBL
Chamaepericlymenum canadense	Bunchberry	Cornaceae	FAC
Clematis virginiana	Virginia Virgin's-Bower	Ranunculaceae	FAC
Clintonia borealis	Yellow Bluebead Lily	Liliaceae	FAC
Coptis trifolia	Three-Leaf Goldthread	Ranunculaceae	FACW
Cypripedium acaule	Pink Lady's Slipper	Orchidaceae	FACW
Dendrolycopodium dendroideum	Prickley Tree Club Moss	Lycopodiaceae	FACU
Dichanthelium sp.	Rosette Grass	Poaceae	N/A
Dryopteris sp.	Wood Fern	Dryopteridaceae	N/A
Eleocharis acicularis	Needle Spike Rush	Cyperaceae	OBL
Eleocharis palustris	Common Spike Rush	Cyperaceae	OBL
Epigaea repens var. *glabrifolia*	Trailing Arbutus	Ericaceae	N/A

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Equisetum arvense	Field Horsetail	Equisetaceae	FAC
Equisetum sylvaticum	Woodland Horsetail	Equisetaceae	FACW
Fagus grandifolia	American Beech	Fagaceae	FACU
Galium asprellum	Rough Bedstraw	Rubiaceae	OBL
Gaultheria hispidula	Creeping Snowberry	Ericaceae	FACW
Gaultheria procumbens	Eastern Teaberry	Ericaceae	FACU
Gymnocarpium dryopteris	Northern Oak Fern	Woodsiaceae	FACU
Ilex mucronata	Mountain Holly	Aquifoliaceae	OBL
Ilex verticillata	Winterberry	Aquifoliaceae	FACW
Impatiens capensis	Jewelweed	Balsaminaceae	FACW
Iris versicolor	Harlequin Blueflag	Iridaceae	OBL
Juncus effusus	Soft Rush	Juncaceae	OBL
Kalmia angustifolia	Sheep Laurel	Ericaceae	FAC
Larix laricina	American Larch	Pinaceae	FACW
Linnaea borealis	Twinflower	Caprifoliaceae	FAC
Lonicera canadensis	American Honeysuckle	Caprifoliaceae	FACU
Lysimachia borealis	Starflower	Myrsinaceae	FAC
Maianthemum canadense	Canada Mayflower	Ruscaceae	FACU
Medeola virginiana	Indian Cucumber Root	Liliaceae	FACU
Myrica gale	Sweetgale	Myricaceae	OBL
Onoclea sensibilis	Sensitive Fern	Onocleaceae	FACW
Osmunda claytonia	Interrupted Fern	Osmundaceae	FAC
Osmundastrum cinnamomeum	Cinnamon Fern	Osmundaceae	FACW
Oxalis montana	Northern Wood Sorrel	Oxalidaceae	FACU
Parathelypteris novaborecensis	New York Fern	Thelypteridaceae	FAC
Picea rubens	Red Spruce	Pinaceae	FACU
Pinus strobus	Eastern White Pine	Pinaceae	FACU
Populus balsamifera	Balsam Poplar	Salicaceae	FACW
Populus grandidentata	Big-Tooth Aspen	Salicaceae	FACU
Populus tremuloides	Quaking Aspen	Salicaceae	FACU
Pteridium aquilinum	Bracken Fern	Dennstaeditaceae	FACU
Rhododendron canadense	Rhodora	Ericaceae	FACW
Rhododendron groenlandica	Rusty Labrador Tea	Ericaceae	OBL
Ribes glandulosum	Skunk Currant	Grossulariaceae	FACW
Ribes lacustre	Bristly Black Gooseberry	Grossulariaceae	FACW
Rubus hispidus	Bristly Dewberry	Rosaceae	FACW
Rubus idaeus	Red Raspberry	Rosaceae	FACU
Salix spp.	Willow	Salicaceae	N/A
Scirpus cyperinus	Common Woolsedge	Cyperaceae	OBL

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Scirpus microcarpus	Barber Pole Bulrush	Cyperaceae	OBL
Solidago rugosa	Wrinkle Leaf Goldenrod	Asteraceae	FAC
Sorbus americana	American Mountain Ash	Rosaceae	FAC
Spiraea alba var. *latifolia*	Meadowsweet	Rosaceae	FACW
Spiraea tomentosa	Steeplebush	Rosaceae	FACW
Thalictrum pubescens	Tall Meadow Rue	Ranunculaceae	FACW
Thuja occidentalis	Northern White Cedar	Cupressaceae	FACW
Trillium erectum	Stinking Benjamin	Melanthiaceae	FACU
Trillium undulatum	Painted Trillium	Melanthiaceae	FACU
Typha latifolia	Broad Leaved Cattail	Typhaceae	OBL
Vaccinium angustifolium	Lowbush Blueberry	Ericaceae	FACU
Vaccinium corymbosum	Highbush Blueberry	Ericaceae	FACW
Veratrum viride	American False Hellebore	Melanthiaceae	FACW
Viburnum dentatum	Smooth Arrowwood	Adoxaceae	FAC
Viburnum lantanoides	Hobblebush	Adoxaceae	FACU
Viburnum lentago	Nanny-berry	Adoxaceae	FAC
Viola spp.	Violet	Violaceae	N/A
INDICATOR STATUS	OCCURRENCE IN WETLANDS (% per Reed, 1998)		
Obligate (OBL)	Almost always occurs in wetlands under natural conditions (99%)		
Facultative Wetland (FACW)	Usually in wetlands, occasionally found in non-wetlands (67- 99%)		
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands. (33-67%)		
Facultative Upland (FACU)	Usually in non-wetlands, occasionally found in wetlands (1-33%)		
Upland (UPL)	Almost always in non-wetlands under natural conditions (1%)		

[1] Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17.USACE National Wetland Plant List. Web 20 June 2018.

[2] Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. ERDC/CRREL TN-12-1, USACE Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH. Available at https://www.fws.gov/wetlands/documents/national-wetland-plant-list-indicator-rating-definitions.pdf [Verified 20 June 2018].

*Reed, P. B., Jr. 1988. *National List of Plant Species that Occur in Wetlands.* Washington, DC, USFWS.

4.0 POOLER PONDS TRACT

4.1 Site Location Information

Municipality: The Forks Plantation **County:** Somerset

Biophysical Region: Central Mountains

Watershed (HUC 12): Kelly Brook-Kennebec River (010300030101)

NECEC Components within HUC 8 (01030003) Watershed: HVDC, Existing right of way

Closest NECEC Component: HVDC, Existing ROW

Coordinates of Site Centroid (Lat/Long WGS 84): 45°17'25.16"N, 69°59'28.86"W

4.2 Natural Resource Inventory Summary **(quantities are +/-):**

Total Site Area .....81.24 acres

NWI Palustrine Wetland Area .....16.20 acres

Delineated and GPS-surveyed Palustrine Wetland Area.....18.33 acres

NHD Rivers and Streams .....6,390 feet (1.21 miles)

(NOTE: NHD Rivers and Streams length above includes length of flowage path through Pooler Ponds)

Delineated and GPS-surveyed Rivers and Streams ….....4,480 feet (0.85 mile)

Upland Area.....62.91 acres

Inland Wading Bird and Waterfowl Habitat (Moderate Value) ……...31.39 acres

Significant Vernal Pools .....None

Other Non-Significant Vernal Pool Types ……1 medium value VP

Vernal Pool Critical Terrestrial Habitat (750 feet) ..... 8.10 acres

4.3 Site Description

Approximately three miles south of the village of The Forks is the 81.24-acre Pooler Ponds Tract (hereafter “PPT” or the “Tract”), bound on the west by 0.8 mile of the Kennebec River, on the east by Maine Scenic Byway US Route 201 (also known as the Old Canada Road), and on the north by a rafting and river campground (Figure 1, Photos 4.1 and 4.2). The Tract is located 3.4 miles north of the Appalachian Trail crossing of US Route 201 and is traversed by the Kennebec River Trail (Photo 4.3). Aside from boating and fishing access roads as well as hiking trails, PPT is otherwise undeveloped (Photo 4.4), and the centerpiece of the Tract is a moderate value 31.39-acre IWWH.

4.4 Surrounding Land Use, Protected Open Space and Focus Areas

PPT is displayed on Figure 4.2, MLUPC's Land Use Guidance Map for The Forks Plantation (T1 R4 BKP EKR). Most of PPT is designated as a General Management Subdistrict M-GN). In addition, the following Protection Subdistricts occur at PPT:

- P-GP – Great Pond
- P-SL1 – areas within 250 feet of the normal high-water mark
- P-SL2 – areas within 75 feet of the normal high-water mark
- P-WL1 – wetlands of special significance (WOSS)
- P-WL2 – scrub shrub and other nonforested wetlands
- P-WL3 – forested wetlands (excluding those covered under PWL-1, PWL-2)

Pooler Ponds (MIDAS # 4106) are also designated as a "water quality limiting lake" (WQLL) sensitive to increased phosphorus concentrations and therefore is subject to additional residential development restrictions. There are no Conserved Lands or Focus Areas immediately adjacent to or within one mile of PPT.

4.5 Wildlife Use

Wildlife usage and habitat evaluations on PPT were conducted based on field surveys, aerial photo interpretation of landscape and terrain, and research of IPaC results from the USFWS for endangered species, critical habitat, migratory birds, and fisheries in and around the area. According to the results of the IPaC report (Appendix 4A), two threatened species: Canada lynx (*Lynx canadensis*) and Northern long-eared bat (*Myotis septentrionalis*); and one endangered species – Atlantic salmon (*Salmo salar*) could be affected by activities on the property.

Multiple moose (*Alces alces*) and whitetail deer (*Odocoileus virginianus*) remains along with active beaver (*Castor canadensis*) dams were observed on the property during natural resource surveys. As moderate rated IWWH, the abundance of aquatic vegetation, chiefly pond lilies (*Nymphaea* spp., *Nuphar* spp.) and other aquatics including watershield (*Brasenia schreberi*), arrowhead (*Sagitarria cuneata*), and floating manna grass (*Glyceria septentrionalis)* are worthy food sources for waterfowl and moose as well as cover habitat for amphibians. The large areas of adjoining mixed forested upland also provide browse for both deer and moose.

Pooler Ponds, and the adjoining emergent and forested wetlands, forested uplands and Kennebec River provide ideal habitat for several bird species. The IPaC report indicates two BCC – Canada warbler (*Cardellina canadensis*) and Cape May warbler (*Setophaga tigrina*) – could be affected by activities on the property. Other birds that may use PPT include, but are not limited to bald eagle (*Haliaeetus leucocephalus*), belted kingfisher (*Megacerylt alcyon*), several species of warblers (*Parulidae*), common loon (*Gavia immer*), northern goshawk (*Accipiter gentilis*), yellow-bellied flycatcher (*Empidonax flaviventris*), olive-sided flycatcher (*Contopus cooperi*), red-breasted nuthatch (*Sitta canadensis*), winter wren (*Troglodytes hiemalis*), and rusty blackbird (*Euphagus carolinus*).

A gray tree frog (*Hyla versicolor*) was observed on the Tract near a small stream bed (Photo 4.5). Spotted salamander (*Ambystoma maculatum*) egg masses (Photo 4.6) were observed on the edges of the pond complex and in the one delineated medium-value vernal pool found during field surveys. American toads (*Anaxyrus americanus*) and green frogs (*Lithobates clamitans*) are other common amphibians within the Tract. Garter snakes (*Thamnophis spp*.) were also observed on the Tract and turtles that may exist on site include, but may not be limited to painted turtles (*Chrysemys picta*), and common snapping turtle (*Chelydra serpentine*).

4.6 Vegetation

The Tract includes a variety of vegetative communities which provide different cover types and habitat characteristics. The property is primarily composed of mature forest, portions of which include deciduous forest and mixed coniferous-deciduous forest. There are also large areas of scrub-shrub and emergent habitats. The scrub-shrub areas are located along the Kennebec River, near the northwest boundary of the property, and typically in between the emergent areas along the shoreline and the upland forest further up slope from the ponds. The emergent areas are primarily located along the shoreline of Pooler Ponds.

Dominant tree species in the upland deciduous forest include northern red oak (*Quercus rubra*) and American beech (*Fagus grandifolia*). Dominant tree species in the upland mixed coniferous-deciduous forest are balsam fir (*Abies balsamea*), eastern white pine (*Pinus strobus*), red maple (*Acer rubrum*), and eastern hemlock (*Tsuga canadensis*). The scrub-shrub stratum contains beaked hazelnut (*Corylus cornuta*), choke cherry (*Prunus virginiana*), and striped maple (*Acer pennsylvanicum).* The herbaceous understory is dominated by Canada mayflower (*Maianthemum canadense*), starflower (*Lysimachia borealis*), bracken fern (*Pteridium aquilinum*), and wood fern (*Dryopteris* sp.).

Forested wetlands are dominated by red maple and yellow birch (*Betula alleghaniensis*). The typical scrub-shrub stratum contains saplings of red maple and black ash (*Fraxinus nigra*), as well as the occasional occurrence of speckled alder (*Alnus incana* ssp. *rugosa*). The herbaceous layer in the forested wetlands is dominated by sensitive fern (*Onoclea sensibilis*), bluejoint grass (*Calamagrostis canadensis*), and common wool sedge (*Scirpus cyperinus*).

Emergent areas (Photo 4.7) are predominantly confined to the pond margins and are dominated by graminoids, most specifically floating manna grass (*Glyceria septentrionalis*), fowl manna grass (*Glyceria striata*), three-way sedge (*Dulichium arundinaceum*), common spike-rush (*Eleocharis palustris*) and common wool sedge (*Scirpus cyperinus*). Other sedges found around the pond margin include fringed sedge (*Carex crinita*), northeastern sedge (*Carex cryptolepis*), hop sedge (*Carex lupulina*), sallow sedge (*Carex lurida*), and lesser bladder sedge (*Carex vesicaria*). Common forbs found in this zone are Allegheny monkey flower (*Mimulus ringens*) and swamp candles (*Lysimachia terrestris*). Adjacent scrub-shrub wetlands (Photo 4.8) are dominated by speckled alder, meadowsweet (*Spiraea alba* var. *latifolia*), and common winterberry (*Ilex verticillata*).

Submerged aquatic vegetation includes white water-lily (*Nymphaea odorata*), yellow pond-lily (*Nuphar* sp.), bur-reed (*Sparganium* sp.), northern arrowhead (*Sagittaria cuneata*), water-shield (*Brasenia schreberi*), and pondweed (*Potamogeton* sp).

4.7 Wetland Characteristics, Functions and Values

Combining the approximately 8.12-acre Pooler Ponds complex (PUB) with approximately 10.21 acres of additional palustrine wetland, 18.33 acres (22.6%) of the 81.24 total acres on PPT were identified as

palustrine wetland during the field survey (Figure 4.3). The primary wetland system on this Tract is palustrine unconsolidated bottom (PUB) associated with the open water of the pond complex. The fringe of this wetland system is enveloped by a graminoid-dominant palustrine emergent area (PEM) (Photo 4.8), which is bordered by a co-dominant palustrine scrub-shrub wetland (PSS). The codominance of these two wetland types creates outstanding wildlife habitat for inland wading birds and waterfowl (IWWH). The transitional habitat between open water, emergent marsh, scrub-shrub, forested wetland, and upland forest provides a high degree of vertical stratigraphy in vegetation that further enhances wildlife attractiveness for numerous species of amphibians, reptiles, birds, and mammals. At the southern end of the pond complex, an intermittent stream flows southwest to the Kennebec River. The Tract has approximately 0.8 river-miles of frontage along the Kennebec River, a permanently flooded, lower perennial riverine wetland system with an unconsolidated bottom (R2UBH). Where the land does not abruptly drop from bedrock cliff to river, there is generally a 20- to 50-foot strip of palustrine scrub shrub (PSS) wetland along the fringe of the Kennebec River (as described earlier in Section 1.5 of this document).

As mapped by the USDA NRCS on Web Soil Survey, approximately 56 acres (68%) of PPT is underlain by somewhat excessively drained (SED) soils. In addition to slightly more than eight acres of waterbody, the remainder of the Tract is mapped as well drained. The soils are derived from glacial outwash plains, till plains and eskers consisting of fine silt loams and clay loams. Hydric soils were identified primarily along fringe wetlands which occur around most of Pooler Ponds and parts of the Kennebec River. The fringe wetlands associated with the pond are classified as PEM and PSS with some smaller components of PFO. A small PSS wetland was mapped along the Kennebec River consisting of fine loamy sands.

TABLE 4-1 SUMMARY OF FUNCTIONS AND VALUES OF WETLANDS ON THE 81.24-ACRE POOLER POND TRACT

FUNCTION/VALUE	EXPLANATION
Groundwater Recharge/Discharge (GW)	PPT occurs on the Kennebec River Significant Sand and Gravel Aquifer and wetlands on the Tract are therefore sites of groundwater discharge from up gradient, as well as recharge areas to the adjoining Kennebec River (Neil and Locke 2008).
Flood flow Alteration (FF)	The Forks Twp is designated as "no data/No Specific Flood Hazard Area" (Dudley and Schalk 2006), however water levels along the Kennebec River are actively managed at the Long Falls Dam outlet of Flagstaff Lake and the Harris Station Dam on Indian Pond by Brookfield Renewable Energy. In relation to these fluctuating water levels, a principal function of wetlands on the Pooler Ponds parcel that are along and hydrologically connected to the Kennebec River is Floodflow Alteration.
Fish and Shellfish Habitat (FH)	The Kennebec River is popular for brook trout and landlocked salmon fishing and on the first day of field surveys an angler was removing his inflatable boat at the "Hole in the Wall" access point (Photo 4.3) at PPT after a successful morning of fishing. Pooler Ponds lack a perennial stream connection to the River and are most likely habitat for a warm water fishery.
Production Export (PE)	As evidenced by browse, droppings and other sign, woody vegetation in wetlands is a fundamental food source for all herbivorous and omnivorous wildlife inhabiting PPT. Seeds, roots and stems from herbaceous vegetation in not PUB, PEM, PSS and PFO wetlands that make up the IWWH on PPT are also food sources for not only waterfowl, but the wide variety of mammals, birds, amphibians, reptiles, fish and insects that inhabit or traverse the Tract.
Sediment/Toxicant/ Pathogen Retention (STPR)	Micro-topography as well as woody and herbaceous vegetation throughout wetlands around the perimeter off Pooler Ponds physically slow surface water transport and retain these degraders of water quality to the Kennebec River. Sediments/toxicants/pathogens trapped with accumulation of vegetative remains as peat or other forms of hydric soils is another way PPT wetlands protect water quality of Pooler Ponds and the Kennebec River.
Nutrient Removal (NR)	Micro-topography as well as woody and herbaceous vegetation throughout PPT wetlands slow/detain surface water transport of phosphorus adhering to sediment, protecting Pooler Ponds (designated as WQLL, from eutrophication and general water degradation of Kennebec River. Direct uptake of nutrients by wetland vegetation and accumulation of plant remains in organic soils and peat is another way PPT wetlands protect water quality.
Sediment/Shoreline Stabilization (SS)	Riverine vegetated wetlands aligned along the east shore of the Kennebec River buffer and protect the adjoining upland shoreline from scour and erosion. Palustrine wetlands around the perimeter of Pooler Ponds also stabilize adjoining upland and thereby limiting and protecting lake degradation.
Wildlife Habitat (WH)	In addition to direct observation as well as tracks, droppings and other sign, moose, deer, beaver, otter, mink and other smaller mammals are abundant on PPT that is further enhanced by the presence of the moderate value IWWH (ID UMO-9951) near the center of the Tract. As described in greater detail above, PPT provides high quality habitat for a wide variety of large mammals and furbearers, raptors, waterfowl, passerines songbirds, amphibians, reptiles and insects.
Educational/ Scientific Value (ED)	This easily accessible Tract provides diversity and abundance of aquatic plants and graminoids relevant to the study of botany and wetland ecology. In addition, the Tract provides a comprehensive zonation of vegetative stratigraphy / wetland types corresponding to the topographic gradient.
Recreation (REC)	PPT is located between a commercial rafting and river guide operation and campground immediately to the north and the Appalachian Trail Corridor 3.4 miles to the south. The Tract is also crossed by the Kennebec River Trial and is an access point to fishing and boating on the Kennebec River.

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4.8 Compensation

As part of the compensation package for NECEC, the approximately 81.24-acre Pooler Ponds Tract (Figure 4.3) will be permanently protected by a conservation easement or similar instrument. Preservation of this Tract along approximately 0.8 mile of the Kennebec River will secure access for rafting, other boating/canoeing and fishing. In addition, approximately 40 percent (31.39 acres) of the 81.24-acre FLT is a moderate value IWWH comprised of diverse wetland types (PFO, PSS, PEM, PUB). Preservation of PPT will result in permanent protection from development and will preserve the existing recreational opportunities, wildlife habitat, water quality benefits, vernal pool habitat, and educational opportunities adjacent to a Maine Scenic Byway (US Route 201).

4.9 Photographs

PHOTO 4-1 A NORTHWARD VIEW OF POOLER PONDS DISPLAYS THE HYDROLOGIC CONNECTIVITY OF THIS GREAT POND, WETLAND OF SPECIAL SIGNIFICANCE (WOSS). NOTE: ROUTE 201 IN THE BACKGROUND

PHOTO 4-2 THE KENNEBEC RIVER SERVES AS THE WESTERN BOUNDARY OF THE TRACT AND PROVIDES RECREATIONAL OPPORTUNITIES SUCH AS FISHING AND RAFTING

PHOTO 4-3 THE KENNEBEC RIVER TRAIL TRAVERSES PPT AND PROVIDES RIVER ACCESS FOR ANGLERS AND BOATERS; LOCALLY THIS ACCESS POINT IS REFERRED TO AS 'HOLE IN THE WALL'

PHOTO 4-4 POOLER PONDS HOSTS A VARIETY OF ECOLOGICAL SYSTEMS, INCLUDING PALUSTRINE UNCONSOLIDATED BOTTOM (PUB), EMERGENT (PEM), SCRUB-SHRUB (PSS), AND FORESTED (PFO) WETLANDS

PHOTO 4-5 A GRAY TREE FROG (*HYLA VERSICOLOR*) RESTS ON A SENSITIVE FERN (*ONOCLEA SENSIBILIS*) FROND

PHOTO 4-6 EIGHT SPOTTED SALAMANDER EGG MASSES FOUND NOT ONLY IN THIS SINGLE VERNAL POOL ON PPT, BUT WERE ALSO OBSERVED AT SEVERAL LOCATIONS IN POOLER PONDS AS WELL

PHOTO 4-7 EMERGENT WETLANDS (PEM) DOMINATED BY A SUITE OF SEDGES (*CAREX* SPP.) AND COMMON WOOL SEDGE (*SCIRPUS CYPERINUS*) ARE PREVALENT ALONG THE POND EDGE

PHOTO 4-8 SCRUB-SHRUB WETLANDS (PSS) ARE TYPICALLY DOMINATED BY SPECKLED ALDER (*ALNUS INCANA* SSP. *RUGOSA*) WITH SENSITIVE FERN (*ONOCLEA SENSIBILIS*) AS THE DOMINANT UNDERSTORY

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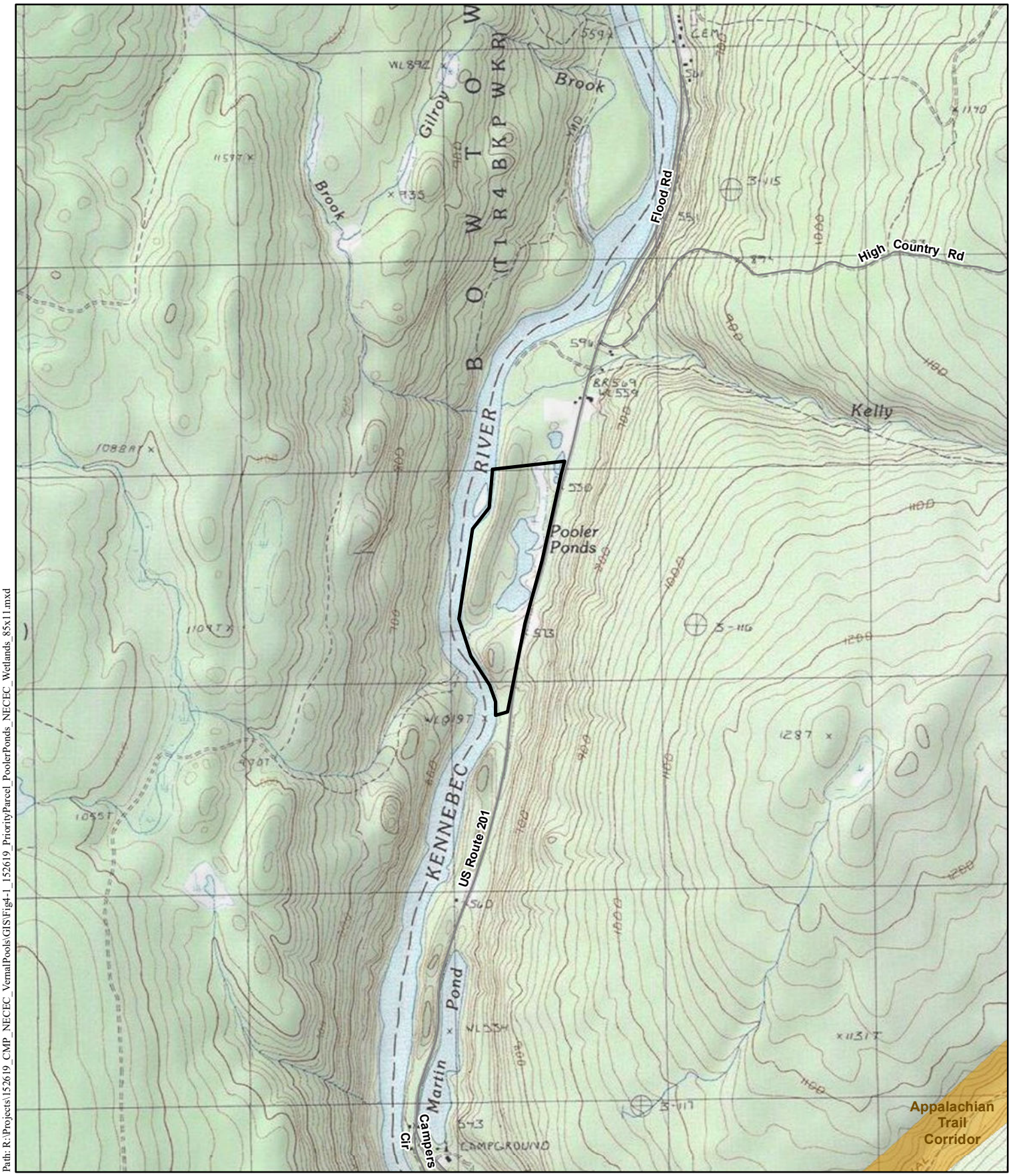

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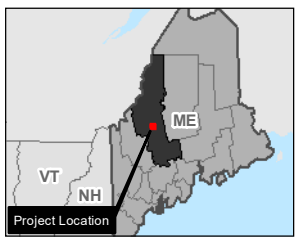

Road
Conserved Lands
Survey Boundary

N
W E
S

SCALE: 1 " = 2,000 '

0 1,000 2,000
Feet

Figure 4.1: Locus
Pooler Ponds Tract

Somerset County
Maine

Date:8/6/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

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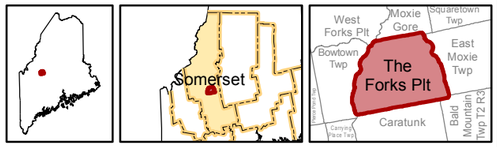
The Forks Plt.

T1 R4 BKP EKR

Somerset County



Land Use Guidance Map

Department of Agriculture, Conservation and Forestry

Maine Land Use Planning Commission

Legend

DEVELOPMENT SUBDISTRICTS

- D-GN: General
- D-RS: Residential

PROTECTION SUBDISTRICTS

- P-GP: Great Pond
- P-RR200: Recreation - 200'
- P-RR: Recreation
- P-SL1: Shoreland - 250'
- P-SL2: Shoreland - 75'
- P-WL1: Wetlands of Special Significance
- P-WL2: Scrub-shrub Wetlands
- P-WL3: Forested Wetlands

This map does not show all designated P-WL Subdistricts, such as non-tidal water bodies and freshwater wetlands within 25 feet of flowing waters.

This map is a reducedsize version and should not be considered definitive. Full sized, official Land Use Guidance Maps are available on the LUPC website or by request.

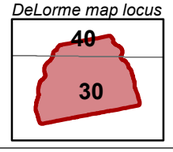
Amendments			
Location #	Zoning Permit	Effective Date	Remarks
1	ZP633	03/11/1999	
2	ZP633A	05/12/2000	
		08/18/2005	Adoption of digital NWI wetlands
3	ZP708	07/26/2007	

0 1,400 2,800 4,200 5,600 Meters

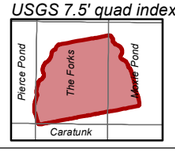
0 4,800 9,600 14,400 19,200 Feet

SOURCES: Maine Land Use Planning Commission, USGS

DeLorme map locus



USGS 7.5' quad index



(1) Map amendment location

▲ Point at which a river drains 25 square miles - symbol points upstream (12 M.R.S. Sec. 682-B(4))

9999 MIDAS number: Unique number assigned to each standing body of water in Maine.

WQLL Water Quality Limiting Lake - Refer to Section 10.23,E,3,g of the Commission's Land Use Districts and Standards.

MC# Lake Management Classes - Refer to Section 10.02 (Definitions) of the Commission's Land Use Districts and Standards.

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Kelly Brook

US Route 201

Pooler Ponds

Kennebec River

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- Wetland Data Point
- Upland Data Point
- Stream (NHD)
- Delineated Intermittent Stream
- Road
- Delineated Wetland
- Vernal Pool
- Critical Terrestrial Habitat (750')
- Inland Waterfowl and Wading Bird Habitat
- Survey Area

N

1 " = 500 '

0 250 500

Feet

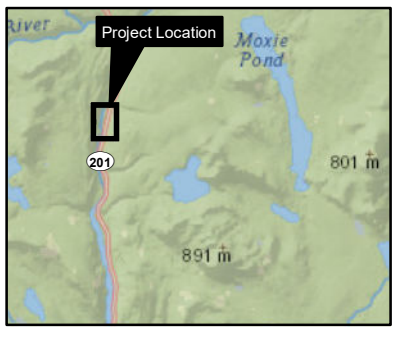

Figure 4.3: Natural Resources
Pooler Ponds Tract

Somerset County
Maine

NAD 1983 HARN StatePlane Maine West FIPS 1802 Feet
Foot US
Transverse Mercator
North American 1983 HARN

Date: 8/6/2018
Author: KK
PEI: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

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APPENDIX 4A IPAC RESULTS: POOLER PONDS TRACT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Compensatory Mitigation

LOCATION

Somerset County, Maine

DESCRIPTION

Pooler Ponds Tract

Local office

Maine Ecological Services Field Office

(207) 469-7300
(207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road
East Orland, ME 04431

http://www.fws.gov/mainefieldoffice/index.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Canada Lynx Lynx canadensis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon Salmo salar There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Canada Warbler Cardellina canadensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Cape May Warbler Setophaga tigrina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

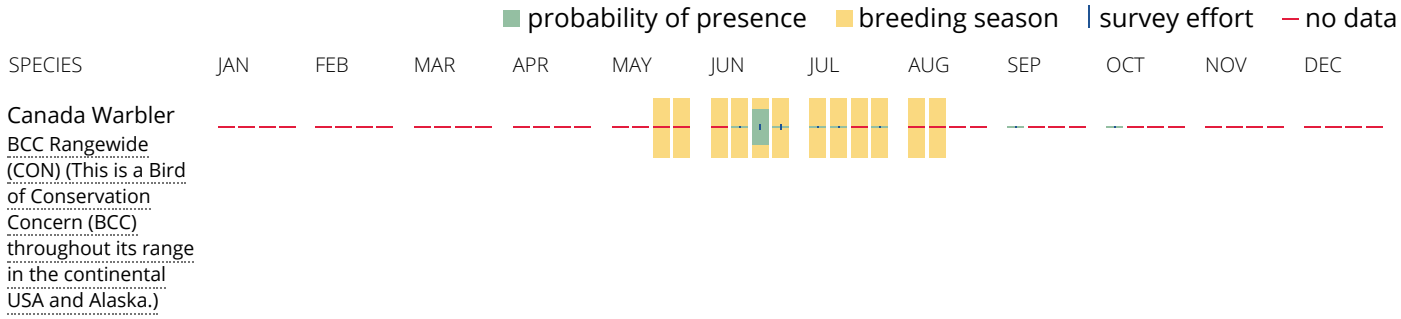
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

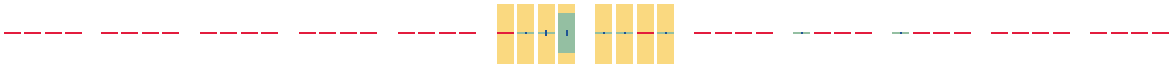
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Cape May Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1E

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1Cx
- PFO4/SS1E
- PSS1E

FRESHWATER POND

- PUBH
- PUBFx

RIVERINE

- R2UBH
- R4SBC
- R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX 4B VEGETATION LIST: POOLER PONDS TRACT

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1,2]
Abies balsamea	Balsam Fir	Pinaceae	FAC
Acer pennsylvanicum	Striped Maple	Sapindaceae	FACU
Acer rubrum	Red Maple	Sapindaceae	FAC
Agrostis capillaris	Colonial Bentgrass	Poaceae	FAC
Agrosits gigantea	Redtop Bentgrass	Poaceae	FACW
Alnus incana ssp. *rugosa*	Speckled Alder	Betulaceae	FACW
Anthoxanthum odoratum	Sweet Vernal Grass	Poaceae	FACU
Apocynum cannabinum	Indian Hemp	Apocynaceae	FAC
Betula alleghaniensis	Yellow Birch	Betulaceae	FAC
Betula populifolia	Gray Birch	Betulaceae	FAC
Brasenia schreberi	Water-Shield	Nymphaceae	OBL
Calamagrostis canadensis	Bluejoint	Poaceae	OBL
Cardamine diphylla	Crinkleroot	Brassicaceae	FACU
Carex crinita	Fringed Sedge	Cyperaceae	OBL
Carex cryptolepis	Northeastern Sedge	Cyperaceae	OBL
Carex intumescens	Greater Bladder Sedge	Cyperaceae	FACW
Carex lupulina	Hop Sedge	Cyperaceae	OBL
Carex lurida	Shallow Sedge	Cyperaceae	OBL
Carex scoparia	Pointed Broom Sedge	Cyperaceae	FACW
Carex vesicaria	Lesser Bladder Sedge	Cyperaceae	OBL
Caulophyllum thalictroides	Blue Cohosh	Berberidaceae	N/A
Chamaepericlymenum canadense	Bunchberry	Cornaceae	FAC
Corylus cornuta	Beaked Hazelnut	Betulaceae	FACU
Crataegus spp.	Hawthorne	Rosaceae	N/A
Dryopteris intermedia	Evergreen Wood Fern	Dryopteridaceae	FAC
Dulichium arundinaceum	Three-Way Sedge	Cyperaceae	OBL
Eleochaeris palustris	Common Spike-Rush	Cyperaceae	OBL
Equisetum arvense	Field Horsetail	Equisetaceae	FAC
Equisetum sylvaticum	Woodland Horsetail	Equisetaceae	FACW
Fagus grandifolia	American Beech	Fagaceae	FACU
Fraxinus americana	White Ash	Oleaceae	FACU
Fraxinus nigra	Black Ash	Oleaceae	FACW
Fraxinus pennsylvanica	Green Ash	Oleaceae	FACW
Glyceria septentrionalis	Floating Manna Grass	Poaceae	OBL
Glyceria striata	Fowl Manna Grass	Poaceae	OBL
Hieracium aurantiacum	Orange Hawkweed	Asteraceae	N/A

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1,2]
Hypericum perforatum	Common St. John's Wort	Hypericaceae	FACW
Ilex verticillata	Common Winterberry	Aquifoliaceae	FACW
Impatiens capensis	Jewelweed	Balsaminaceae	FACW
Iris versicolor	Blue Iris	Iridaceae	OBL
Juncus articulatus	Joint-Leaved Rush	Juncaceae	OBL
Juncus effusus	Soft Rush	Juncaceae	OBL
Leucanthemum vulgare	Ox-Eye Daisy	Asteraceae	UPL
Lycopus sp.	Water Horehound	Lamiaceae	OBL
Lysimachia borealis	Starflower	Myrsinaceae	N/A
Lysimachia terrestris	Swamp Candles	Myrsinaceae	OBL
Maianthemum canadense	Canada Mayflower	Ruscaceae	FACU
Maianthemum racemosum	Feathery False Solomon's Seal	Ruscaceae	FACU
Matteuccia struthiopteris	Ostrich Fern	Onocleaceae	FAC
Mimulus ringens	Allegheny Monkey-Flower	Phrymaceae	OBL
Mitchella repens	Partridge Berry	Rubiaceae	FACU
Nuphar sp.	Pond-Lily	Nymphaceae	OBL
Nymphaea odorata	White Water-Lily	Nymphaceae	OBL
Onoclea sensibilis	Sensitive Fern	Onocleaceae	FACW
Parathelypteris novaborecensis	New York Fern	Thelypteridaceae	FAC
Parthenocissus quinquefolia	Virginia-Creeper	Vitaceae	FACU
Phalaris arundinacea	Reed Canary Grass	Poaceae	FACW
Pinus strobus	Eastern White Pine	Pinaceae	FACU
Poa pratensis ssp. *pratensis*	Kentucky Blue Grass	Poaceae	FACU
Populus grandidentata	Big-Tooth Aspen	Salicaceae	FACU
Potamogeton sp.	Pondweed	Potamogetonaceae	OBL
Prunus virginiana	Choke Cherry	Rosaceae	FACU
Pteridium aquilinum	Bracken Fern	Dennstaeditaceae	FACU
Pyrola elliptica	Elliptic-Leaved Shinleaf	Ericaceae	FACU
Quercus rubra	Northern Red Oak	Fagaceae	FACU
Rhus hirta	Staghorn Sumac	Anacardiaceae	N/A
Rubus hispidus	Bristly Dewberry	Rosaceae	FACW
Rubus idaeus	Red Raspberry	Rosaceae	FACU
Sagittaria cuneata	Northern Arrowhead	Alismataceae	OBL
Sambucus racemosa	Red Elderberry	Adoxaceae	FACW
Scirpus cyperinus	Common Woolsedge	Cyperaceae	OBL
Silene vulgaris	Bladder Campion	Caryophyllaceae	N/A
Solidago canadensis	Canada Goldenrod	Asteraceae	FACU
Solidago rugosa ssp. *rugosa*	Common Wrinkle Leaved Goldenrod	Asteraceae	FAC

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1,2]
Sparganium sp.	Bur-Reed	Typhaceae	OBL
Spiraea alba var. *latifolia*	Meadowsweet	Rosaceae	FACW
Swida sericea	Red Osier Dogwood	Cornaceae	FACW
Tsuga canadensis	Eastern Hemlock	Pinaceae	FACU
Ulmus americana	American Elm	Ulmaceae	FACW
Vaccinium angustifolium	Lowbush Blueberry	Ericaceae	FACU
Vaccinium angustifolium	Lowbush Blueberry	Ericaceae	FACU
Veratrum viride	American False Hellebore	Melanthiaceae	FACW
Veronica americana	American Speedwell	Plantaginaceae	OBL
Viburnum lantanoides	Hobblebush	Adoxaceae	FACU
Viola spp.	Violets	Violaceae	N/A

INDICATOR STATUS	OCCURRENCE IN WETLANDS (% per Reed, 1998)
Obligate (OBL)	Almost always occurs in wetlands under natural conditions (99%)
Facultative Wetland (FACW)	Usually in wetlands, occasionally found in non-wetlands (67- 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands. (33-67%)
Facultative Upland (FACU)	Usually in non-wetlands, occasionally found in wetlands (1-33%)
Upland (UPL)	Almost always in non-wetlands under natural conditions (1%)

[1] Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17.USACE National Wetland Plant List. Web.20 June 2018.

[2] Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. ERDC/CRREL TN-12-1, USACE Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH. Available at https://www.fws.gov/wetlands/documents/national-wetland-plant-list-indicator-rating-definitions.pdf [Verified 20 June 2018]

*Reed, P. B., Jr. 1988. *National List of Plant Species that Occur in Wetlands.* Washington, DC, USFWS.

5.0 GRAND FALLS TRACT

5.1 Site Location Information

Municipality: Spring Lake Township (T03 R04 BKP WKR) **County:** Somerset
Biophysical Region: Western Mountains
Watershed (HUC 12): Spring Lake-Upper Dead River (010300020502)
NECEC Components within HUC 8 (01030002) Watershed: HVDC, New ROW
Closest NECEC Component: HVDC, New ROW
Coordinates of Site Centroid (Lat/Long WGS 84): 45°17'43.03"N, 70°13'14.93"W

5.2 Natural Resource Inventory Summary **(quantities are +/-):**

Total Site Area .....120.84 acres
NWI Palustrine Wetland Area.....12.10 acres
Delineated and GPS-surveyed Palustrine Wetland Area….....14.51 acres
NHD Rivers and Streams .....3,690 feet (0.70 mile)
Delineated and GPS-surveyed Streams .....5,610 feet (1.06 miles)
Outstanding River Segment (Ch 200 §403: Dead River)…….……..…… 0.70 mile
Upland Area..... .....106.33 acres
Inland Wading Bird and Waterfowl Habitat (Moderate Value) ……..16.06 acres
Significant Vernal Pools .....1 high value SVP
Non-Significant Vernal Pools ……...1 high value PSVP
Vernal Pool Critical Terrestrial Habitat (750 feet) .....40.09 acres
Deer Wintering Area…….40 acres

5.3 Site Description

The 120.84-acre Grand Falls Tract (hereafter "GFT" or "the Tract") – the centerpiece of which is Grand Falls (Photos 5.1 and 5.2) – is bisected by the Dead River and therefore has approximately 0.8 mile of frontage on each side of the River (Figure 5.1). GFT is a unique and stunning Tract with not only scenic views of Grand Falls and the associated display of diverse geologic features but also productive forested (PFO), scrub-shrub (PSS), and emergent (PEM) wetlands. Having a blend of cover types, GFT provides a range of habitats for a variety of animal species and includes a moderate value IWWH which connects the Tract to a 50,000-acre Focus Area of Statewide Ecological Significance. In addition to the Maine Huts and Trails network, the Northern Forest Canoe Trail traverses the Tract connecting Flagstaff Lake with Spencer Stream.

5.4 Surrounding Land Use, Protected Open Space and Focus Areas

In addition to the Maine Huts and Trails bridge (Photo 5.3), two long-established cabins are located on the Tract (one on each side of the Dead River) and a third is immediately adjacent to the west boundary (Photo 5.4). On the east bank of the Dead River, at the upstream end of the Northern Forest Canoe Trail portage which makes use of the MHT network is a simple canoe support station (Photo 5.5). Downstream of this and immediately north of a large island a relic cribwork spans the river (Photos 5.6 and 5.7). With the exception of a gated, gravel road, no other development exists on the Tract.

GFT is displayed on Figure 5.2, MLUPC's Land Use Guidance Map for Spring Lake Twp (T3 R4 BKP WKR). Much of GFT is designated as a General Management Subdistrict M-GN). In addition, the following Protection Subdistricts occur at GFT:

- P-FP – Flood Prone
- P-FW – Fish and Wildlife 060030
- P-RR – Recreation –Water
- P-SL1 – Shore Land within 250 feet of the normal high-water mark
- P-UA – Unusual Area
- P-WL1 – Wetlands of special significance (WOSS)
- P-WL2 – Wetlands scrub shrub (PSS)

GFT is approximately 3.25 miles downstream, along the Dead River, of the 50,000-acre Bigelow Mountain-Flagstaff Lake-North Branch of the Dead River Focus Area of Statewide Ecological Significance. Within the intervening distance is the 1,542-acre moderate value IWWH, linking GFT with the Focus Area. Conserved lands on the Tract are limited to the 200 feet wide Dead River Trail and Conservation Corridor on the east side of the River.

5.5 Wildlife Use

Wildlife usage and habitat evaluations on GFT were conducted based on field surveys, aerial photo interpretation of landscape and terrain, and research of IPaC results from the USFWS for endangered species, critical habitat, migratory birds, and fisheries in and around the area. According to the results of the IPaC report (Appendix 5A), two threatened species - Canada lynx (*Lynx canadensis*) and Northern long-eared bat (*Myotis septentrionalis*); and one endangered species – Atlantic salmon (*Salmo salar*) could be affected by activities on the property.

Moose (*Alces alces*) tracks were witnessed on GFT along the shore of the Dead River. Based on the location and vegetative cover in the location of P-FW (060030) on the LUPC map (Figure 5.2) an approximately 40-acre Deer Wintering Area is located along the northeast side of GFT which also extends downstream along the Dead River to Basin Tract (BT). Small mammals were observed during field surveys including red squirrel (*Sciurus vulgaris*), chipmunk (*Tamias sp*.), and snowshoe hare (*Lepus americanus*). Black bear (*Ursus americanus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*) beaver (*Castor candensis*), mink (*Neovison vison*), river otter (*Lontar canadensis*), fisher (*Pekania pennanti*) and pine marten (*Martes americana)* are furbearers that inhabit or traverse the Tract. Several passerine birds and birds of prey are likely to use GFT for its diverse habitat and abundance of food sources, including

hard and soft mast and a number of fish species. Tall balsam firs and Eastern white pines allow for birds of prey to nest along the Dead River.

The various wetland cover types, upland forest, and riverine habitat make it a suitable place for birds to reside. MDIFW has identified a moderate value 1,526 acres IWWH along the Dead River, most of which is upstream, however approximately 13 percent GFT occurs within this significant wildlife habitat.

During field surveys, one high value State Significant Vernal Pool (SVP) with over 40 spotted salamander (*Ambystoma maculatum*) egg masses was observed (Photo 5.8). One high value potentially significant vernal pool (PSVP) was recorded with twelve (12) spotted salamander egg masses, along with one potential vernal pool, all on the east side of the Dead River. Due to the timing of surveys, the presence of wood frog (*Lithobates sylvaticus*) egg masses could not be verified. American toads (*Anaxyrus americanus*) and green frogs (*Lithobates clamitans*) are other common amphibians within the Tract. Garter snakes (*Thamnophis spp*.) were present as well during field surveys.

The Upper Dead River, also referred to as the Grand Falls Flowage, is known for its rainbow trout (*Oncorhynchus mykiss*) which often feed on smelts that wash in to the river from Flagstaff Lake. Rainbow trout are a local, naturally reproducing population possibly stocked illegally many years ago. Landlocked salmon (*Salmo salar sebago*) and brook trout (*Salvelinus fontinalis*) are also abundant in the River (https://mainehuts.org/discover/things-do/fishing). These are excellent resources for birds of prey and even the occasional opportunistic black bear.

5.6 Vegetation

The property includes a variety of vegetative communities which provide different cover types, habitat characteristics, and ecological function. The property is primarily composed of mixed coniferous-deciduous forests. There are also several scrub-shrub wetlands, typically associated with the shore of the Dead River and the banks of feeder tributary streams.

Wetlands and uplands were identified in the mixed coniferous-deciduous forest mentioned above. Dominant tree species in the wetland forest include red maple (*Acer rubrum*), northern white cedar (*Thuja occidentalis*), balsam fir (*Abies balsamea*), and yellow birch (*Betula allegheniensis*). Common woody plants in the shrub stratum are typically saplings of balsam fir. Common understory plants include sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmunda cinnamomeum*), interrupted fern (*Osmunda claytonia*), violets (*Viola* spp.), dewberry (*Rubus hispidus*), and *Sphagnum* spp. mosses.

In the forested uplands, the dominant tree species are red spruce (*Picea rubens*), balsam fir, red maple, and eastern white pine (*Pinus strobus*). Dominant understory plants in the shrub stratum include American beech (*Fagus grandifolia*) saplings, mountain ash (*Sorbus americana*), and beaked hazelnut (*Corylus cornuta*). Common forbs include starflower (*Lysimachia borealis*), yellow blue-bead lily (*Clintonia borealis*), Canada mayflower (*Maianthemum canadense*), sarsaparilla (*Aralia nudicaulis*), and rosy bells (*Streptopus lanceolatus*).

The scrub shrub wetlands are dominated by speckled alder (*Alnus incana* ssp. *rugosa*) and meadowsweet (*Spiraea alba* var. *latifolia*). Common herbaceous plants in the understory are bluejoint grass (*Calamagrostis canadensis*), tall meadow-rue (*Thalictrum pubescens*), sedges (*Carex* spp.), and wrinkle-leaved goldenrod (*Solidago rugosa*).

5.7 Wetland Characteristics, Functions, and Values

Approximately 14.51 acres (12%) of the 120.84 total acres of the GFT were identified as palustrine wetlands during the field surveys (Figure 5.3). Although the largest wetland type on the Tract is the Dead River covering approximately 18.66 acres, characterized as a permanently flooded, lower perennial riverine system with an unconsolidated bottom (R2UBH), as discussed earlier it is excluded from total palustrine wetland area. Therefore, the second most abundant wetland type is palustrine forested with a mixed coniferous-deciduous canopy (PFO4/1) (Photo 5.9). The third most abundant wetland type (Photos 5.10 and 5.11) is palustrine scrub shrub (PSS), occurring predominantly along the shores of the Dead River in addition to the intermittent and perennial tributary streams that feed into the Dead River. The least abundant wetland system represented on the Tract is palustrine emergent (PEM, localized near the southeastern boundary of the parcel where the Dead River meanders around the island (Photo 5.12). However, despite its small extent, the PEM habitat is integral to the IWWH. The Dead River flows from the southern end of the property to the northern end of the property where it merges with Spencer Creek and turns toward the east. Accounting for both banks of the Dead River, approximately a total of 1.6 river miles of frontage occur on the Tract.

Opportunities for education and recreation abound on this Tract, along with opportunities for cultural values such as aesthetics. The falls and the surrounding ravines and bedrock provide examples of the effect of hydrology on landscape formation. The existing network of Maine Huts and Trails and the Northern Forest Canoe Trail exhibits an already-established recreational aspect to the site, such as canoeing, kayaking, rafting, fishing, and hiking.

As mapped by the USDA NRCS on Web Soil Survey, approximately 32 acres (26%) of GFT is underlain by poorly drained (PD) hydric soils. Areas of the tract where these soils occur are typically on zero to two percent slopes. Map Unit Name and Symbols for hydric soils at GFT consist of the Charles-Cornish-Wonsqueak complex (CG) a PD/VPD coarse silt loam formed in alluvial deposits on flood plains. Wetlands exist predominantly on the more gently sloping west side of the Dead River mapped as fine sandy loams whereas on the east side of the Dead River with 20 to 60 percent slopes well drained, upland soils predominate.

TABLE 5-1 SUMMARY OF FUNCTIONS & VALUES OF WETLANDS ON THE 120.84 ACRE GRAND FALLS TRACT

FUNCTION/VALUE	EXPLANATION
Groundwater Recharge/Discharge (GW)	Wetlands on river valley slopes of GFT are commonly associated with spring/seeps or sites of groundwater discharge and as part of the surface hydrologic system at other locations on GFT are recharge areas to the baseflow of the Dead River.
Flood flow Alteration (FF)	Spring Lake Twp is designated as "no data/No Specific Flood Hazard Area" (Dudley and Schalk 2006), however water levels along the Dead River are actively managed at the Long Falls Dam outlet of Flagstaff Lake by Brookfield Renewable Energy. In relation to these fluctuating water levels, a principal function of wetlands on the Grand Falls parcel that are along and hydrologically connected to the Dead River is Floodflow Alteration.
Fish and Shellfish Habitat (FH)	As observed during field surveys the Dead River at Grand Falls is popular for brook trout and landlocked salmon fishing. In 2017 the segment of the Dead River crossing T3 R4 BKP WKR where LET is located was stocked with approximately 1,550, 8- to 14-inch landlocked salmon and brook trout to support the fishery for recreational angler (MDIFW 2018). Freshwater mussels were observed along muddy shorelines of the Dead River upstream of Grand Falls.
Production Export (PE)	As evidenced by browse, droppings and other sign, woody vegetation in GFT wetlands is a fundamental food source for all herbivorous and omnivorous wildlife inhabiting the Tract. Seeds, roots and stems from herbaceous vegetation in not only PEM but PSS and PFO wetlands on GFT are also food sources for not only mammals, but the wide variety of birds, amphibians, reptiles, fish and insects that inhabit or traverse the Tract.
Sediment/Toxicant/ Pathogen Retention (STPR)	Micro-topography as well as woody and herbaceous vegetation throughout GFT wetlands physically slow surface water transport and retain these degraders of water quality to the Dead River. Sediments/toxicants/pathogens trapped with accumulation of vegetative remains as peat or other forms of hydric soils is another form of GF T wetlands protecting water quality of tributary streams and the Dead River.
Nutrient Removal (NR)	Micro-topography as well as woody and herbaceous vegetation throughout GFT wetlands slow surface water transport of nutrients protecting the Dead Rivera as well as lesser tributaries from water quality degradation (Photo 5.9). Direct uptake of nutrients by wetland vegetation and subsequent accumulation of dead vegetation in organic soils and peat is another pathway of GFT wetlands protecting water quality.
Sediment/Shoreline Stabilization (SS)	Riverine and palustrine wetlands aligned along both shores of the Dead River buffer and protect the adjoining upland shoreline from scour and erosion.
Wildlife Habitat (WH)	In addition to direct observation as well as tracks, droppings and other sign, moose, bear, deer, coyote, beaver, otter, mink and other smaller mammals are abundant on GFT that is further enhanced by the presence along the Dead River on the southern edge of the Tract of approximately 16 acres of a 1,542 acres moderate value IWWH. Based on the location and vegetative cover in the location of P-FW (060030) on the LUPC map (Figure 5.2) a Deer Wintering Area is located along the northeast side of GFT which also extends downstream along the Dead River to BT.
Educational/ Scientific Value (ED)	Educational values of GFT are recognized and promoted by a Maine Geologic Facts and Localities report by the Maine Geological Survey (Marvinney 2014). Due to proximity and connectivity, educational and scientific values of GFT are similar to those of the Bigelow Mountain-Flagstaff Lake-North Branch Dead River Focus Area of Statewide Ecological Significance (https://www.maine.gov/dacf/mnap/focusarea/bigelow_mountain_focus_area.pdf).
Recreation (REC)	GFT, crossed by the MHT network traveled by day, and through hikers is also used for camping cross country skiing and snowshoeing. The Northern Forest Canoe Trail (Photo 5.5) crosses the Tract which is the starting point for commercial Dead River rafting operation. The Tract is also regarded for trout and salmon fishing and hunting opportunities.

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5.8 Compensation

As part of the compensation package for NECEC, the approximately 120.84-acre Grand Falls Tract will be permanently protected by a conservation easement or similar instrument. Preservation of GFT (Figure 5.3) will expand on the Dead River Trail and Conservation Corridor and will encompass not only Grand Falls but also approximately 0.8 mile on each side of this reach of the Dead River which is designated as an Outstanding River Segment (Ch 200 §403). This key location will also augment Western Mountain conservation easement on the north side of the Dead River near the mouth of Spencer Stream. In addition, approximately 12 percent (14.41 acres) of the 120.84-acre GFT are comprised of a diverse mix of wetland types (PFO, PSS, PEM) with much of the PSS and PEM being part of the wetland in the Tract's 16.06-acre portion of a 1,542 acres moderate value IWWH. P-FW 060030 on the MLUPC Land Use Guidance Map (Figure 5.2) also indicates a Deer Wintering Area occurs in the northeast corner of GFT.

Two long established cabins and the Maine Huts and Trails bridge are presently the limit of residential type development at GFT. Portions of the Tract are zoned M-GN and additional development similar to the three cabins now on and immediately adjacent to GFT could therefore take place. Preservation of GFT would provide permanent protection from development and preserve the existing wetland based- wildlife, vernal pool, fish and shellfish habitats, water quality benefits, and recreational and educational opportunities.

5.9 Photographs

PHOTO 5-1 GRAND FALLS IS A HORSESHOE WATERFALL ON THE DEAD RIVER APPROXIMATELY 40 FEET TALL AND 200 FEET WIDE

PHOTO 5-2 GRAND FALLS ATTRACT VISITORS ANNUALLY FOR ITS SCENIC VIEWS AND NATURAL SPLENDOR

PHOTO 5-3 A MAINE HUTS AND TRAILS BRIDGE CROSSES THE DEAD RIVER UPSTREAM FROM GRAND FALLS

PHOTO 5-4 TWO CABINS ARE LOCATED ON THE TRACT (ONE ON EACH SIDE OF THE DEAD RIVER) AND A THIRD IS IMMEDIATELY ADJACENT TO THE WEST BOUNDARY

PHOTO 5-5 THE NORTHERN FOREST CANOE TRAIL AND THE MAINE HUTS AND TRAILS TRAIL SYSTEM PASS THROUGH THE TRACT; HERE A RACK AND A FOOD STORAGE BOX BESIDE THE PORTAGE TAKE OUT ALLOWS PADDLERS TO CARE FOR THEIR EQUIPMENT WHILE TAKING IN VIEWS OF GRAND FALLS

PHOTO 5-6 RELIC CRIBWORK LIKELY FROM HISTORIC LOGGING OPERATIONS SPANS THE WIDTH OF THE DEAD RIVER UPSTREAM FROM GRAND FALLS

PHOTO 5-7 THIS HISTORIC SIGN AND ITS RESPECTIVE CAMPSITE ARE LOCATED ON THE ISLAND, APPROXIMATELY ONE THIRD OF A MILE SOUTH OF THE BRIDGE (WARDEN MAYNARD ATWOOD OF KINGFIELD, MAINE, RETIRED IN 1984)

PHOTO 5-8 A "SIGNIFICANT VERNAL POOL" ON GFT PROVIDES HABITAT FOR SPOTTED SALAMANDER EGG MASSES

PHOTO 5-9 FORESTED WETLANDS (PFO4/1) ON GFT ARE TYPICALLY DOMINATED BY RED MAPLE, BALSAM FIR, NORTHERN WHITE CEDAR, AND YELLOW BIRCH

PHOTO 5-10 THIS TRIBUTARY STREAM TO THE DEAD RIVER IS DOMINATED BY AN ALDER SHRUB SWAMP WETLAND (PSS)

PHOTO 5-11 ALDER SHRUBLAND (PSS) OCCURS AS A FRINGE BETWEEN AN OPEN AREA AND A FORESTED WETLAND (PFO)

PHOTO 5-12 AN EMERGENT WETLAND (PEM) BORDERS THE WEST BANK OF THE DEAD RIVER, UPSTREAM FROM GRAND FALLS. FRESHWATER MUSSELS WERE FOUND ALONG THE SHORELINE IN THIS VICINITY

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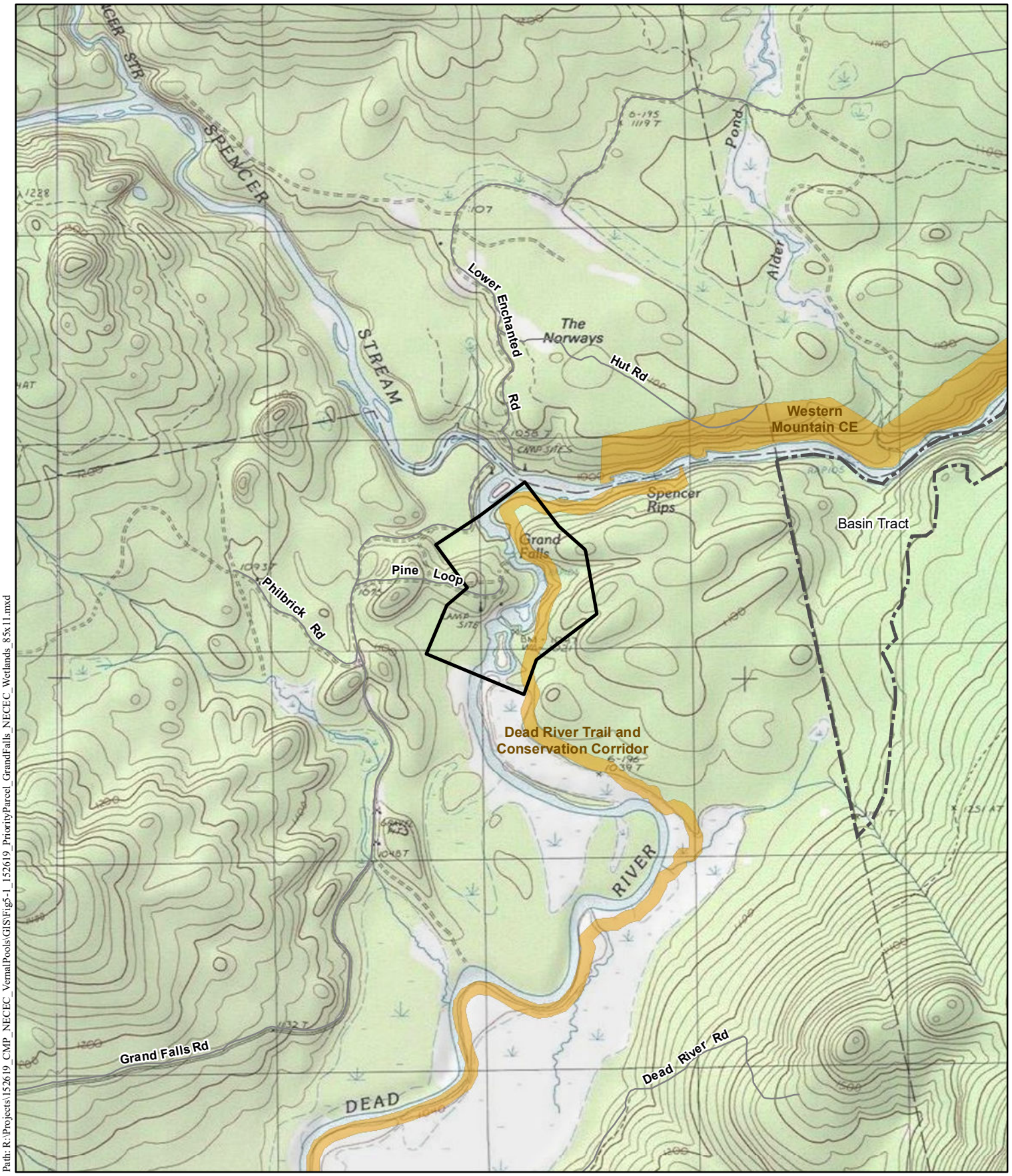
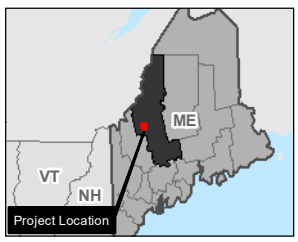


Path: R:\Projects\152619_CMP_NECEC_VernalPools\GIS\Fig5-1_152619_PriorityParcel_GrandFalls_NECEC_Wetlands_8.5x11.mxd



Road
Conserved Lands
Other Tract
Survey Area

N
W E
S

SCALE: 1 " = 2,000 '

0 1,000 2,000
Feet

Figure 5.1: Locus
Grand Falls Tract

Somerset County
Maine

Date:8/6/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

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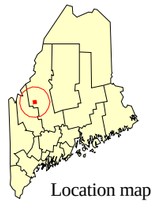
Land Use Guidance Map

T3 R4 BKP WKR

Spring Lake Twp.
Somerset County


Location map

Maine Department of Agriculture, Conservation and Forestry
LAND USE PLANNING COMMISSION
Augusta, Maine 04333−0022
(207) 287−2631
TTY (888) 577−6690
http://www.maine.gov/doc/lupc

Legend

Development Subdistricts

- D−RS Residential

Protection Subdistricts

- P−AL Accessible Lake
- P−FP Flood Prone
- P−FW Fish and Wildlife
- P−GP Great Pond
- P−RR Recreation −Water
- P−SG Soils and Geology
- P−SL1 250 ft Shoreland −Major
- P−SL2 75 ft Shoreland −Minor
- P−UA Unusual Area
- P−WL1 Wetlands − Significant
- P−WL2 Wetlands − Scrub−shrub
- P−WL3 Wetlands − Forested

Management Subdistricts

- M−GN General

- Water body
- Improved road
- Unimproved road
- Trail

Areas designated as two or more protection zones are annotated with each zone, e.g. P-FP/FW/WL1, P-FP/SL1, etc., where necessary

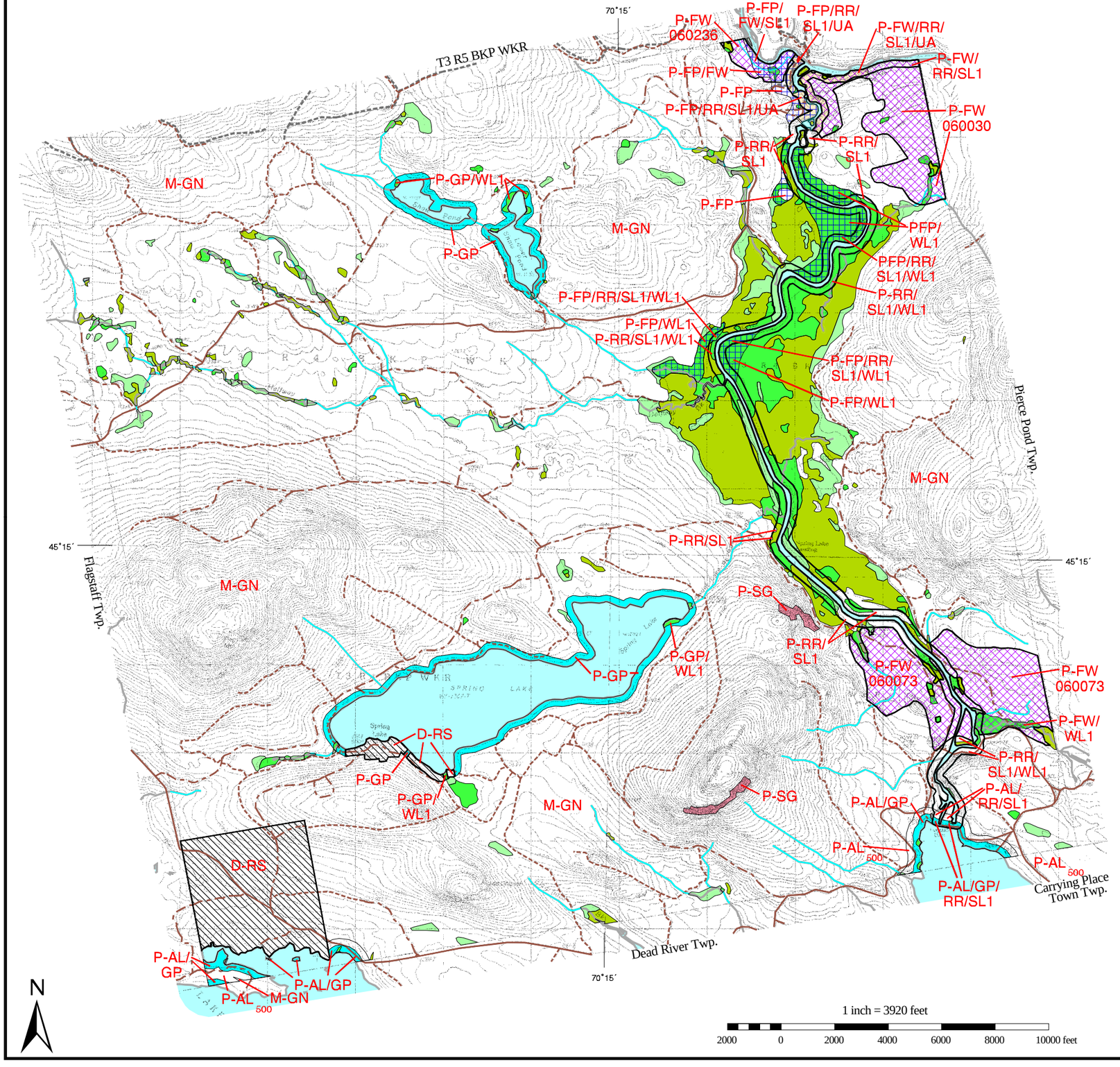
- Subdistrict boundary
- ① Zoning amendment

Topographic base, roads and trails from U.S. Geological Survey 7.5−minute map series

For the purpose of simplicity, this map does not show the Wetland Protection Subdistricts for areas identified pursuant to Section 10.16,K,2 such as beds of rivers, lakes, and other water bodies, and freshwater wetlands within 25 feet of stream channels, which are nevertheless within P−WL Subdistricts.

This map is a reduced version of the official Land Use Guidance Map. It is not certified to be a true and correct copy. Full size official LUPC Land Use Guidance Maps are available from the Commission at its Augusta office. Potential applicants unsure of their zoning should request a full size map from the Augusta office.

Land Use Guidance Map last amended on August 18, 2005



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Hut Rd
Lower Enchanted Rd
Spencer Stream
Western Mountain CE
Dead River
Dead River Trail and Conservation Corridor
Grand Falls Rd
Grand Falls
Pine Loop
Cribworks
Grand Falls Rd

Path: R:\Projects\152619_CMP_NECEC_VernalPools\GIS\Fig5-3_152619_PriorityParcel_GrandFalls_NECEC_Wetlands_11x17.mxd

- Wetland Data Point
- Upland Data Point
- Stream (NHD)
- Maine Huts & Trails Bridge
- Cabin
- Maine Huts & Trails Main Trail
- Delineated Intermittent Stream
- Delineated Perennial Stream
- Road
- Delineated Wetland
- Significant Vernal Pool
- Potential Significant Vernal Pool
- Potential Vernal Pool
- Critical Terrestrial Habitat (750')
- Inland Waterfowl and Wading Bird Habitat
- Conservation Land
- Survey Area

1 " = 500 '

0 250 500

Feet

Project Location

HURRICANE MOUNTAIN

BASIN MOUNTAIN

Figure 5.3: Natural Resources Grand Falls Tract

Somerset County Maine

NAD 1983 HARN StatePlane Maine West FIPS 1802 Feet Foot US
Transverse Mercator
North American 1983 HARN

Date: 8/6/2018
Author: KK
PEI: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

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APPENDIX 5A IPAC RESULTS: GRAND FALLS TRACT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Compensatory Mitigation

LOCATION

Somerset County, Maine

DESCRIPTION

GFT

Local office

Maine Ecological Services Field Office

(207) 469-7300
(207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road
East Orland, ME 04431

http://www.fws.gov/mainefieldoffice/index.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Canada Lynx Lynx canadensis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon Salmo salar There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

THERE ARE NO MIGRATORY BIRDS OF CONSERVATION CONCERN EXPECTED TO OCCUR AT THIS LOCATION.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1E

FRESHWATER FORESTED/SHRUB WETLAND

- PSS1E
- PSS1/EM1E
- PFO4E
- PFO1E
- PSS1F

RIVERINE

- R3UBH
- R2UBH
- R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error

is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX 5B VEGETATION LIST: GRAND FALLS TRACT

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Abies balsamea	Balsam Fir	Pinaceae	FAC
Acer rubrum	Red Maple	Sapindaceae	FAC
Acer saccharum	Sugar Maple	Sapindaceae	FACU
Alnus incana sp. *rugosa*	Speckled Alder	Betulaceae	FACW
Anemone quinquefolia	Nightcaps	Ranunculaceae	FACU
Aralia nudicaulis	Wild Sarsaparilla	Araliaceae	FACU
Betula alleghaniensis	Yellow Birch	Betulaceae	FAC
Calamagrostis canadensis	Bluejoint	Poaceae	OBL
Carex trisperma	Three-Seed Sedge	Cyperaceae	OBL
Carex stricta	Tussock Sedge	Cyperaceae	OBL
Chamaedaphne calyculata	Leatherleaf	Ericaceae	OBL
Chamaepericlymenum canadense	Bunchberry	Cornaceae	FAC
Clematis virginiana	Devil's Darning Needles	Ranunculaceae	FAC
Clintonia borealis	Yellow Bluebead Lily	Liliaceae	FAC
Corylus cornuta	Beaked Hazelnut	Betulaceae	FACU
Fraxinus nigra	Black Ash	Oleaceae	FACW
Gaultheria hispidula	Creeping Spicy Wintergreen	Ericaceae	FACW
Geum rivale	Purple Avens	Rosaceae	OBL
Hypericum punctatum	Spotted St. John's Wort	Hypericaceae	FAC
Ilex verticillata	Common Winterberry	Aquifoliaceae	FACW
Lysimachia borealis	Starflower	Myrsinaceae	FAC
Maianthemum canadense	Canada Mayflower	Ruscaceae	FACU
Matteuccia struthiopteris	Ostrich Fern	Onocleaceae	FAC
Onoclea sensibilis	Sensitive Fern	Onocleaceae	FACW
Osmunda claytonia	Interrupted Fern	Osmundaceae	FAC
Osmundastrum cinnamomeum	Cinnamon Fern	Osmundaceae	FACW
Picea rubens	Red Spruce	Pinaceae	FACU
Pinus strobus	Eastern White Pine	Pinaceae	FACU
Populus balsamifera	Balsam Poplar	Salicaceae	FACW
Prunus virginiana	Chokecherry	Rosaceae	FACU
Ribes lacustre	Bristly Swamp Currant	Grossulariaceae	FACW
Rubus hispidus	Bristly Dewberry	Rosaceae	FACW
Rubus idaeus	Red Raspberry	Rosaceae	FACU
Solidago canadensis	Canadian Goldenrod	Asteraceae	FACU
Solidago rugosa	Wrinkle-Leaf Goldenrod	Asteraceae	FAC
Sorbus americana	American Mountain-Ash	Rosaceae	FAC

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Spiraea alba var. *latifolia*	Meadowsweet	Rosaceae	FACW
Swida sericea	Red Osier Dogwood	Cornaceae	FACW
Thalictrum pubescens	Tall Meadow-Rue	Ranunculaceae	FACW
Thuja occidentalis	Northern White Cedar	Cupressaceae	FACW
Tiarella cordifolia	Foam Flower	Saxifragicaceae	FACU
Trillium erectum	Stinking Benjamin	Melanthiaceae	FACU
Uvularia sessilifolia	Sessile-Leaf Bellwort	Colchicaceae	FACU
Viola spp.	Violet	Violaceae	N/A

INDICATOR STATUS	OCCURRENCE IN WETLANDS (% per Reed, 1998)
Obligate (OBL)	Almost always occurs in wetlands under natural conditions (99%)
Facultative Wetland (FACW)	Usually in wetlands, occasionally found in non-wetlands (67- 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands. (33-67%)
Facultative Upland (FACU)	Usually in non-wetlands, occasionally found in wetlands (1-33%)
Upland (UPL)	Almost always in non-wetlands under natural conditions (1%)

[1] Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17.USACE National Wetland Plant List. Web.20 June 2018.

[2] Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. ERDC/CRREL TN-12-1, USACE Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH. Available at https://www.fws.gov/wetlands/documents/national-wetland-plant-list-indicator-rating-definitions.pdf [Verified 20 June 2018].

*Reed, P. B., Jr. 1988. *National List of Plant Species that Occur in Wetlands.* Washington, DC, USFWS.

6.0 LOWER ENCHANTED TRACT

6.1 Site Location Information

Municipality: Lower Enchanted Township **County:** Somerset

Biophysical Region: Central Mountains

Watershed (HUC 12): Enchanted Stream (010300020504),
Gulf Stream-Lower Dead River (010300020506)

NECEC Components within HUC 8 (01030002) Watershed: HVDC, New right of way

Closest NECEC Component: HVDC New ROW

Coordinates of Site Centroid (Lat/Long WGS 84): 45°19'50.89"N, 70°6'13.71"W

6.2 Natural Resource Inventory Summary **(quantities are +/-):**

Total Site Area .....235.60 acres

NWI Palustrine Wetland Area .....7.68 acres

Delineated and GPS-surveyed Palustrine Wetland Area .....12.97 acres

NHD Rivers and Streams .....19,210 feet (3.64 miles)

Outstanding River Segment (Ch 200 §403: Dead River)……..……..2.3 miles

Delineated and GPS-surveyed Rivers and Streams.....22,620 feet (4.28 miles)

Upland Area.....222.63 acres

Significant Vernal Pools .....None

Non-Significant Vernal Pools ……..1 high value PSVP, 5 low value VPs

Vernal Pool Critical Terrestrial Habitat (750 feet)..... 84.46 acres

6.3 Site Description

The approximately 235.60-acre Lower Enchanted Tract (hereafter “LET” or “the Tract”) has a configuration similar to an inverted “T” with approximately 1.33 miles of frontage on each side of Enchanted Stream (Photos 6.1 and 6.2) and 2.30 miles of frontage along the north side of the Dead River (Figure 6.1). Access to the east side of the LET is by Whiskey Springs Road from Lower Enchanted Road, from which a former logging road also leads to the west side of the Tract.

Although extensive timber harvesting has occurred on each side of Enchanted Stream to the Dead River, the entirety of LET remains essentially uncut and therefore contains a 3.63-mile undisturbed riparian corridor. Widths of the Tract along Enchanted Stream range from 250 to 1,050 feet and are typically 200 feet and 300 feet on the east and west sides, respectively, whereas along the Dead, widths range from 300 to 900 feet with representative widths on the upstream and downstream segments of 400 and 700 feet, respectively.

6.4 Surrounding Land Use, Protected Open Space and Focus Areas

Lower Enchanted Stream is spanned by a bridge on LET that is part of the Maine Huts and Trails network along the length of the Dead River (Figure 6.2, Photo 6.3). The Dead River (Photo 6.4) is heavily used by rafters and from Whiskey Springs Road; an appendage on the east side of the Tract provides emergency access to the River. Lower Enchanted Stream and the Dead River are also popular for brook trout (*Salvelinus fontinalis*) and landlocked salmon (*Salmo salar sebago*) fishing. In 2017, the segment of the Dead River crossing T3 R4 BKP WKR where LET is located was stocked with approximately 1,550, 8- to 14-inch landlocked salmon and brook trout to support the fishery for recreational anglers (MDIFW 2018). The northern tip of LET is within 150 feet of the southern terminus of a moderate value IWWH associated with Lower Enchanted Pond. There are no Focus Areas immediately adjacent to or within one mile of LET.

LET is displayed on Figure 6.2, MLUPC's Land Use Guidance Map for Lower Enchanted Twp. (T2 R5 BKP WKR). Most of LET is designated as a General Management Subdistrict M-GN). In addition, the following Protection Subdistricts occur at LET:

- P-RR – Recreation –Water
- P-SL1 – Shore Land within 250 feet of the normal high-water mark
- P-WL2 – Wetlands scrub shrub (PSS)
- P-WL3 – Wetlands forested wetlands (PFO)

6.5 Wildlife Use

Wildlife usage and habitat evaluations on LET were conducted based on field surveys, aerial photo interpretation of landscape and terrain, and research of IPaC results from the USFWS for endangered species, critical habitat, migratory birds, and fisheries in and around the area. According to the results of the IPaC report (Appendix 6A), two threatened species: Canada lynx (*Lynx canadensis*) and Northern long-eared bat (*Myotis septentrionalis*); and one endangered species – Atlantic salmon (*Salmo salar*) could be affected by activities on the property.

Bald eagles (*Haliaeetus leucocephalus*) likely make use of the LET riparian corridor. The wide Dead River valley lined with tall trees along the shoreline and valley walls is an ideal habitat area for bald eagles and other birds of prey. This allows for the birds to nest high and have a 360-degree view as well as have abundant fishing in the River. A pair of common ravens (*Corvus corax*) was observed sounding alarm calls as field crews approached what was likely their nest.

White-tailed deer (*Odocoileus virginianus*) and moose (*Alces alces*) droppings were observed, mainly on the gentler slopes of the Tract. American beech (*Fagus grandifolia*) is a common upland tree species and beech nuts, is a prevalent food source for deer, Eastern gray squirrel (*Sciurus carolinensis*), red squirrel (*Sciurus vulgaris*), chipmunks (*Tamias sp.*), and black bear (*Ursus americanus*). Coyote (*Canis latrans*), red fox (*Vulpes vulpes*) beaver (*Castor candensis*), mink (*Neovison vison*), river otter (*Lontar canadensis*), fisher (*Pekania pennanti*) and pine marten (*Martes americana)* are furbearers that inhabit or traverse the Tract.

Several pools harboring indicator species egg masses were observed on site including five low value natural vernal pools (VP) and one high value potentially significant vernal pool (PSVP) (Photo 6.5). Due to survey timing, only spotted salamander (*Ambystoma maculatum*) egg masses were observed, though the presence of wood frogs (*Lithobates sylvaticus*) is likely as well. American toads (*Anaxyrus americanus*) and green frogs (*Lithobates clamitans*) are other common amphibians observed within the Tract. Garter snakes (*Thamnophis spp*.) were also observed during field visits.

6.6 Vegetation

This Tract includes a variety of vegetative communities which provide different cover types and habitat characteristics. The Tract is primarily composed of mature forest, portions of which include dominantly deciduous and areas of mixed-growth (coniferous and deciduous) forest. In addition, there are also large areas of scrub-shrub communities, generally present along the periphery of the river. The eastern and western boundaries of the upstream portion of the parcel are characterized by early successional forests, predominantly big-toothed aspen (*Populus grandidentata*), balsam fir (*Abies balsamea*), paper birch (*Betula papyrifera*) and red spruce (*Picea rubens*).

Wetlands and uplands were identified in each type of vegetative community mentioned above. Dominant tree species in the upland forest are eastern hemlock (*Tsuga canadensis*), balsam fir, red spruce, and sugar maples (*Acer saccharum*). The shrub and sapling understory layer of the upland forest includes beaked hazelnut (*Corylus cornuta*), hobblebush (*Viburnum lantanoides*), and striped maple (*Acer pennsylvanicum*). Common forbs in the upland forest are painted trillium (*Trillium undulatum*), red trillium (*Trillium erectum*), yellow blue-bead lily (*Clintonia borealis*), and sarsaparilla (*Aralia nudicaulis*).

Forested wetlands (PFO) are dominated by red maple (*Acer rubrum*), balsam fir, yellow birch (*Betula allegheniensis*), northern white cedar (*Thuja occidentalis*), and black ash (*Fraxinus nigra*). The dominant understory plant in the PFO is sensitive fern (*Onoclea sensibilis*). The scrub-shrub wetlands (PSS) are dominated by speckled alder (*Alnus incana* ssp. *rugosa*) and meadowsweet (*Spiraea alba* var. *latifolia*), with occasional abundance of steeplebush (*Spiraea tomentosa*) and willow (*Salix* spp.). Herbaceous plants found in the shrublands are dominated by bluejoint grass (*Calamagrosits canadensis*), American false hellebore (*Veratrum viride*), and a suite of sedges (*Carex* spp.) and bulrushes (*Scirpus* spp.).

6.7 Wetland Characteristics, Functions and Values

Approximately 12.97 acres (5.5%) of the 235.60 total acres of the LET were identified as palustrine wetlands during the field surveys (Figure 5.3). Although the largest wetland type on the Tract is the Enchanted Stream covering approximately 6.67 acres, characterized as a permanently flooded, lower perennial riverine system with an unconsolidated bottom (R3UBH), as discussed earlier it is excluded from total palustrine wetland area. Accounting for both banks, LET contains approximately 2.7 miles of frontage along the Enchanted Stream. The Enchanted Stream flows southeast through the Tract to the Dead River (Photo 6.4). The Tract has a total of approximately 2.3 miles of frontage on the Dead River, including sections both upstream and downstream of the mouth of Enchanted Stream. The second most abundant wetland type is palustrine scrub shrub (PSS), typically displayed as a speckled alder thicket growing within the floodplain of the riverine system (Photo 6.6). The least abundant wetland type is palustrine forested, which typically occurs at the toe of slope between the Enchanted Stream and the steep hillsides along the stream valley. Variations of forested wetland (Photo 6.7) occur across LET such as those dominated by deciduous trees (PFO1) and those dominated by mixed coniferous-deciduous canopy (PFO4/1).

As mapped by the USDA NRCS on Web Soil Survey, the entire Lower Enchanted Tract consists of somewhat excessively drained (SED), well drained (WD), or moderately well drained (MWD) soils with slopes ranging between 15 and 60 percent. Due to the steep valley walls on both sides of Enchanted Stream any surface and groundwater rapidly flows directly to the stream channel, or are hillside seep wetlands delineated during field surveys (Photo 6.8). The Dead River valley contains a larger area of flatter slopes allowing for a higher abundance of poorly drained, hydric soils. Hydric soils were observed predominantly along the shores of Enchanted Stream and the Dead River.

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TABLE 6-1 SUMMARY OF FUNCTIONS & VALUES OF WETLANDS ON THE 235.60-ACRE LOWER ENCHANTED TRACT

FUNCTION/VALUE	EXPLANATION
Groundwater Recharge/Discharge (GW)	Wetlands on river valley slopes of LET are commonly associated with spring/seeps or sites of groundwater discharge and as part of the surface hydrologic system at other locations on LET are recharge areas to the baseflow of Enchanted Stream and the Dead River (Photo 6.8).
Flood flow Alteration (FF)	Lower Enchanted Twp is designated as "no data/No Specific Flood Hazard Area" (Dudley and Schalk 2006), however water levels along the Dead River are actively managed at the Long Falls Dam outlet of Flagstaff Lake by Brookfield Renewable Energy. In relation to these fluctuating water levels, a principal function of wetlands on the Lower Enchanted parcel that are along and hydrologically connected to the Dead River is Floodflow Alteration.
Fish and Shellfish Habitat (FH)	Lower Enchanted Stream and the Dead River are popular for brook trout and landlocked salmon fishing. In 2017, the segment of the Dead River crossing T3 R4 BKP WKR where LET is located was stocked with approximately 1,550, 8- to 14-inch landlocked salmon and brook trout to support the fishery for recreational angler (MDIFW 2018). Freshwater mussels observed upstream and downstream on GFT and BT along muddy shorelines of the Dead River are also likely to inhabit similar substrate on LET.
Production Export (PE)	As evidenced by browse, droppings and other sign, woody vegetation in LET wetlands is a fundamental food source for all herbivorous and omnivorous wildlife inhabiting the Tract. Seeds, roots and stems from herbaceous vegetation in not only PEM but PSS and PFO wetlands on GFT are also food sources for not only mammals, but the wide variety of birds, amphibians, reptiles, fish and insects that inhabit or traverse the Tract.
Sediment/Toxicant/ Pathogen Retention (STPR)	Micro-topography as well as woody and herbaceous vegetation throughout LET wetlands physically slow surface water transport and retain these degraders of water quality to the Dead River. Sediments/toxicants/pathogens trapped with accumulation of vegetative remains as peat or other forms of hydric soils is another form of LET wetlands protecting water quality of tributary streams and the Dead River.
Nutrient Removal (NR)	Micro-topography as well as woody and herbaceous vegetation throughout LET wetlands slow surface water transport of nutrients protecting the Dead River as well as lesser tributaries from water quality degradation. Direct uptake of nutrients by wetland vegetation and subsequent accumulation of dead vegetation in organic soils and peat is another pathway of LET wetlands protecting water quality.
Sediment/Shoreline Stabilization (SS)	Riverine and palustrine wetlands aligned along the north shore of the Dead River and both shores of Enchanted Stream buffer and protect the adjoining upland shoreline from scour and erosion (Photo 6.6).
Wildlife Habitat (WH)	In addition to direct observation as well as tracks, droppings and other sign, moose, bear, deer, coyote, beaver, otter, mink and other smaller mammals are abundant on LET. The northern tip of LET is within 150 feet of the southern terminus of a 276-acre moderate value IWWH associated with Lower Enchanted Pond.
Educational/ Scientific Value (ED)	Although there appear to be no records of educational use or scientific research, attributes of LET including the baseline of mapped resources and its remote location along riparian corridors of Enchanted Stream and the Dead River could be relevant to further study.
Recreation (REC)	LET is crossed by the MHT network traveled by day, and through hikers that is also used for camping cross country skiing and snowshoeing (Photo 6.3). Commercial river rafting on the Dead River pass along the shoreline of the Tract which also provides emergency access to the river. Enchanted Stream as well as the Dead River are regarded for trout and salmon fishing. Hunting opportunities are another recreational value of the Tract and its wetlands.

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6.8 Compensation

As part of the compensation package for NECEC, the approximately 235.60-acre Lower Enchanted Tract will be permanently protected by a conservation easement or similar instrument. Preservation of LET will link segments of and expand on the Western Mountain Conservation Easement and will encompass approximately 0.7 mile on both sides of Enchanted Stream as well as 2.3 miles along the north shoreline of the Dead River (Figure 6.3) which is designated as an Outstanding River Segment (Ch 200 §403). In addition, approximately 5.5 percent (12.97 acres) of the 235.60-acre LET are comprised of a mix of PSS and PFO riparian wetland.

Most of the Tract is zoned M-GN, and easily accessible by Whiskey Springs Road. Development of this otherwise undeveloped riparian Tract could therefore occur. Preservation of LET would provide permanent protection from development and preserve the existing wetland based-wildlife, vernal pool, fish and shellfish habitats, water quality benefits, and recreational, and educational values of this Tract.

6.9 Photographs

PHOTO 6-1 AN UPSTREAM VIEW FROM THE MHT BRIDGE DISPLAYS A POOL ON LOWER ENCHANTED STREAM

PHOTO 6-2 A DOWNSTREAM VIEW FROM THE MHT BRIDGE OF RIFFLES/RAPIDS ON LOWER ENCHANTED STREAM

PHOTO 6-3THE MHT TRAIL CROSSES LET LOCATED APPROXI-MATELY FIVE MILES DOWNSTREAM ON THE DEAD RIVER FROM THE GRAND FALLS HUT

PHOTO 6-4 THE CONFLUENCE OF LOWER ENCHANTED STREAM (LEFT) AND THE DEAD RIVER (RIGHT SIDE) IS LOCATED NEAR THE CENTER OF THE TRACT.

PHOTO 6-5 A POTENTIALLY SIGNIFICANT VERNAL POOL (PSVP) FOUND ON THE EAST SIDE OF LOWER ENCHANTED STREAM PROVIDES HABITAT FOR SPOTTED SALAMANDER EGG MASSES, AS WELL AS OTHER ADULT AMPHIBIANS

PHOTO 6-6 SCRUB SHRUB FLOODPLAIN WETLANDS ARE ABUNDANT ALONG THE BANKS OF THE LOWER ENCHANTED STREAM (RIGHT SIDE OF PHOTO) AND ARE TYPICALLY DOMINATED BY SPECKLED ALDER AND MEADOWSWEET

PHOTO 6-7 A FORESTED WETLAND (PFO) OCCURS THROUGHOUT THE TRACT BETWEEN THE TOE OF SLOPE (AT LEFT) AND LOWER ENCHANTED STREAM

PHOTO 6-8 SEVERAL TRIBUTARY STREAMS RUN DOWN THE STEEP SLOPES OF THE VALLEY, ULTIMATELY DRAINING INTO THE LOWER ENCHANTED STREAM

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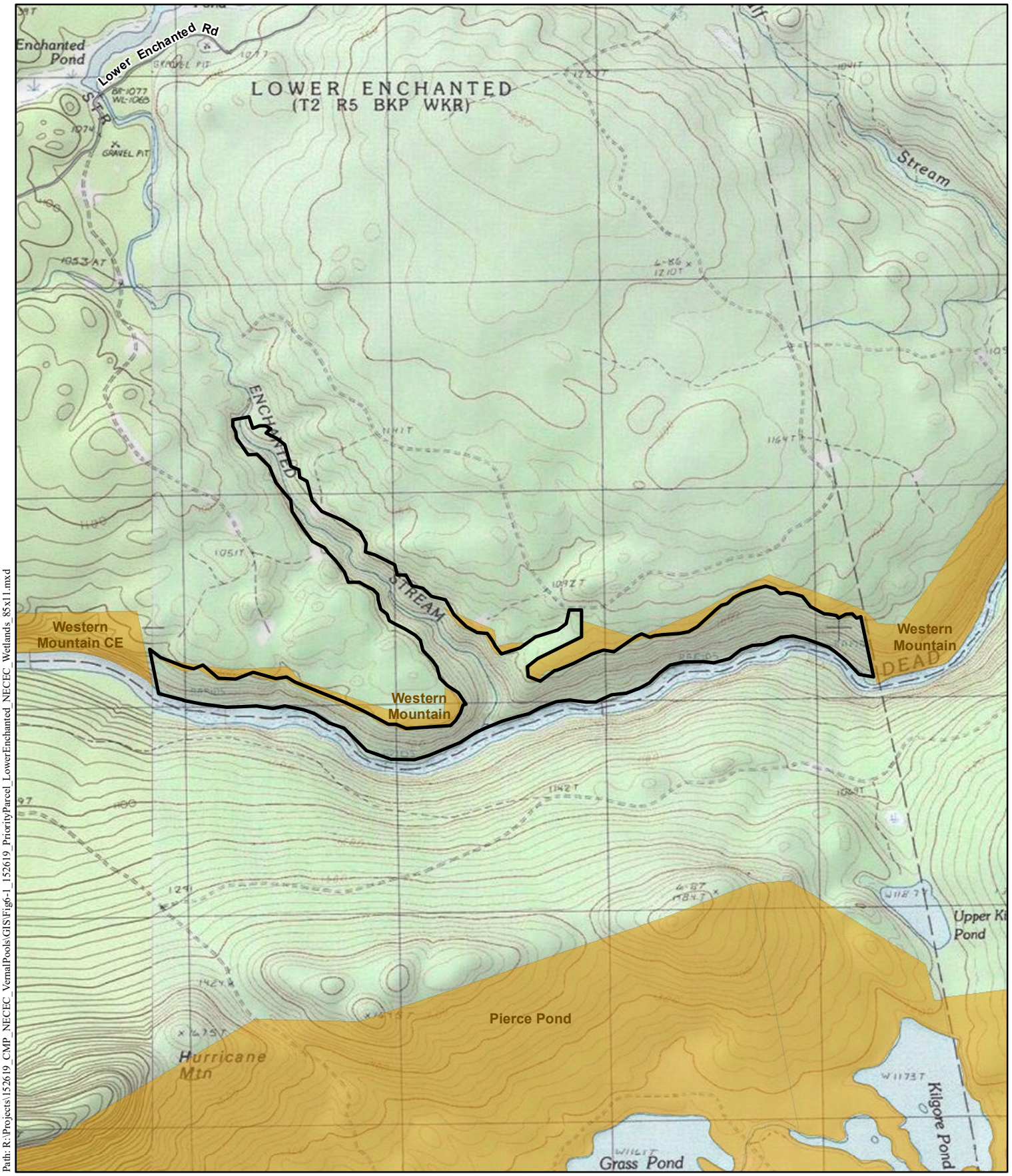

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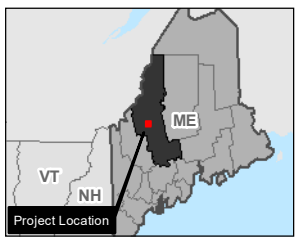

Road
Conserved Lands
Survey Boundary

N
W E
S

SCALE: 1 " = 2,000 '

0 1,000 2,000
Feet

Figure 6.1: Locus
Lower Enchanted Tract

Somerset County
Maine

Date:8/6/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER
POWER ENGINEERS

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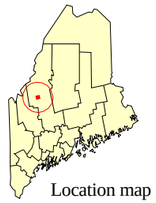
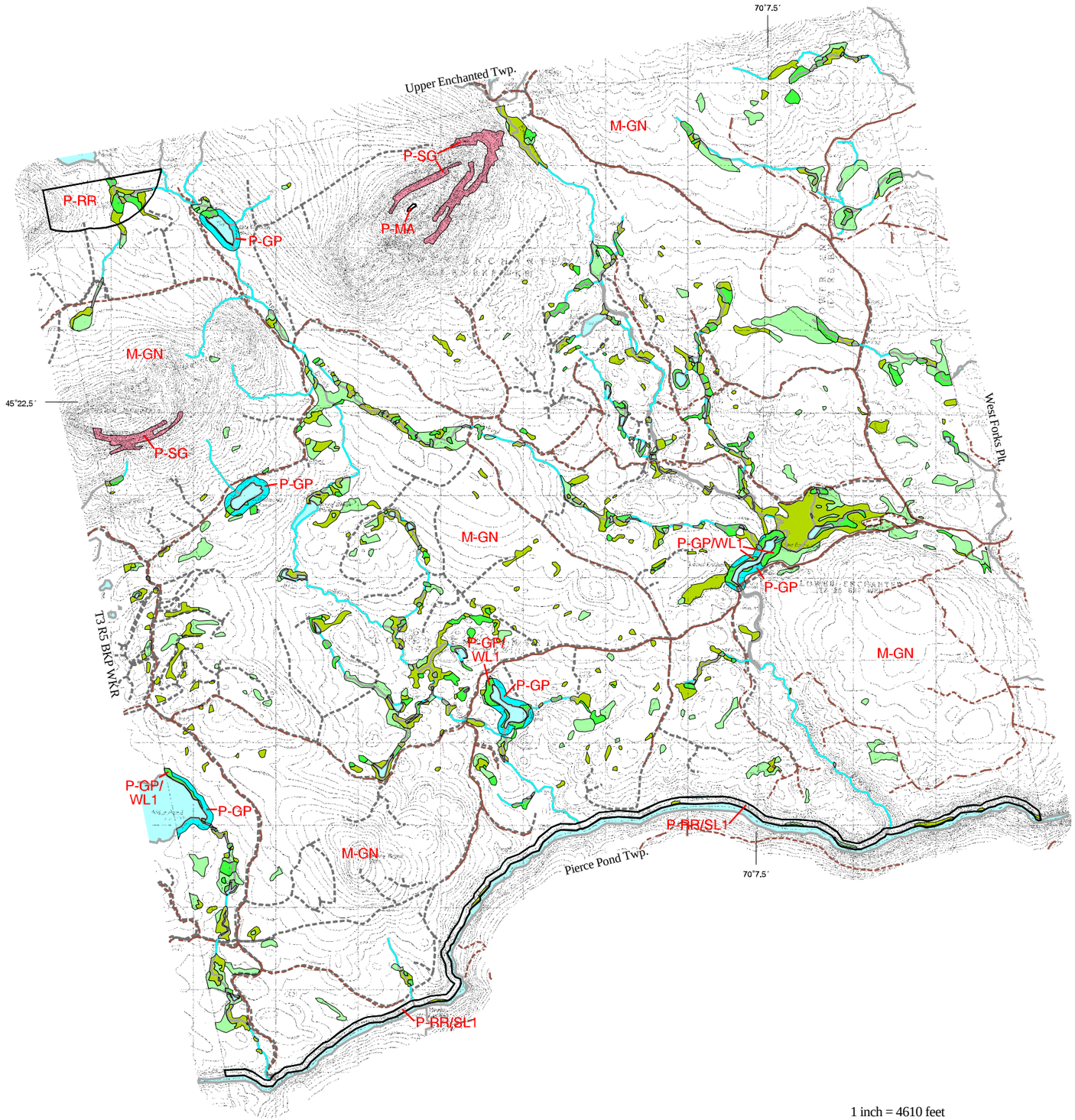
Land Use Guidance Map

Lower Enchanted Twp.

T2 R5 BKP WKR
Somerset County


Location map

Maine Department of Agriculture, Conservation and Forestry
LAND USE PLANNING COMMISSION
Augusta, Maine 04333−0022
(207) 287−2631
TTY (888) 577−6690
http://www.maine.gov/doc/lupc



Legend

Development Subdistricts

Protection Subdistricts

- P−GP Great Pond
- P−MA Mountain Area
- P−RR Recreation −Water
- P−SG Soils and Geology
- P−SL1 250 ft Shoreland −Major
- P−SL2 75 ft Shoreland −Minor
- P−WL1 Wetlands − Significant
- P−WL2 Wetlands − Scrub−shrub
- P−WL3 Wetlands − Forested

Management Subdistricts

- M−GN General

- Water body
- Improved road
- Unimproved road
- Trail

Areas designated as two or more protection zones are annotated with each zone, e.g. P−FP/FW/WL1, P−FP/SL1, etc., where necessary

- or — Subdistrict boundary
- (1) Zoning amendment

Topographic base, roads and trails from U.S. Geological Survey 7.5−minute map series

For the purpose of simplicity, this map does not show the Wetland Protection Subdistricts for areas identified pursuant to Section 10.16,K,2 such as beds of rivers, lakes, and other water bodies, and freshwater wetlands within 25 feet of stream channels, which are nevertheless within P−WL Subdistricts.

This map is a reduced version of the official Land Use Guidance Map. It is not certified to be a true and correct copy. Full size official LUPC Land Use Guidance Maps are available from the Commission at its Augusta office. Potential applicants unsure of their zoning should request a full size map from the Augusta office.

Land Use Guidance Map last amended on August 18, 2005

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Enchanted Stream

Whiskey Springs Rd

Western Mountain

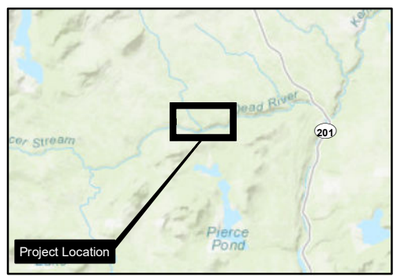
Western Mountain

Western Mountain

Western Mountain

Western Mountain CE

Dead River



- Corps Vernal Pool
- Vernal Pool
- Wetland Data Point
- Upland Data Point
- Maine Huts & Trails Bridge
- Delineated Intermittent Stream
- Delineated Perennial Stream
- Stream (NHD)
- Critical Terrestrial Habitat (750')
- Potential Significant Vernal Pool
- Inland Waterfowl and Wading Bird Habitat
- Survey Area
- Maine Huts & Trails Main Trail
- Road
- Delineated Wetland
- Conservation Land

Figure 6.3: Natural Resources
Lower Enchanted Tract

Somerset County, Maine

DRAFT

0 500 1,000 2,000

Feet

1 " = 1,000 '

Page 1 of 1

Central Maine Power
NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

Date: 8/6/2018; Author: KK; Project: 152619

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APPENDIX 6A IPAC RESULTS: LOWER ENCHANTED TRACT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Compensatory Mitigation

LOCATION

Somerset County, Maine

DESCRIPTION

LET

Local office

Maine Ecological Services Field Office

(207) 469-7300
(207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road
East Orland, ME 04431

http://www.fws.gov/mainefieldoffice/index.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Canada Lynx Lynx canadensis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon Salmo salar There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

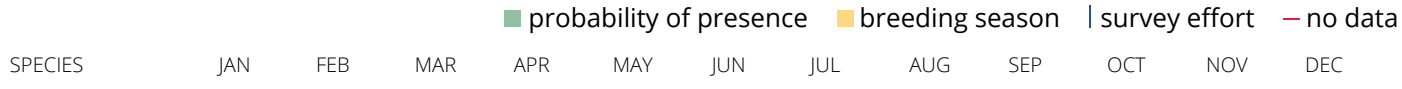
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds

guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize

potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

- PSS1C
- PFO1C
- PSS1E

RIVERINE

- R3UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX 6B VEGETATION LIST: LOWER ENCHANTED TRACT

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Abies balsamea	Balsam Fir	Pinaceae	FAC
Acer rubrum	Red Maple	Sapindaceae	FAC
Acer saccharum	Sugar Maple	Sapindaceae	FACU
Actaea pachypoda	Doll's Eyes	Ranunculaceae	UPL
Alnus incana ssp. *rugosa*	Speckled Alder	Betulaceae	FACW
Anemone canadensis	Round-Leaf Thimbleweed	Ranunculaceae	FACW
Anemone quinquefolia	Nightcaps	Ranunculaceae	FACU
Aralia nudicaulis	Wild Sarsaparilla	Araliaceae	FACU
Arisaema triphyllum	Jack-in-the-Pulpit	Araceae	FAC
Athyrium angustum	Northern Lady Fern	Woodsiaceae	FAC
Betula alleghaniensis	Yellow Birch	Betulaceae	FAC
Calamagrostis canadensis	Bluejoint	Poaceae	OBL
Cardamine diphylla	Crinkle Root	Brassicaceae	FACU
Carex leptalea	Bristly-Stalk Sedge	Cyperaceae	OBL
Carex spp.	Sedge	Cyperaceae	N/A
Clintonia borealis	Yellow Bluebead Lily	Liliaceae	FAC
Corylus cornuta	Beaked Hazelnut	Betulaceae	FACU
Dichanthelium sp.	Rosette Grass	Poaceae	N/A
Eleocharis acicularis	Needle Spike-Rush	Cyperaceae	OBL
Equisetum scirpoides	Dwarf Scouring-Rush	Equisetaceae	FAC
Equisetum sylvaticum	Woodland Horsetail	Equisetaceae	FACW
Fagus grandifolia	American Beech	Fagaceae	FACU
Fraxinus americana	White Ash	Oleaceae	FACU
Fraxinus nigra	Black Ash	Oleaceae	FACW
Fraxinus pennsylvanica	Green Ash	Oleaceae	FACW
Galium aparine	Sticky-Willy	Rubiaceae	FACU
Galium palustre	Common Marsh Bedstraw	Rubiaceae	OBL
Geum rivale	Purple Avens	Rosaceae	OBL
Gymnocarpium dryopteris	Northern Oak Fern	Woodsiaceae	FACU
Lysimachia borealis	Starflower	Myrsinaceae	FAC
Maianthemum canadense	Canada Mayflower	Ruscaceae	FACU
Matteuccia struthiopteris	Ostrich Fern	Onocleaceae	FAC
Medeola virginiana	Indian Cucumber-Root	Liliaceae	FACU
Onoclea sensibilis	Sensitive Fern	Onocleaceae	FACW
Osmunda claytonia	Interrupted Fern	Osmundaceae	FAC
Osmundastrum cinnamomeum	Cinnamon Fern	Osmundaceae	FACW

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Parathelypteris novaborecensis	New York Fern	Thelypteridaceae	FAC
Phegopteris connectilis	Narrow Beech Fern	Thelypteridaceae	FACU
Picea rubens	Red Spruce	Pinaceae	FACU
Pinus strobus	Eastern White Pine	Pinaceae	FACU
Populus balsamifera	Balsam Poplar	Salicaceae	FACW
Populus grandidentata	Big-Tooth Aspen	Salicaceae	FACU
Populus tremuloides	Quaking Aspen	Salicaceae	FACU
Prunus virginiana	Chokecherry	Rosaceae	FACU
Ribes glandulosum	Skunk Currant	Grossulariaceae	FACW
Ribes sp.	Currant	Grossulariaceae	N/A
Rubus idaeus	Red Raspberry	Rosaceae	FACU
Rubus hispidus	Bristly Dewberry	Rosaceae	FACW
Salix sp.	Willow	Salicaceae	N/A
Spiraea alba var. latifolia	Meadowsweet	Rosaceae	FACW
Streptopus lanceolatus	Rosy Bells	Liliaceae	FACU
Swida sericea	Red Osier Dogwood	Cornaceae	FACW
Thalictrum pubescens	Tall Meadow-Rue	Ranunculaceae	FACW
Thuja occidentalis	Northern White Cedar	Cupressaceae	FACW
Tiarella cordifolia	Heart-Leaf Foamflower	Saxifragicaceae	FACU
Trillium erectum	Stinking Benjamin	Melanthiaceae	FACU
Trillium undulatum	Painted Trillium	Melanthiaceae	FACU
Tsuga canadensis	Eastern Hemlock	Pinaceae	FACU
Tussilago farfara	Colt's-Foot	Asteraceae	FACU
Uvularia sessilifolia	Sessile-Leaf Bellwort	Colchicaceae	FACU
Veratrum viride	American False Hellebore	Melanthiaceae	FACW
Viburnum lantanoides	Hobblebush	Adoxaceae	FACU
Viola spp.	Violet	Violaceae	N/A

INDICATOR STATUS	OCCURRENCE IN WETLANDS (% per Reed, 1998)
Obligate (OBL)	Almost always occurs in wetlands under natural conditions (99%)
Facultative Wetland (FACW)	Usually in wetlands, occasionally found in non-wetlands (67- 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands. (33-67%)
Facultative Upland (FACU)	Usually in non-wetlands, occasionally found in wetlands (1-33%)
Upland (UPL)	Almost always in non-wetlands under natural conditions (1%)

[1] Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17.USACE National Wetland Plant List. Web.20 June 2018.

[2] Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. ERDC/CRREL TN-12-1, USACE Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH. Available at https://www.fws.gov/wetlands/documents/national-wetland-plant-list-indicator-rating-definitions.pdf [Verified 20 June 2018].*Reed, P. B., Jr. 1988. *National List of Plant Species that Occur in Wetlands.* Washington, DC, USFWS.

7.0 BASIN TRACT

7.1 Site Location Information

Municipality: Pierce Pond Township **County:** Somerset

Biophysical Region: Western Mountains

Watershed (HUC 12): Gulf Stream-Lower Dead River (010300020506)

Spring Lake-Upper Dead River (010300020502)

NECEC Components within HUC 8 (01030002) Watershed: HVDC, New ROW

Closest NECEC Component: HVDC New right of way

Coordinates of Site Centroid (Lat/Long WGS 84): 45°18'22.94"N, 70°10'43.99"W

7.2 Natural Resource Inventory Summary **(quantities are +/-):**

Total Site Area .....697.06 acres

NWI Palustrine Wetland Area.....9.73 acres

Delineated and GPS-surveyed Palustrine Wetland Area.....63.37acres

NHD Rivers and Streams.....25,750 feet (4.88 miles)

Delineated and GPS-surveyed Rivers and Streams.....35,210 feet (6.67 miles)

Outstanding River Segment (Ch 200 §403: Dead River)…… 4.16 miles

Upland Area..... .....633.69 acres

Significant Vernal Pools .....None

Other Non-Significant Vernal Pools Types……1 low value VP, 1 low value CVP, 4 PVP

Vernal Pool Critical Terrestrial Habitat (750 feet) .....69.56 acres

Deer Wintering Area……180 acres

7.3 Site Description

The approximately 697.06-acre Basin Tract (hereafter "BT" or "the Tract") is located on the north side of Basin and Hurricane Mountains and has approximately 4.2 miles of frontage along the south side of the Dead River (Figure 7.1, Photos 7.1 and 7.2). Widths of the Tract from the Dead River range between approximately 300 and 5,780 feet at the west property line which coincides with the township boundary shared by T2R4 (Pierce Pond) and T3R4. In the vicinity of a perennial stream near the Tract's mid-length along the Dead River, the width is approximately 2,800 feet, upstream and downstream of which representative widths of BT are 1,500 and 1,200 feet, respectively.

Timber harvesting occurred along the southern side of the Tract since September 2013, however along the Dead River, the entirety of BT remains uncut and is therefore a 4.2-mile undisturbed riparian corridor. Access to the east end of BT is from North Bowtown road and the west end can be reached on foot from the Maine Huts and Trails across the Dead River bridge at Grand Falls.

7.4 Surrounding Land Use, Protected Open Space and Focus Areas

BT has no cabins or trails, but does have a campsite along the Dead River (Photos 7.3 and 7.4) and is otherwise undeveloped. The Tract is displayed on Figure 7.3, MLUPC's Land Use Guidance Map for Pierce Pond Twp. (T2 R4 BKP WKR). Most of BT is designated as General Management Subdistrict M-GN). In addition, the following Protection Subdistricts occur at BT:

- P-FW – Fish and Wildlife 060030
- P-RR – Recreation –Water
- P-SL1 – Shore Land within 250 feet of the normal high-water mark
- P-SL2 – Shore Land within 75 feet of the normal high-water mark
- P-WL1 – Wetlands of special significance (WOSS)
- P-WL2 – Wetlands scrub shrub (PSS)

Approximately one mile south of the 697-acre BT there are approximately 10,000 contiguous acres of Conserved Lands encompassing: Pierce Pond, Grass Pond, Kilgore Pond, Split Rock Pond, Higher Pond, Dixon Pond, Fernald Pond and Horseshoe Pond as well as the Appalachian Trail Corridor. There are no Focus Areas immediately adjacent to or within one mile of BT.

7.5 Wildlife Use

Wildlife usage and habitat evaluations on BT were conducted based on field surveys, aerial photo interpretation of landscape and terrain, and research of IPaC results from the USFWS for endangered species, critical habitat, migratory birds, and fisheries in and around the area. According to the results of the IPaC report (Appendix 7A), two threatened species - Canada lynx (*Lynx canadensis*) and Northern long-eared bat (*Myotis septentrionalis*) - and one endangered species – Atlantic salmon (*Salmo salar*) could be affected by activities on the property.

During field surveys, either evidence of or actual sightings occurred for moose (*Alces alces*), white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), red fox (*Vulpes vulpes*), Eastern gray squirrel (*Sciurus carolinensis*), red squirrel (*Sciurus vulgaris*), woodland jumping mouse (*Napaeozapus insignisand*), chipmunks (*Tamias sp*.) and snowshoe hare (*Lepus americanus*). Based on the location and vegetative cover in the location of P-FW (060030) on the LUPC map (Figure 6.2), an approximately 180-acre Deer Wintering Area is located along the riparian corridor across the center of the Tract and along west boundary which also extends upstream along the Dead River to GFT. Coyote (*Canis latrans*), beaver (*Castor candensis*), mink (*Neovison vison*), river otter (*Lontar canadensis*), fisher (*Pekania pennanti*) and pine marten (*Martes americana)* are furbearers that inhabit or traverse the Tract.

Several bird species were observed and heard on the property including, but not limited to bald eagle (*Haliaeetus leucocephalus*), sharp-shinned hawk (*Accipiter striatus*), common raven (*Corvus corax*), American robin (*Turdus migratorius*), and wood thrush (*Hylocichla mustelina*). The Tract has been logged in upland portions in past years; however, this disturbance allows for opportunistic, successional plant species to colonize such as red raspberry which increases in cut areas and has a positive impact on food sources for many birds and animals

Vernal pools on the property consist of one low value vernal pools, one low value Corps vernal pools and four potential vernal pools. The vernal pool contained spotted salamander (*Ambystoma maculatum*) egg masses at the time of observation (Photo 7.5). The other pools have the potential to harbor wood frog (*Lithobates sylvaticus*) egg masses, but due to survey timing, finding presence of such egg masses was not possible. Garter snakes (*Thamnophis* spp.) American toads (*Anaxyrus americanus*), and green frogs (*Lithobates clamitans*) were also observed during field surveys.

7.6 Vegetation

The property includes a variety of vegetative communities which provide different cover types, habitat characteristics, and ecological function. The property is primarily composed of mature mixed coniferous-deciduous forest. There are also large swaths of scrub-shrub floodplain wetlands along the Dead River and early successional forest close to the southern boundary where there is evidence of historic logging operations.

Uplands and wetlands were identified in the mixed coniferous-deciduous forests. Dominant tree species in the forested uplands include American beech (*Fagus grandifolia*), eastern hemlock (*Tsuga canadensis*), eastern white pine (*Pinus strobus*), red spruce (*Picea rubens*), and red maple (*Acer rubrum*). Common woody plants in the shrub stratum include striped maple (*Acer pennsylvanicum*), mountain maple (*Acer spicatum*), hobblebush (*Viburnum lantanoides*), and beaked hazelnut (*Corylus cornuta*). Common forbs and grasses in the upland forested understory are northern long-awned wood grass (*Brachyelytrum aristosum*), whorled aster (*Oclemena acuminate*), starflower (*Lysimachia borealis*), rosy bells (*Streptopus lanceolatus*), sarsaparilla (*Aralia nudicaulis*), elliptic-leaved shinleaf (*Pyrola elliptica*) and evergreen wood fern (*Dryopteris intermedia*).

Forested wetlands typically occur at the base of the slope on a terraced flat above the riverine floodplain. Dominant tree species in the forested wetland include northern white cedar (*Thuja occidentalis*), yellow birch (*Betula allegheniensis*), balsam fir (*Abies balsamea*) and red maple. Common herbaceous plants in the forested wetland understory (Photo 7.6) include interrupted fern (*Osmunda claytonia*), sensitive fern (*Onoclea sensibilis*), jewelweed (*Impatiens capensis*), bedstraw (*Galium* spp.), fowl manna grass (*Glyceria striata*), and sedges (*Carex* spp.).

The early successional forest around previously logged areas are dominated by gray birch (*Betula populifolia*), quaking aspen (*Populus tremuloides*), balsam poplar (*Populus balsamifera*), opportunistic red raspberry (*Rubus idaeus*) and other early successional species such as fireweed (*Chamerion angustifolium*), drooping sedge (*Carex gynandra*), sweet vernal grass (*Anthoxanthum odoratum*), timothy grass (*Phleum pretense*), bent grass (*Agrostis* spp.), common St. John's wort (*Hypericum perforatum*), vetch (*Vicia* sp.), flat top goldenrod (*Euthamia graminifolia*), and hawkweeds (*Hieracium* spp).

Due to the steep sloping topography of the site, toe of slope seeps and ephemeral drainages occur sporadically throughout the tract, creating microclimatic wetlands that exist in channels (Photo 7.7). Common understory plants found in these habitats include foam flower (*Tiarella cordifolia*), jewelweed, enchanter's nightshade (*Circaea alpine*), sensitive fern, sedges, and buttercups (*Ranunculus* spp.).

The scrub-shrub wetlands occur primarily along the banks of the Dead River and are subject to seasonal flooding linked to dam releases upstream. Dominant shrubs in this habitat are speckled alder (*Alnus incana* ssp. *rugosa*), meadowsweet (*Spiraea alba* var. *latifolia*), and red-osier dogwood (*Swida sericea*). Common herbaceous plants are Canada goldenrod (*Solidago Canadensis*), Kentucky bluegrass (*Poa pratensis*), Virginia virgin's bower (*Clematis virginiana*), northern long-awned wood grass (*Brachyelytrum aristosum*), wrinkle leaved goldenrod (*Solidago rugosa*), tall meadow-rue (*Thalictrum pubescens*), and bedstraw (*Galium* spp.).

7.7 Wetland Characteristics, Functions and Values

Approximately 63.37 acres (9.1%) of the 697 total acres of the BT were identified as palustrine wetland during the field survey effort. The primary wetland system is palustrine forested (PFO4/1) (Photo 7.8), generally located on topographic terraces between the palustrine scrub shrub (PSS) floodplain of the Dead River and the steep slopes on the southern end of the site. The portion of the forested wetland located on the BT totals approximately 48.6 acres. The second most abundant wetland is palustrine scrub shrub, which occupies a total of 14.7 acres of the property (Photo 7.9). The Dead River, a permanently flooded, upper perennial riverine system with an unconsolidated bottom (R3UBH) that flows west to east, is the northern property boundary. Approximately 4.2 river miles of the Dead River frontage occurs on the Tract (Photos 7.1 and 7.2). The section of the Dead that flows along the BT boundary has a moderate velocity with varying classes of whitewater that fluctuate with seasonal high water and upstream dam releases. This creates outstanding recreational opportunities for rafters and kayakers. Approximately 1.5 miles downstream of the northwestern boundary of the Tract, an unnamed stream (R3UBH) flowing south to north through upland forest, joins the Dead River (Photo 7.10). This area has been identified by LUPC as a significant deer wintering habitat.

As mapped by the USDA NRCS on Web Soil Survey, approximately 330 acres (47%), of BT is underlain by very poorly drained (VPD) and somewhat poorly drained (SPD) hydric soils. These areas of hydric soils typically occur on slopes of 0 to 15 percent. Map Unit Name and Symbols for hydric soils at BT include:

- Bucksport and Wonsqueak mucks (WO) – VPD organic soils derived from vegetation deposited in water with 0 to 2 percent slopes.
- Colonel-Peru-Pillsbury (PD) association (CNC) – SPD mineral soils of loamy and coarse loamy textures with 3 to 15 percent slopes.
- Colonel-Pillsbury (PD)-Skerry association (CRB) – SPD mineral soils of loamy and coarse loamy textures with 0 to 8 percent slopes.

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TABLE 7-1 SUMMARY OF FUNCTIONS & VALUES OF WETLANDS ON THE 697.06 ACRE BASIN TRACT

FUNCTION/VALUE	EXPLANATION
Groundwater Recharge/Discharge (GW)	Wetlands on river valley slopes of BT are commonly associated with spring/seeps or sites of groundwater discharge and as part of the surface hydrologic system at other locations on BT are recharge areas to the baseflow of the Dead River (Photo 7.7).
Flood flow Alteration (FF)	Pierce Pond Twp is designated as "no data/No Specific Flood Hazard Area" (Dudley and Schalk 2006), however water levels along the Dead River are actively managed at the Long Falls Dam outlet of Flagstaff Lake by Brookfield Renewable Energy. In relation to these fluctuating water levels, a principal function of wetlands on the Basin Tract that are along and hydrologically connected to the Dead River is Floodflow Alteration.
Fish and Shellfish Habitat (FH)	The Dead River is popular for brook trout and landlocked salmon fishing. Downstream in 2017, the segment of the Dead River crossing T3 R4 BKP WKR where LET is located was stocked with approximately 1,550, 8- to 14-inch landlocked salmon and brook trout to support the fishery for recreational angler (MDIFW 2018). Freshwater mussels were observed on BT along muddy shorelines of the Dead River.
Production Export (PE)	As evidenced by browse, droppings and other sign, woody vegetation in BT wetlands is a fundamental food source for all herbivorous and omnivorous wildlife inhabiting the Tract. Seeds, roots and stems from herbaceous vegetation in not only PEM but PSS and PFO wetlands on BT are also food sources for not only mammals, but the wide variety of birds, amphibians, reptiles, fish and insects that inhabit or traverse the Tract.
Sediment/Toxicant/ Pathogen Retention (STPR)	Micro-topography (Photo 7.5) as well as woody and herbaceous vegetation throughout BT wetlands physically slow surface water transport and retain these degraders of water quality to the Dead River. Sediments/toxicants/pathogens trapped with accumulation of vegetative remains as peat or other forms of hydric soils is another form of BT wetlands protecting water quality of tributary streams and the Dead River.
Nutrient Removal (NR)	Micro-topography as well as woody and herbaceous vegetation throughout BT wetlands slow surface water transport of nutrients protecting the Dead River as well as lesser tributaries from water quality degradation. Direct uptake of nutrients by wetland vegetation and subsequent accumulation of dead vegetation in organic soils and peat is another pathway of BT wetlands protecting water quality.
Sediment/Shoreline Stabilization (SS)	Riverine and palustrine wetlands aligned along the south shore of the Dead River buffer and protect the adjoining upland shoreline from scour and erosion (Photos 7.1 and 7.2).
Wildlife Habitat (WH)	In addition to direct observation as well as tracks, droppings and other sign, moose, bear, deer, coyote, beaver, otter, mink and other smaller mammals are abundant on BT. Based on the location and vegetative cover in the location of P-FW (060030) on the LUPC map (Figure 6.2), a Deer Wintering Area is located along the riparian corridor across the center of the Tract and along west boundary which also extends upstream along the Dead River to GFT.
Educational/ Scientific Value (ED)	Although there appear to be no records of educational use or scientific research attributes of BT including, the baseline of mapped resources and remote location along riparian corridors of Enchanted Stream and the Dead River could be relevant to further study.
Recreation (REC)	Established camps sites occur on BT (Photo 7.3) and the MHT network is on the opposite shore of the Dead River and traveled by day, and through hikers and also used for camping, cross country skiing and snowshoeing. Commercial river rafting on the Dead River passes along the shoreline of the Tract. The Dead River is also regarded for trout and salmon fishing. Hunting opportunities are another recreational value of the Tract and its wetlands.

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7.8 Compensation

As part of the compensation package for NECEC, the approximately 697.06-acre Basin Tract will be permanently protected by a conservation easement or similar instrument. Preservation of BT will permanently protect 4.16 miles of intact and unaltered riparian buffer along the south side of the Dead River that is designated as an Outstanding River Segment (Ch 200 §403). Approximately one mile south of the Tract is more than 10,000 contiguous acres of Conserved Lands that encompass at least eight essentially unaltered or sparsely developed "great ponds." In addition, approximately nine percent (63.37 acres) of the 697.06-acre BT are comprised of a mix of PSS and PFO wetland types.

BT is accessible by Bowtown Road and most of the Tract is zoned M-GN. Development of this otherwise undeveloped Tract could therefore occur. Preservation of GFT would provide permanent protection from development and preserve the existing deer wintering area, wetland based wildlife, vernal pool, fish and shellfish habitats, water quality benefits, and recreational and educational opportunities.

7.9 Photographs

PHOTO 7-1 THE BASIN TRACT HAS APPROXIMATELY 4.2 MILES OF RIVER FRONTAGE ON THE SOUTHERN BANK OF THE DEAD RIVER

PHOTO 7-2 WHITEWATER RAPIDS OF VARYING DIFFICULTY GRADES OCCUR ALONG THE DEAD RIVER JUST NORTH OF THE BASIN TRACT PROPERTY BOUNDARY

PHOTO 7-3 A LOGGING ROAD LEADS FROM THE SOUTHERN PROPERTY BOUNDARY DOWNHILL TO AN ACTIVE CAMPSITE ALONG THE DEAD RIVER

PHOTO 7-4 FIRE PERMITS FROM THE MAINE FOREST SERVICE FOREST ARE REQUIRED AT THE CAMPSITE IN THE PREVIOUS PHOTOGRAPH

PHOTO 7-5 PIT AND MOUND MICRO-RELIEF OF THE FORESTED WETLANDS (PFO) PROVIDE POTENTIAL TOPOGRAPHIC CHARACTERISTICS SUITABLE TO VERNAL POOLS

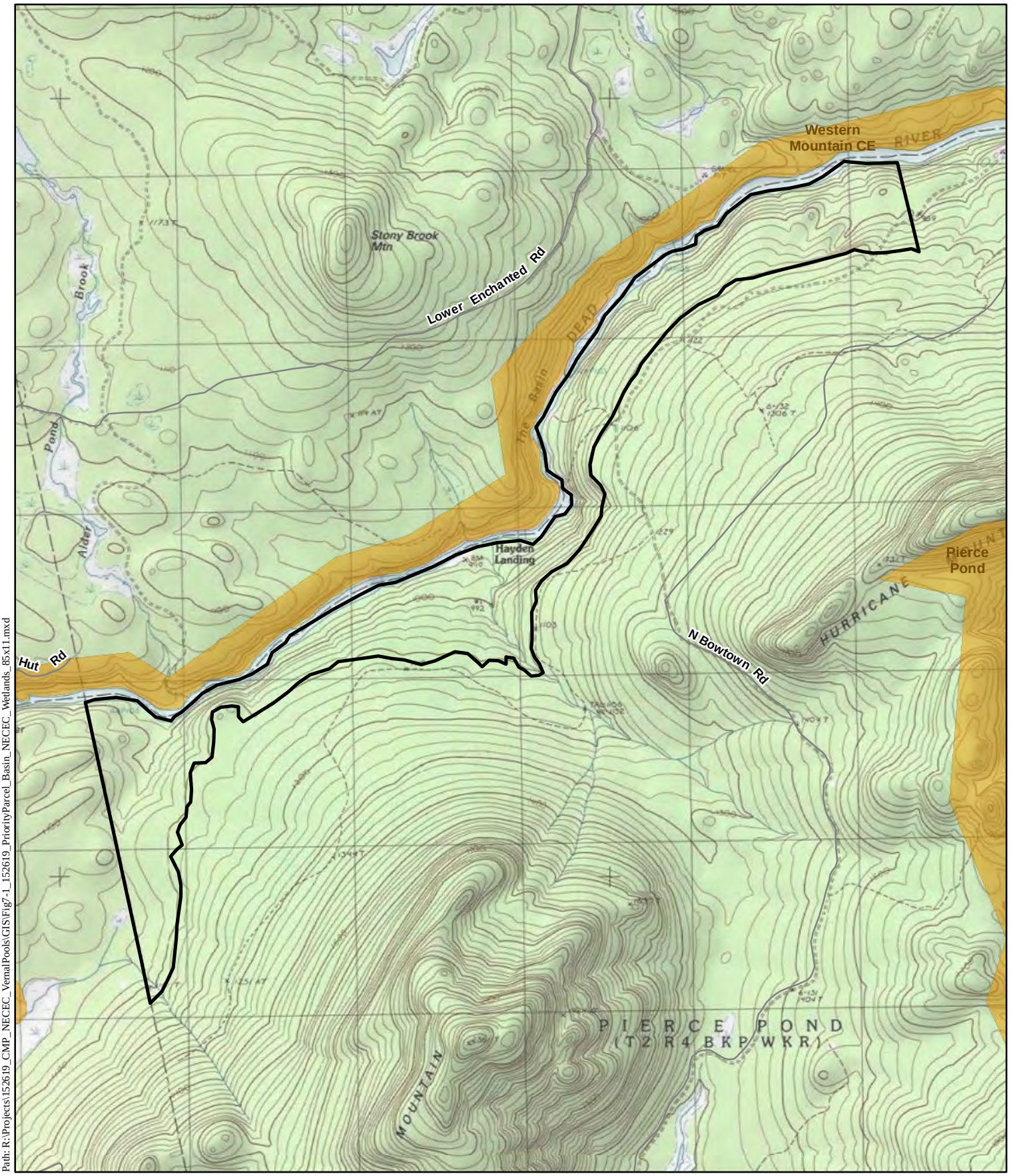
PHOTO 7-6 HYDROPHYTIC GRAMINOIDS ARE COMMON UNDERSTORY PLANTS IN THE FLOODPLAIN FOREST NEAR THE BANKS OF THE DEAD RIVER

PHOTO 7-7 EPHEMERAL CHANNELS CROSSING THE STEEP SLOPES ON THE SOUTHERN EDGE OF THE BASIN TRACT CONVEY DRAINAGE FROM THE LOGGED AREA TO THE DEAD RIVER

PHOTO 7-8 CEDAR AND YELLOW BIRCH FORESTS (PFO1/4), ABUNDANT ON THE BASIN TRACT, ARE OFTEN ASSOCIATED WITH SEEPS HAVING PIT AND MOUND MICRO-TOPOGRAPHY CHARACTERISTIC OF FORESTED WETLANDS

PHOTO 7-9 SCRUB-SHRUB WETLAND (PSS) DOMINATED BY SPECKLED ALDER AVERAGE APPROXIMATELY 30 FEET IN WIDTH ALONG THE DEAD RIVER SHORELINE

PHOTO 7-10 THE RIPARIAN CORRIDOR ALONG THIS PERENNIAL STREAM, LOCATED IN THE CENTER OF THE TRACT, IS IDENTIFIED BY THE LAND USE PLANNING COMMISSION AS PART OF A SIGNIFICANT FISH AND WILDLIFE USAGE AREA (P-FW 060030)



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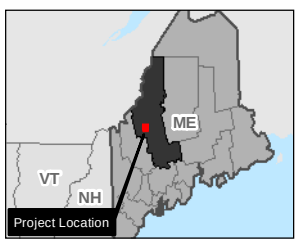

Road
Conserved Lands
Survey Boundary

N
W E
S

SCALE: 1 " = 2,500 '

0 1,250 2,500
Feet

Figure 7.1: Locus
Basin Tract

Somerset County
Maine

Date:8/6/2018
Author: KK
Project: 152619

Central Maine Power

NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER
POWER ENGINEERS

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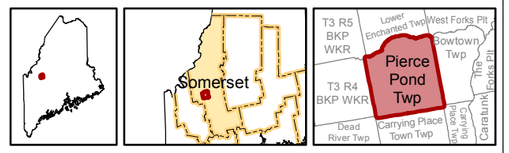
Pierce Pond Twp.

T2 R4 BKP WKR

Somerset County



Land Use Guidance Map

Department of Agriculture, Conservation and Forestry

Maine Land Use Planning Commission

Legend

DEVELOPMENT SUBDISTRICTS

- D-GN: General

MANAGEMENT SUBDISTRICTS

- M-GN: General

PROTECTION SUBDISTRICTS

- P-AL: Accessible Lake
- P-FW: Fish and Wildlife
- P-GP: Great Pond
- P-RR200: Recreation - 200'
- P-RR: Recreation
- P-SG: Soils and Geology
- P-SL1: Shoreland - 250'
- P-SL2: Shoreland - 75'
- P-WL1: Wetlands of Special Significance
- P-WL2: Scrub-shrub Wetlands
- P-WL3: Forested Wetlands

This map does not show all designated P-WL Subdistricts, such as non-tidal water bodies and freshwater wetlands within 25 feet of flowing waters.

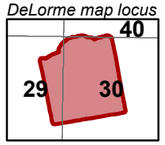
This map is a reducedsize version and should not be considered definitive. Full sized, official Land Use Guidance Maps are available on the LUPC website or by request.

Amendments			
Location #	Zoning Permit	Effective Date	Remarks
		08/18/2005	Adoption of digital NWI wetlands

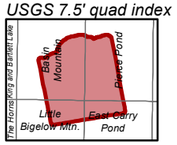
0 1,500 3,000 4,500 6,000 Meters

0 5,200 10,400 15,600 20,800 Feet

DeLorme map locus



USGS 7.5' quad index



(1) Map amendment location

▲ Point at which a river drains 25 square miles - symbol points upstream (12 M.R.S. Sec. 682-B(4))

9999 MIDAS number: Unique number assigned to each standing body of water in Maine.

WQLL Water Quality Limiting Lake - Refer to Section 10.23,E,3,g of the Commission's Land Use Districts and Standards.

MC# Lake Management Classes - Refer to Section 10.02 (Definitions) of the Commission's Land Use Districts and Standards.

SOURCES: Maine Land Use Planning Commission, USGS

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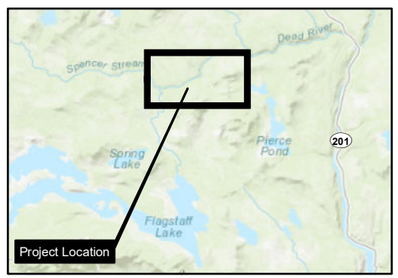
Alder Pond Brook
Story Brook
Dead River
Western Mountain CE
Lower Enchanted Tract
Western Mountain
Lower Enchanted Rd
Western Mountain CE
N Bowtown Rd
Hut Rd
Spencer Stream
Dead River Trail and Conservation Corridor
Pine Loop
Grand Falls Tract
Philbrick Rd
Grand Falls Rd
Pierce Pond



- Corps Vernal Pool
- Vernal Pool
- Potential Vernal Pool
- Wetland Data Point
- Upland Data Point
- Delineated Ephemeral Stream
- Delineated Intermittent Stream
- Delineated Perennial Stream
- Stream (NHD)
- Critical Terrestrial Habitat (750')
- Maine Huts & Trails Main Trail
- Road
- Inland Waterfowl and Wading Bird Habitat
- Survey Area
- Other Tract
- Delineated Wetland
- Conservation Land

Figure 7.3: Natural Resources
Basin Tract

Somerset County, Maine

DRAFT

0 1,000 2,000 4,000
Feet

1 " = 2,000 '

Page 1 of 1

Central Maine Power
NECEC Compensation Parcels
Natural Resource Survey Results

CENTRAL MAINE POWER

POWER ENGINEERS

Date: 8/6/2018; Author: KK; Project: 152619

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APPENDIX 7A IPAC RESULTS: BASIN TRACT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

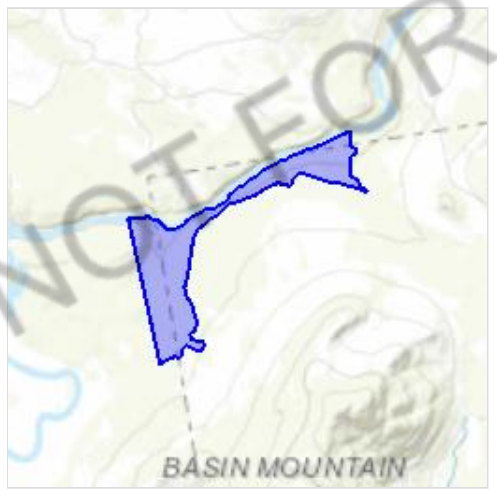
Project information

NAME

Compensatory Mitigation

LOCATION

Somerset County, Maine



DESCRIPTION

BT

Local office

Maine Ecological Services Field Office

(207) 469-7300
(207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road
East Orland, ME 04431

http://www.fws.gov/mainefieldoffice/index.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Canada Lynx Lynx canadensis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon Salmo salar There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

THERE ARE NO MIGRATORY BIRDS OF CONSERVATION CONCERN EXPECTED TO OCCUR AT THIS LOCATION.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1E

FRESHWATER FORESTED/SHRUB WETLAND

PSS1E
PFO4E

RIVERINE

R3UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX 7B VEGETATION LIST: BASIN TRACT

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Abies balsamea	Balsam Fir	Pinaceae	FAC
Acer pennsylvanicum	Striped Maple	Sapindaceae	FACU
Acer rubrum	Red Maple	Sapindaceae	FAC
Acer spicatum	Mountain Maple	Sapindaceae	FACU
Actaea rubra	Red Baneberry	Ranunculaceae	FACU
Agrostis capillaris	Colonial Bentgrass	Poaceae	FAC
Alnus incana ssp. *rugosa*	Speckled Alder	Betulaceae	FACW
Amelanchier laevis	Smooth Shadbush	Rosaceae	N/A
Anemone quinquefolia	Nightcaps	Ranunculaceae	FACU
Anthoxanthum odoratum	Sweet Vernal Grass	Poaceae	FACU
Apocynum cannabinum	Indian Hemp	Apocynaceae	FAC
Aralia nudicaulis	Wild Sarsaparilla	Araliaceae	FACU
Arctium minus	Common Burdock	Asteraceae	FACU
Arisaema triphyllum	Jack-in-the-Pulpit	Araceae	FAC
Betula alleghaniensis	Yellow Birch	Betulaceae	FAC
Betula payrifera	Paper Birch	Betulaceae	FACU
Betula populifolia	Gray Birch	Betulaceae	FAC
Brachyelytrum aristosum	Northern Long-Awned Wood Grass	Poaceae	FACU
Campanula rotundifolia	Scotch Bellflower	Campanulaceae	FACU
Carex cryptolepis	Northeastern Sedge	Cyperaceae	OBL
Carex debilis	White-Edged Sedge	Cyperaceae	FACW
Carex disperma	Soft-Leaf Sedge	Cyperaceae	FACW
Carex gracillima	Graceful Sedge	Cyperaceae	FACU
Carex gynandra	Nodding Sedge	Cyperaceae	OBL
Carex intumescens	Greater Bladder Sedge	Cyperaceae	FACW
Carex stipata	Stalk-Grain Sedge	Cyperaceae	OBL
Chamaepericlymenum canadense	Bunchberry	Cornaceae	FAC
Chamerion angustifolium	Narrow-Leaved Fireweed	Onagraceae	N/A
Circaea alpina	Small Enchanter's Nightshade	Onagraceae	FACW
Clematis virginiana	Virginia Virgin's Bower	Ranunculaceae	FAC
Clintonia borealis	Yellow Bluebead Lily	Liliaceae	FAC
Coptis trifolia	Three-Leaf Goldthread	Ranunculaceae	FACW
Corylus cornuta	Beaked Hazelnut	Betulaceae	FACU
Crataegus sp.	Hawthorne	Rosaceae	N/A
Diervilla lonicera	Bush-Honeysuckle	Caprifoliaceae	N/A
Dryopteris intermedia	Evergreen Wood Fern	Dryopteridaceae	FAC

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Epipactis helleborine	Broad-Leaved Helleborine	Orchidaceae	UPL
Equisetum arvense	Field Horsetail	Equisetaceae	FAC
Equisetum scirpoides	Dwarf Scouring Rush	Equisetaceae	FAC
Equisetum sylvaticum	Woodland Horsetail	Equisetaceae	FACW
Euthamia graminifolia	Flat-Top Goldentop	Asteraceae	FAC
Fragaria virginiana	Common Strawberry	Rosaceae	FACU
Fraxinus americana	White Ash	Oleaceae	FACU
Fraxinus nigra	Black Ash	Oleaceae	FACW
Galium aparine	Scratch Bedstraw	Rubiaceae	FACU
Galium odoratum	Sweet-Scented Bedstraw	Rubiaceae	N/A
Galium triflorum	Fragrant Bedstraw	Rubiaceae	FACU
Gaultheria hispidula	Creeping Snowberry	Ericaceae	FACW
Glyceria striata	Fowl Manna Grass	Poaceae	OBL
Gymnocarpium dryopteris	Northern Oak Fern	Woodsiaceae	FACU
Hieracium aurantiacum	Orange Hawkweed	Asteraceae	N/A
Hypericum perforatum	Common St. John's Wort	Hypericaceae	FACW
Impatiens capensis	Spotted Touch-Me-Not	Balsaminaceae	FACW
Lonicera canadensis	American Fly-Honeysuckle	Caprifoliaceae	FACU
Lysimachia borealis	Starflower	Myrsinaceae	N/A
Lysimachia terrestris	Swamp Candles	Myrsinaceae	OBL
Matteuccia struthiopteris	Ostrich Fern	Onocleaceae	FAC
Medeola virginiana	Indian Cucumber Root	Liliaceae	FACU
Mitchella repens	Partridge Berry	Rubiaceae	FACU
Oclemena acuminata	Whorled Aster	Asteraceae	FACU
Onoclea sensibilis	Sensitive Fern	Onocleaceae	FACW
Osmunda claytonia	Interrupted Fern	Osmundaceae	FAC
Osmunda regalis	Royal Fern	Osmundaceae	OBL
Osmundastrum cinnamomeum	Cinnamon Fern	Osmundaceae	FACW
Oxalis montana	Northern Wood Sorrel	Oxalidaceae	FACU
Parathelypteris novaborecensis	New York Fern	Thelypteridaceae	FAC
Phegopteris connectilis	Long Beech Fern	Thelypteridaceae	FACU
Phleum pratense	Common Timothy	Poaceae	FACU
Picea rubens	Red Spruce	Pinaceae	FACU
Plantanthera aquilonis	North Wind Bog-Orchid	Orchidaceae	FACW
Poa pratensis ssp. *pratensis*	Kentucky Blue Grass	Poaceae	FACU
Populus balsamifera	Balsam Poplar	Salicaceae	FACW
Populus tremuloides	Quaking Aspen	Salicaceae	FACU
Prunella vulgaris	Common Self-Heal	Lamiaceae	FAC

SCIENTIFIC NAME	COMMON NAME	FAMILY	WETLAND PLANT INDICATOR RATING [1, 2]
Prunus nigra	Canada Plum	Rosaceae	FACU
Pyrola elliptica	Elliptic-Leaved Shinleaf	Ericaceae	FACU
Ranunculus spp.	Crowfoot	Ranunculaceae	N/A
Ribes glandulosum	Skunk Currant	Grossulariaceae	FACW
Ribes lacustre	Bristly Swamp Currant	Grossulariaceae	FACW
Rosa blanda	Smooth Rose	Rosaceae	FACU
Rubus hispidus	Bristly Dewberry	Rosaceae	FACW
Rubus idaeus	Red Raspberry	Rosaceae	FACU
Sambucus racemosa ssp. *pubens*	Red Elderberry	Adoxaceae	FACU
Sanicula marilandica	Maryland Sanicle	Apiaceaea	FACU
Scutellaria lateriflora	Mad Dog Skullcap	Lamiaceae	OBL
Solidago canadensis	Canadian Goldenrod	Asteraceae	FACU
Solidago rugosa	Wrinkle-Leaf Goldenrod	Asteraceae	FACU
Sorbus americana	American Mountain Ash	Rosaceae	FAC
Spinulum annotinum	Bristly Clubmoss	Lycopodiaceae	FAC
Streptopus lanceolatus	Rosy Bells	Liliaceae	FACU
Swida alternifolia	Alternate-Leaved Dogwood	Cornaceae	FACU
Swida sericea	Red Osier Dogwood	Cornaceae	FACW
Symphyotrichum lateriflorum	Calico American Aster	Asteraceae	FAC
Thalictrum pubescens	Tall Meadow-Rue	Ranunculaceae	FACW
Thuja occidentalis	Northern White Cedar	Cupressaceae	FACW
Trillium erectum	Stinking Benjamin	Melanthiaceae	FACU
Trillium undulatum	Painted Trillium	Melanthiaceae	FACU
Tsuga canadensis	Eastern Hemlock	Pinaceae	FACU
Vaccinium angustifolium	Common Lowbush Blueberry	Ericaceae	FACU
Viburnum lantanoides	Hobblebush	Adoxaceae	FACU
Viola spp.	Violets	Violaceae	N/A

INDICATOR STATUS	OCCURRENCE IN WETLANDS (% per Reed, 1998)
Obligate (OBL)	Almost always occurs in wetlands under natural conditions (99%)
Facultative Wetland (FACW)	Usually in wetlands, occasionally found in non-wetlands (67- 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands. (33-67%)
Facultative Upland (FACU)	Usually in non-wetlands, occasionally found in wetlands (1-33%)
Upland (UPL)	Almost always in non-wetlands under natural conditions (1%)

[1] Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. USACE National Wetland Plant List. Web.20 June 2018.
[2] Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. ERDC/CRREL TN-12-1, USACE Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH. Available at https://www.fws.gov/wetlands/documents/national-wetland-plant-list-indicator-rating-definitions.pdf [Verified 20 June 2018].

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8.0 SUMMARY AND CONCLUSIONS

8.1 Potential Compensation Tracts Summary

The extent and composition of the surveyed natural resources on the six potential compensation tracts displayed on Figures 2.2 (LJPT), 3.3 (FLT), 4.3 (PPT), 5.3 (GFT) 6.3 (LET) and 7.3 (BT) are summarized in Table 8.1.

TABLE 8-1 NECEC POTENTIAL COMPENSATION TRACTS NATURAL RESOURCE SUMMARY

WETLAND TYPE (acres)	LJPT	FLT	PPT	GFT	LET	BT
PUB	-	-	8.40	-	-	-
PEM	50.11	16.48	3.13	0.46	-	-
PSS	-	94.71	4.80	2.97	8.18	14.72
PFO	18.36	312.77	2.00	11.08	4.79	48.65
Total Palustrine Wetland Area (acres)	68.46	423.96	18.33	14.51	12.97	63.37
Total Palustrine Wetland Percentage of Tract (%)	62.37	50.99	22.56	12.00	5.46	9.09
R2 (river-miles)	0.12	1.52	0.78	1.11	-	-
R3 (river-miles)	-	-	-	0.45	5.13	4.21
R4 (river-miles)	-	0.52	-	-	-	-
Total Riverine Frontage (miles)	0.12	2.04	0.78	1.56	5.13	4.21
R2 (acres)	-	-	-	14.92	-	-
R3 (acres)	-	-	-	3.74	6.67	-
Total Riverine Area (acres)	N/A	N/A	N/A	18.66	6.67	N/A
Total Riverine Wetland Percentage of Tract (%)	N/A	N/A	N/A	15.44	10.24	N/A
L1UB (miles)	-	8.50	-	-	-	-
Total Lacustrine Frontage (miles)	N/A	8.50	N/A	N/A	N/A	N/A
Total Lacustrine Frontage and Wetland Percentage of Tract (%)	62.73	50.99	22.56	27.44	15.70	9.90

Additional information describing the surveyed natural resources on the six Compensation Tracts displayed on Figures 2.2 (LJPT), 3.3 (FLT), 4.3 (PPT), 5.3 (GFT) 6.3 (LET) and 7.3 (BT) is presented in Table 8.2.

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TABLE 8-2 NECEC POTENTIAL COMPENSATION TRACTS SUMMARY

	PHYSICAL ATTRIBUTES	WETLAND CLASSIFICATION	FUNCTIONS AND VALUES	SWH / JUXTAPOSITION	DEVELOPMENT
Little Jimmie Pond –Harwood (LJPT) 109.77 Acres	Wetlands: 68.46 acres Streams: 3,030 feet (ft) (0.58 miles [mi]) Frontage: 0.17 mi Hutchinson Pond	NWI: L1UB, PFO4/1, PSS, PEM WOSS: SWH (moderate value IWWH), GP250, FP, PT, RSB	Principal: GW, FF, WH, FH, PE, STPR, NR, SS, ED, REC	SWH: 211.5-acre medium ranked IWWH, candidate DWA, 2 PSVPs Conserved Land: 886-acre Jamie's Pond WMA, 81-acre Hutchinson Pond (KLT)	Zoning: Rural/Residential (R1) – 2.0-acre Shoreland Zone Resource Protection Aquifer Overlay
Flagstaff Lake (FLT) 831.39 Acres (76.31 Acres Leased)	Wetlands: 423.96 acres Streams: 10,790 ft (2.04 mi) Frontage: 8.5 miles Flagstaff Lake	NWI: L1UB, PFO1/4 PSS, PEM, PUB WOSS: SWH (high value IWWH), GP 250, 20k POW/PEM, FP, PT, RSB	Principal: GW, FF, WH, FH, PE, STPR, NR, SS, ED, REC	SWH: 36.5-acre high value IWWH, 1 PSVP Conserved Land: Bigelow Preserve, Dead River Peninsula, Dead River Trail & Conservation Corridor, Appalachian Trail Corridor	Zoning: M-GN P-AL, P-GP, P-SL2 P-WL1, P-WL2, P-WL3
Pooler Ponds (PPT) 81.24 Acres	Wetlands: 18.33 acres Streams: 4,480 ft (0.85 mi) Frontage: 0.8 mi Kennebec River	NWI: R2UB, PFO1/4, PSS, PEM, PUB WOSS: SWH (moderate value IWWH), GP 250, 20k POW/PEM, FP, RSB	Principal: GW, FF, WH, FH, PE, STPR, NR, SS, ED, REC	SWH: 31.39 moderate value IWWH Conserved Land: none within 1.0 mile Appalachian Trail Corridor 3.4 miles to south	Zoning: M-GN P-GP, P-SL1, P-SL2, P-WL1, WQLL
Grand Falls (GFT) 120.84 Acres (< 1 acre leased)	Wetlands: 14.51 acres Streams: 5,610 ft (1.06 mi) Frontage: 0.7 mi Dead River	NWI: R3UB, PFO1/4, PSS, PEM WOSS: SWH (moderate value IWWH), 20k POW/PEM, FP, PT, RSB	Principal: GW, FF, WH, FH, PE, STPR, NR, SS, ED, REC	SWH: 16.01 acres of 1,542-acre moderate value IWWH, DWA (LUPC): 1 SVP, 1 PSVP Conserved Land: Dead River Trail & Conservation Corridor	Zoning: M-GN P-FP, P-FW 0600300 P-RR, P-SL1, P-UA P-WL1, P-WL2, P-WL3

	PHYSICAL ATTRIBUTES	WETLAND CLASSIFICATION	FUNCTIONS AND VALUES	SWH / JUXTAPOSITION	DEVELOPMENT
Lower Enchanted (LET) 235.60 Acres	Wetlands: 12.97 acres Streams: 22,620 ft (4.28 mi) Frontage: 2.3 mi Dead River 1.33 mi Enchanted Stream	NWI: R3UB, PFO1/4, PSS WOSS: FP, PT, RSB	Principal: GW, FF, WH, FH, PE, STPR, NR, SS, REC	SWH: w/in 150 ft of 276-acre moderate value IWWH, 1 PSVP Conserved Land: Western Mountain Charitable Foundation Easement	Zoning: M-GN P-RR, P-SL1, P-SL2 P-WL2, P-WL3
Basin (BT) 697.06 Acres	Wetlands: 63.37 acres Streams: 35,210 ft (6.67 mi) Frontage: 4.2 mi Dead River	NWI: R3UB, PFO1/4, PSS, PEM WOSS: FP, PT, RSB	Principal: GW, FF, WH, FH, PE, STPR, NR, SS, REC	SWH: DWA (LUPC) Conserved Land: 10,000+ contiguous acres one mile to the south	Zoning: M-GN P-FW 060030, P-RR PSL-1, P-SL2 P-WL1, P-WL2
SUMMARY: 2,075.90 ACRES	Wetlands: 601.6 acres Streams: 81,740 ft (15.48 mi) Frontage: 8.0 mi Rivers 8.67 mile Lakes	NWI: L1UB, R2UB, R3UB, PFO1/4, PSS, PEM, PUB WOSS: SWH (M/H value IWWH, SVP), GP 250, 20k POW/PEM, FP, PT, RSB	Principal: GW, FF, WH, FH, PE, STPR, NR, SS, ED, REC	SWH: 211.54 acres moderate / high value IWWH, 1 SVP, 5 PSVPs Contiguous Conserved Land: > 41,600 acres	Zoning: All 6 Tracts suitable for residential development

Code explanations can be found at: NWI – page 7; WOSS – page 8; Functions & Values – pages 11-12; SWH/IWWH – page 8; Vernal Pools – pages 8-10; Development – page 124.

8.2 Developability of LUPC Compensation Tracts

LJPT located in Manchester, is therefore subject to the Town of Manchester local zoning and development requirements. A brief, preliminary overview of potential developability requirement for LJPT is presented in related Section 2.5 on page 15.

Similar zoning and development requirements are identified on Land Use Guidance Maps. by the Maine Land Use Planning Commission for the remaining five Tracts and displayed as Figures 4.2, 5.2, 6.2 and 7.2 for FLT, PPT, GFT, LET and BT, respectively. Land Use Subdistricts for each of the five Compensation Tracts are listed under Development on Table 8.1. Portions of all five Tracts are identified as General Management (**M-GN**) Subdistricts as well as the following Protection Subdistricts:

- Shoreland Protection (**P-SL**)
    - **P-SL1** – areas within 250 feet of the normal high-water mark of flowing waters upstream of a 50-square mile drainage area.
    - **P-SL2** – areas within 75 feet of the normal high-water mark of flowing waters downstream of a 50-square mile drainage area, and the upland edge of freshwater wetlands designated as P-WL1, P-WL2 and P-WL3.
- Wetland Protection (**P-WL**), obtained from NWI maps prepared by the USFWS (Nichols 1984; Tiner 2007), is comprised of:
    - **P-WL1** – wetlands of special significance (WOSS),
    - **P-WL2** – scrub shrub and other non-forested wetlands, or
    - **P-WL3** – forested wetlands (excluding those covered under PWL-1, PWL-2).

The following additional Protection Subdistricts are also present on four specific Tracts:

- Accessible Lake (**P-AL**) - FLT
- Flood Prone areas (**P-FP**) – GFT,
- Fish and Wildlife (**P-FW**) – GFT, BT
- Great Pond (**P-GP**) – FLT, PPT
- Unusual Area (**P-UA**) – FLT, GFT

In accordance with MLUPC's Chapter 10, Sub-Chapter II provisions, various land uses in General Management Districts (**M-GN**) are:

1. permissible without a permit, such as (but not limited to) – primitive recreational uses such as fishing, hiking, and wildlife study, forest management activities
2. permissible without a permit subject to standards, including (but not limited to) – Level A road projects, accessory structures; or are
3. specific uses requiring a permit ranging from residential construction (single to multi-family dwellings, and subdivisions to shoreland alterations.

8.3 Potential Compensation Tracts Suitability for the NECEC Project Impacts

As described in greater detail in Section 2.0, Alternatives Analysis, and Section 13.0, Compensatory Mitigation, of the September 27, 2017 NRPA application, the 146.5-mile long NECEC Project Preferred Alternative (Figure 1) will include and require:

- 53.5 miles of undeveloped ROW
- 1,823 acres of clearing, of which 149.07 acres will result in permanent cover type conversion of forested wetland
- 115 stream crossings
- 47.21 acres of temporary (in place less than 18 months. i.e., crane mats) wetland fill
- 0.85 acres of fill in WOSS (includes fill in IWWH and SVPH)
- 4.47 acres of permanent wetland (non-WOSS) fill
- 0.01 acre of permanent upland fill into IWWH
- 31.31 acres permanent upland cover type conversion of SVPH
- 13.31 acres permanent upland cover type conversion of IWWH
- 0.72 acre of permanent upland fill in SVP habitat
- 4.7 acres in or within 100 ft of 250 USACE compensable vernal pools with 56 of high value, 122 medium value, and 72 low value

The Pooler Ponds, Little Jimmie Pond, Grand Falls, Lower Enchanted, Basin and Flagstaff Lake Compensation Tracts (Figure 1), range in size between 81.24 and 831.39 acres, for an aggregate area of 2,075.90 acres and encompass:

- 8.5 miles along the east shore of Flagstaff Lake (Focus Area of Statewide Ecological Significance)
- 1.33 miles of intact, unaltered riparian corridor along each side of Enchanted Stream
- 7.2 miles of intact, unaltered riparian corridor along the Dead River
- 7.16 miles of Outstanding River Segments of the Dead River, encompassing both sides on GFT (Ch 200 §403)
- Grand Falls, the largest horseshoe waterfalls in Maine
- 0.78 mile of intact riparian habitat along the Kennebec River
- 6.15 miles of ephemeral, intermittent and perennial streams (excluding Enchanted Stream and Dead and Kennebec Rivers)
- 601.6 acres of palustrine wetlands (PFO, PSS, PEM, PUB) that provide a suite of principal functions and values including: Groundwater Recharge/Discharge, Floodflow Alteration, Fisheries and Shellfish Habitat, Sediment/Toxicant/Pathogen, Nutrient Removal/Retention, Production (Nutrient) Export, Sediment/Shoreline Stabilization and Wildlife Habitat and Recreation, Educational and Scientific values

- 120.16 acres of moderate or high value IWWH
- At least one high value SVP, four high value PSVPs, 11 medium value, seven low value VPs, 10 medium to low value CVPs, and at least 43 PVP/ABAs
- Associated 516.33 acres of Vernal Pool Critical Terrestrial Habitat (750 feet)
- 220 acres of Deer Wintering Area
- Direct connectivity with more than 41,600 acres of presently permanently-conserved public lands

The relationship of these attributes to the New England District Compensatory Mitigation Guidance discussed in Section 2.1 is summarized in Table 8.3

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TABLE 8-3 USACE NEW ENGLAND DISTRICT COMPENSATORY GUIDANCE (9/1/2016)

(See Section 1.2 on page 5)	LJPT 109.77 acres	FLT 831.39 acres	PPT 81.24 acres	GFT 120.84 acres	LET 235.60 acres	BT 697.0 acres
MITIGATION SITE SELECTION						
Ecologic Suitability:						
hydrologic conditions, soil characteristics and other physical and chemical characteristics,	✓	✓	✓	✓	✓	✓
watershed–scale features such as habitat diversity, connectivity and other landscape scale functions,	Figure 2.3	Figure3.3	Figure 4.3	Figure 5.3	Figure 6.3	Figure 7.3
size and location relative to hydrologic sources and other ecologic features,	Figure 2.1	Figure3.1	Figure 4.1	Figure 5.1	Figure 6.1	Figure 7.1
compatibility with adjacent land use and watershed management	Figure 2.3	Figure3.3	Figure 4.3	Figure 5.3	Figure 6.3	Figure 7.3
reasonably foreseeable effects on ecologically important aquatic or terrestrial resources,	Table 2.1	Table 3.1	Table 4.1	Table 5.1	Table 6.1	Table 7.1
other relevant factors such as: development trends, anticipated land use changes, habitat status and trends, location in stream network, local or regional goals for protection of particular habitat, and water quality and floodplain management goals;	886-acre Jamies Pond WMA, Cobbossee-Annabessacook Focus Area	50,000-acre Bigelow Mtn Flagstaff Lk N Branch Dead River Focus Area	Mod. value IWWH	Outstanding River Segment, Mod value IWWH, DWA	Outstanding River Segment, MHTs	Outstanding River Segment, DWA
Landscape Position (similar setting and wetland types as of the impacted aquatic resource(s)	Figure 2.1	Figure3.1	Figure 4.1	Figure 5.1	Figure 6.1	Figure 7.1
Resistance to Disturbance (located near refuges, buffers, green spaces and other preserved natural elements of the landscape)	Figure 2.1	Figure3.1	Figure 4.1	Figure 5.1	Figure 6.1	Figure 7.1
Sustainability Considerations (current and future hydrology and preference for locations in areas that will remain as open space not to be severely impacted by clearly predictable development)	Figure 2.1 Figure 2.3 Figure 2.3	Figure3.1 Figure 3.2 Figure 3.3	Figure 4.1 Figure 4.2 Figure 4.3	Figure 5.1 Figure 5.2 Figure 5.3	Figure 6.1 Figure 6.2 Figure 6.3	Figure 7.1 Figure 7.2 Figure 7.3
Surrounding land use/plans, including probable future land use	Figure 2.2	Figure3.2	Figure 4.2	Figure 5.2	Figure 6.2	Figure 7.2
FOR PRESERVATION AS COMPENSATORY MITIGATION IN PARTICULAR:						
Resources to be preserved provide important physical, chemical or biological function for the watershed;	Table 2.1	Table 3.1	Table 4.1	Table 5.1	Table 6.1	Table 7.1
Resources to be preserved contribute to the ecological sustainability of the watershed;	HUC 01030003	HUC 01030000	HUC 01030003	HUC 0103002	HUC 01030002	HUC 01030002
Resources are under threat of destruction or adverse modifications;	R-1	M-GN	M-GN	M-GN	M-GN	M-GN
Site will be permanently protected through an appropriate real estate or other legal instrument	✓	✓	✓	✓	✓	✓

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Exhibit 1-10: Title, Right or Interest for the NECEC Preservation Tracts

Exhibit 1-10: Title, Right or Interest for the NECEC Preservation Tracts

Parcel	Town	County	Grantor	Book/Page	Date
Pooler Pond	The Forks	Somerset	Joseph Durgin	631-384	11-18-1960
“	“	“	Herbert Durgin	387-295	6-14-1926
“	“	“	Augusta Trust	391-291	4-1-1927
Little Jimmie Pond	Manchester	Kennebec	Julian Harwood	10775-49	7-1-2011
“	“	“	Herbert Rollins	11147-275	8-24-2012
“	“	“	Julian Harwood et al.	10488-209	7-30-2010
Grand Falls	Spring Lake	Somerset	Edna Page Bunker	396-127	6-30-1927
“	“	“	Albert Clark et al.	397-483	5-19-1928
“	“	“	Charles Clark	396-129	6-24-1927
“	“	“	Ethel Clark	394-555	11-8-1927
“	“	“	Ethel Clark	397-145	11-8-1927
“	“	“	Ethel Clark	401-61	9-29-1928
“	“	“	Wilkie Clark	387-529	9-3-1926
“	“	“	Blinn Page	389-564	2-8-1927
“	“	“	Blinn Page et al.	397-492	5-19-1928
“	“	“	Nellie Toune et al.	396-128	6-24-1927
“	“	“	Blain Viles	387-437	8-5-1926
“	“	“	Helen Wentworth	396-133	7-19-1927
Flagstaff Lake	Dead River Plt. Carrying Place	“	Guy P. Gannet	453-431	1-24-1941
“	“	“	First National Granite Bank	457-457	11-27-1940
“	“	“	Fidelity Trust Company	480-397	3-29-1945
“	“	“	Augusta Trust Company	480-265	2-1-1945
Lower Enchanted	Lower Enchanted	“	Oxford Paper Company	2165-339	12-22-1995
“	“	“	Willie Snow	373-250	5-3-1923
Basin Tract	Pierce Pond	“	Kennebec Land Company	413-221	6-17-1931
“	“	“	Augusta Trust Company	418-131	1-27-1933
The Forks 8/11	The Forks	“	Joseph Durgin	820-865	7-6-1972
“	“	“	Lyford Bean	389-201	5/25/1926
”	“	“	Joseph Durgin	820-865	7/6/1972
”	“	“	Thought to be E. Durgin	-	-
The Forks 11/2	The Forks	“	William and Oscar Jones	380-510	11/1/1923

Parcel	Town	“	Grantor	Book/Page	Date
The Forks 11/9	The Forks	“	Susie Goodwin	536-177	6/14/1951
”	“	“	Alice Kennedy	539-449	12/27/1951
”	“	“	Glenice Merrill	541-538	9/29/1952
Carry Brook	Moxie Gore	“	T-M Corporation	1921-327	8/25/1993
Moxie Stream Lower	Moxie Gore	“	Bessemer Securities Corporation	536-131	5/15/1951
”	“	“	Park, Edward C (Executor of Henry Harriman)	536-138	5/18/1951
”	“	“	Realty Operators Corporation	536-135	5/14/1951
”	“	“	Harriman, Gordon D.	536-141	5/16/1951
Squaretown	Squaretown	“	J.M. Huber Corporation	1932-248	5/31/1993
”	“	“	J.M. Huber Corporation	539-99	10/10/1931
”	“	“	Wyman, W.S., et al	434-89	9/19/1935
Indian Stream	Indian Stream	“	J.M Huber Corporation	1932-248	5/31/1993
”	“	“	J.M. Huber Corporation	539-99	10/10/1931
”	“	“	Wyman, W.S. et al	434-89	9/19/1935

Exhibit 1-11: NECEC Culvert Replacement Program

New England Clean Energy Connect (NECEC) Project
Culvert Replacement Program
October 19, 2018

Introduction

As a component of the NECEC Compensation Plan (submitted August 2018), Central Maine Power Company (CMP) committed to developing a program to address missing, non-functional, damaged, undersized, and improperly installed culverts as mitigation for indirect impacts to coldwater fisheries. The following plan outlines a three-tiered approach to improve habitat connectivity in coldwater fisheries within the project area.

Background

The Maine Department of Environmental Protection (MDEP) and Maine Department of Inland Fisheries and Wildlife (MDIFW) have determined, through review of the NECEC Site Location of Development Law and Natural Resources Protection Act applications, that construction, maintenance, and operation of the project will have unavoidable impacts to coldwater fisheries in the project area, and are requiring CMP to provide mitigation for these impacts. Specifically, MDEP in its General Questions on CMP's application dated December 11, 2017 stated:

> *"the project crosses 67 rivers, streams, or brooks which contain brook trout habitat and five Outstanding River Segments and according to the vegetation management plan all vegetation over ten feet tall will be removed. While the Department has not yet made a determination whether the impacts to these resources are unreasonable there will certainly be impacts to these resources. Please provide a mitigation package to compensate for these impacts."*

Additionally, the MDIFW in its March 15, 2018 environmental review comments on CMP's application noted that the construction of the NECEC has "drastically minimized the amount of linear impact to streams" by utilizing existing logging roads. Should the need arise for modification or replacement of the logging roads or associated culverts, MDIFW makes the following recommendations:

> *"that culverts be replaced with appropriately-sized structures that will restore lost stream connectivity and significantly enhance life history requirements in these streams. MDIFW recommends that any new, modified, and replacement stream crossings, including temporary crossings, be sized to span 1.2 times the bankfull width of the stream. In addition, we recommend that stream crossings be open bottomed (i.e. natural bottom). Any proposed permanent replacement structures should be reviewed and approved by MDIFW fisheries staff prior to installation."*

The MDEP, during an April 3, 2018 compensation working session with CMP and the U.S. Army Corps of Engineers (USACE), informed CMP that in addition to CMP's proposal to make a contribution to the Maine In-Lieu Fee (ILF) Program, land preservation and/or habitat enhancement must also be considered as part of the mitigation package to address all project related impacts. As a result, CMP's compensation plan submitted on August 14, 2018, included a multifaceted proposal consisting of: 1) a contribution to the ILF Program, 2) three compensation tracts, totaling 1,022.4 acres, to offset impacts to wetlands and Inland Wading Bird and Waterfowl habitat (IWWH), 3) three preservation tracts, totaling 1,053.5 acres, to augment existing conserved lands, protect habitat connectivity, and protect 8.1 miles of frontage on the Dead River, to preserve recreational interests associated with Outstanding River segments, 4) habitat mitigation and enhancement proposals for streams containing Roaring Brook Mayfly and Northern Spring Salamander, 5) habitat enhancement for deer wintering areas (DWA) by revegetating disturbed upland areas with a Wildlife Seed Mix, 6) proposed habitat enhancement for indirect impact to coldwater

fisheries in the form of wood addition or "chop and drop" (no longer being considered due to MDIFW guidance), and 7) culvert replacements.

On the recommendation of environmental advocacy groups, CMP turned its attention to the Maine Aquatic Connectivity Restoration Project (MACRP). The MACRP focuses Natural Resources Conservation Service (NRCS) and partner resources to target and improve aquatic organism passage issues in the State of Maine. Through this effort the MACRP partnership developed a geographic information systems (GIS) application named the Maine Stream Habitat Viewer which includes an extensive inventory of culverts throughout the state and their status as it relates to aquatic passage, i.e., no barrier, potential barrier, barrier, unknown. CMP intends to use this application to identify culverts whose replacement would have the most beneficial impact by removal of barriers and improved habitat connectivity on its lands (e.g. within transmission line corridors) and along unimproved project access roads (e.g. off-corridor logging roads) to be used by CMP construction contractors to access the transmission line corridor during construction.

Mitigation

CMP will contact MACRP and request GIS data of culvert locations that have been deemed as barriers or potential barriers to fish passage. CMP will evaluate this information and determine the number and locations of culverts that would be potential candidates for replacement on unimproved roads that will be used during the construction of the NECEC. Priority will be given to culverts that act as barriers to fish passage and that provide habitat connectivity to large stream networks with dendritic watersheds. Only culverts with ½ mile or more of quality upstream stream habitat will be considered. Culverts will be assessed both on CMP controlled lands and on lands that provide off corridor access to the Project. In instances where debris is the sole barrier, i.e., clogging, CMP will simply remove the debris and dispose of it properly. CMP will secure landowner permission for replacements of culverts on private properties prior to performing any work, including surveys to establish existing conditions.

CMP will develop a field variance process, in cooperation with the MDEP and USACE and similar to the process implemented during the 2010 to 2015 construction of the Maine Power Reliability Program (MPRP), to allow for informal review and approval of minor modifications during Project construction. These field variances would then be packaged and included for formal approval through a future permit revision request. Culvert replacements would be consolidated into batches and submitted as a field variance request for review and approval prior to implementation.

Culvert Replacements on CMP Controlled Lands

CMP will replace or remove all culverts that are deemed to be barriers to fish passage on CMP controlled lands associated with the NECEC. This includes the transmission line corridors, mitigation parcels, and access easements held by CMP. CMP will evaluate the condition of all culverts within the Project right-of-way during pre-construction walkovers with the contractor(s), CMP environmental inspector, construction inspector, and MDEP third-party inspector. Culverts identified to be a barrier to fish passage will be documented, flagged with a distinctive color, and GPS located. All parties present on the pre-construction walkover will form a consensus as to whether the culvert merits replacement during access road preparation or during the restoration phase. If it is determined that the culvert is in sufficient condition to be spanned or matted over during construction with little to no risk of waterbody impacts, in areas where extensive construction traffic is anticipated, a decision might be made to replace or remove the culvert during project restoration. In some instances, CMP may determine that the culvert can be removed and the stream restored to a free-flowing condition with no replacement of the culvert necessary.

Off corridor Culvert Replacements

In addition to replacing culverts within CMP controlled lands associated with the Project, CMP will dedicate up to $200,000, sufficient to replace approximately 20-35 culverts on lands outside of CMP's

ownership. CMP proposes to work with MDEP, MDIFW, and interested environmental non-governmental organizations to grant this money to the appropriate entities who can identify those culverts most beneficial to replace, and to manage and oversee their replacement.

Culvert Installation Methodology

A CMP environmental inspector will be present to monitor all culvert removals and installations. CMP will install replacement culverts consistent with Stream Smart principles to improve or maintain habitat connectivity. This includes spanning the entire stream channel, a minimum of 1.2 times the bank full width to eliminate concentrated and accelerated flow; setting the culvert at the correct elevation (i.e., below the elevation of the original stream channel); matching the slope gradient to the stream bottom at the upstream and downstream portions of the crossing; and properly sizing and embedding the culverts to allow for natural streambed substrate in the culvert.

Culvert replacement activities will be avoided during periods of high water and forecasted inclement weather. CMP will replace the culvert under dry conditions by installing temporary coffer dams upstream and downstream of the crossing and pumping the stream flow around the construction area to maintain downstream flows and prevent sedimentation during the culvert installation process. An energy dissipater will be placed at the discharge of the pump-around to prevent stream scour. All pumps will be placed in a secondary containment structure to prevent contaminants from entering the water during pump operation or refueling. In addition, a sufficient number of backup pumps will be available in the event of a pump failure. Spoil piles associated with excavation of the existing culvert will be placed a minimum of 10 feet back from the top of the stream bank and erosion and sedimentation controls will be installed as appropriate on both the upstream and downstream sides of the stream. The new culvert will be installed according to the Stream Smart principles and backfilled using native material or clean stone as appropriate. The downstream coffer dam, followed by the upstream coffer dam, will be removed and water returned to the culvert following the completion of backfill and stabilization of all disturbed areas adjacent to the replacement project.

Culvert Removals and Stream Restoration

It may be determined that an existing culvert is a candidate for removal (without replacement), in order to restore the natural course of a waterbody. In this case, culvert removal will be conducted as described above, temporarily installing coffer dams and pumping the stream flow around the work site. After removal, cobble or clean stone will be used to restore the stream bottom and both stream banks will be sloped to match the existing grade and contour. Disturbed areas will be seeded and stabilized with an erosion control fabric or similar approved erosion control measure. To prevent wildlife entrapment, CMP will not use erosion control fabrics containing monofilament mesh. The use of stone riprap for bank stabilization will be avoided unless otherwise approved by MDEP and the USACE. Silt fence or a functional equivalent shall be installed on both sides of the crossing between the temporarily stabilized banks and any adjacent disturbed areas associated with transmission line construction. After the stream bottom and both banks have been properly stabilized with temporary erosion and sedimentation control measures, pump-around will be halted, coffer dams will be removed, and water will be allowed to flow through the restored area.

Reporting and Post-Construction Monitoring

CMP will document each culvert replacement or removal and will submit a summary report for Condition Compliance to the MDEP and the USACE following construction. In addition, CMP will monitor the conditions of replaced culverts for a period of 1 year following construction and will report any deficiencies and recommended corrective actions to the MDEP and USACE.