SECTION 9.
UNUSUAL NATURAL AREAS

In 2014 and 2015, Stantec Consulting Services Inc. (Stantec) conducted desktop and field evaluations to determine the presence of unusual natural areas within or in the vicinity of the proposed Number Nine Wind Farm (Project) in Aroostook County, Maine. The Project includes the Turbine Area, North Generator Lead Line (North Line) and Bridal Path Generator Lead Line (Bridal Path Line). Unusual natural areas are considered as part of the Preservation of Unusual Natural Areas standard of the No Adverse Environmental Effect Standard of the Site Location of Development Law (06-096 CMR 375.12). Under this standard, an unusual natural area is defined as "any land or water area, usually only a few acres in size, which is undeveloped and which contains natural features of unusual geological, botanical, zoological, ecological, hydrological, or other scientific, educational, scenic, or recreational significance."

The following sections discuss unusual natural areas relative to botanical resources including rare, threatened, and endangered (RTE) plant species as well as rare and exemplary natural communities. Information regarding scenic and visual resources is included in Section 30 of this application. Information regarding wildlife, wetland, and waterbody resources is included in Section 7 of this application. Information regarding surficial geological resources (e.g., soil) is included in Section 11 of this application.

9.1 RARE, THREATENED AND ENDANGERED PLANTS

Desktop reviews and field surveys were conducted in order to determine the presence of unusual botanical natural resources present within the Project. A complete discussion of the methodology and results for the Rare, Threatened and Endangered Plant Surveys (including an addendum report) is included in Exhibit 9-A.

Fifteen RTE plant populations were located within the area evaluated for the Project. These include 6 RTE plant locations along the North Line and 9 RTE plant locations along the Bridal Path Line. The species located include:

- Showy lady's-slipper (*Cypripedium reginae*): State-Threatened[1, 2] (2 locations along Bridal Path Line; 1 location along North Line);
- Swamp honeysuckle (*Lonicera oblongifolia*): State-Special Concern (3 locations along Bridal Path Line);

[1] State rarity status is based on the Maine Natural Areas Program Rare, Threatened, and Endangered Plant Taxa list, as updated November 2012.
[2] This listing of this species is presently proposed by the Maine Natural Areas Program to change from Threatened to Special Concern.

- Lesser yellow water crowfoot (*Ranunculus gmelinii*): State-Threatened[3] (2 locations along Bridal Path Line; 1 location along North Line);
- Marsh valerian (*Valeriana uliginosa*): State-Special Concern (1 location along Bridal Path Line and 1 location along North Line);
- Northern bog sedge (*Carex gynocrates*): State-Special Concern (2 locations along Bridal Path Line)
- Goldie's fern (*Dryopteris goldiana*): State-Special Concern (1 location along North Line); and
- Male fern (*Dryopteris filix-mas*): State-Endangered (1 location along North Line).

Through the use of clearing and management buffers around the RTE plant populations and within the exemplary natural community, as described below and in Section 10, the proposed construction and continued operation of the proposed Project is not likely to result in adverse impacts to the long-term viability of the RTE plant populations.

9.2 EXEMPLARY NATURAL COMMUNITY

An exemplary Streamshore Ecosystem natural community as identified by MNAP intersects the Bridal Path Line near the southern terminus in Haynesville.

This Streamshore Ecosystem is crossed by the Bridal Path Line adjacent to the terminus of the alignment in Haynesville. The majority of the natural community is co-located within a 100-foot stream buffer that will be established for crossings of streams within Atlantic salmon (*Salmo salar*) Critical Habitat. Therefore, impacts within the natural community will be minimal. Section 10 of this application details the vegetation clearing and construction procedures in buffers associated with Atlantic salmon habitat. These procedures include no pole placement within the buffer, clearing of only capable species (i.e., tree species that are capable of growing to a height to potentially make contact with electrical lines) greater than 8 – 10 feet tall, cutting by hand or use of low ground pressure equipment working from construction mats, no refueling within buffer, and no herbicide applications.

No other rare or exemplary natural communities were identified within the Project - as a result of the 2014 and 2015 field surveys.

9.3 POTENTIAL IMPACT AND DESIGN CONSIDERATIONS

No adverse impacts are anticipated to RTE plant species or exemplary natural communities as a result of the Project. The following summarizes the proposed avoidance and minimization measures that will be implemented.

[3] This listing of this species is presently proposed by the Maine Natural Areas Program to change from Threatened to Special Concern.

9.3.1 Buffers

To avoid and minimize impacts to the 15 RTE plant populations identified, buffers will be established around these populations during construction activities. Within these identified buffers, construction activities will be minimal and limited to pedestrian activities (i.e., no mechanized construction activities within the buffers). Section 10 of this application details the buffers that will be implemented in the Project. The following provides a summary of the proposed buffers relative to RTE plant species.

Clearing and Construction Procedures

Prior to initial clearing of the right-of-way near the RTE plant locations, a qualified consultant will demarcate the locations of the RTE plants. In these locations, the habitat containing the densest concentrations of RTE plants will be demarcated with brightly colored flagging or other obvious material (e.g., caution tape, snow fence). This process will serve to clearly distinguish the area in which the clearing restrictions must be applied.

During the initial clearing, only capable species within the demarcated habitat that are 8–10 feet or taller will be cut at ground level. To maintain suitable habitat conditions for the RTE plants, no other vegetation will be cut within the demarcated areas. To avoid and minimize disturbance to flagged RTE plants, capable species within the demarcated habitat will be cut by hand. No mechanized harvesting equipment will be permitted within the demarcated RTE plant locations. The clearing contractor will also maintain wetland hydrology within and immediately adjacent to the RTE plant locations when operating equipment around the habitats. Construction mats and other erosion control materials will be utilized to minimize impacts to wetland hydrology and to reduce rutting around the plant locations.

Vegetation Maintenance Procedures

The vegetation maintenance restrictions within and surrounding RTE plant locations are the same as those that apply during the initial clearing process. Maintenance procedures will be designed to avoid impacts to flagged RTE plants, and minimize impacts within the demarcated RTE plant habitats. Section 10 (Exhibit 10-A) details the vegetation maintenance practices that will be implemented in the RTE plant locations.

Structure Placement

No structures (e.g., utility poles) will be located within the mapped RTE plant locations or exemplary natural communities.

9.3.2 Long-term Persistence

RTE Plant Species

The modifications of the present habitat conditions supporting the 15 populations of RTE plants will be minimal and is not likely to adversely affect the long-term persistence of these species at these locations.

Showy lady's-slipper

Two populations of showy lady's-slipper are located predominantly on the eastern edge of the Bridal Path Line. In these areas, the individuals are located along the transition from a moderately undisturbed northern white cedar (*Thuja occidentalis*) swamp that extends to the east of the populations and the corridor that was previously cleared in the 1960s. The habitat within the previously cleared corridor to the west of the showy lady's-slipper populations includes scattered larch (*Larix laricina*) and northern white cedar trees, speckled alder (*Alnus incana*) and red-osier dogwood (*Swida sericea*) shrubs, and broad-leaved cattail (*Typha latifolia*) and three-leaved false Solomon's seal (*Maianthemum trifolium*) herbaceous plants. The proposed construction will require the removal of the individual trees that have become established in the previously cleared corridor. As the showy lady's-slipper plants are located along the edge of the proposed corridor, an approximately 50% canopy will remain over the population as provided from the forested wetland that abuts the population to the east.

The showy lady's-slipper population along the North Line is located within a calcareous northern white cedar swamp in the southern portion of the proposed corridor. The proposed corridor will require clearing of canopy vegetation within this wetland community.

Based on past data collection and observations by Stantec botanists, showy lady's-slipper prefers habitats with partially open canopies and can grow abundantly within partially open habitats, including along the edges of open wetlands and edges of utility line corridors. The construction procedures that will be implemented are intended to maintain present hydrology and microtopographic conditions of the showy lady's-slipper habitat.

*Swamp honeysuckle*Three swamp honeysuckle populations are located in the proposed Bridal Path Line. Two populations are located along the edge of the previously cleared Bridal Path Line at the transition of the previously cleared corridor through the forested northern white cedar swamp. The third swamp honeysuckle location is located within an existing open transmission line corridor and the adjacent forested wetland near the terminus of the Bridal Path Line in Haynesville. Minimal tree clearing will be required near these populations. Based on on-site observations and previous data collection and observation of swamp honeysuckle populations by Stantec botanists, swamp honeysuckle will grow readily on the edges of open wetlands and within open utility line corridors.

Lesser yellow water crowfoot

The three lesser yellow water crowfoot populations are located within open wetland habitats within the North Line and Bridal Path Line corridors. The species is amphibious and can persist under nearly continuous inundation as well as moist soil condition. Construction procedures outlined in Section 10 of this application include the use of timber mats and winter construction (if possible) to minimize hydrological alterations to wetland communities. Provided that the present hydrology is maintained, lesser yellow water crowfoot will continue to persist at these locations.

Marsh valerian

Marsh valerian was growing with showy lady's-slipper at two locations. The marsh valerian population in the Bridal Path Line is located on the eastern edge of the previously cleared corridor and continues east into the relatively undisturbed northern white cedar swamp. Tree clearing will be necessary near the population to remove established tree species. However, since the population is located on the edge of the Bridal Path Line and continues off-site, much of the existing canopy associated with the population will remain in place.

Tree clearing will be necessary at the marsh valerian population on the North Line. The population has been recently impacted as a result of forest harvest operations adjacent to the population. As a result of these operations, woody debris has been placed atop portions of the marsh valerian population.

Similar to showy lady's-slipper and swamp honeysuckle, past observations and data collection on marsh valerian populations by Stantec botanists have indicated that the species will grow readily on the edges of utility line corridors under a moderately open (e.g., 50 %) canopy. The construction procedures that will be implemented are intended to maintain present hydrology and microtopographic conditions of the showy lady's-slipper habitat.

Northern bog sedge

Northern bog sedge populations are located in two areas along the Bridal Path Line. One population is growing along the eastern edge of the previously cleared Bridal Path Line. The other population is growing along the western edge of the existing open transmission line corridor near the terminus of the Bridal Path Line in Haynesville. Limited canopy tree clearing will be required at these locations. Therefore, there will be minimal changes to overall canopy conditions at these population areas. Based on on-site observations and previous data collection and observation of northern bog sedge populations by Stantec botanists, northern bog sedge will grow readily on the edges of open wetlands and within open utility line corridors.

Goldie's fern

One Goldie's fern population was located along the North Line. Approximately 50% of the population area is located within the proposed North Line corridor. The remaining portion of the population extends to the east. Recent selective forest harvests have occurred within the Goldie's fern population area. The resulting partial opening of the forest canopy from the forest harvests have promoted dense colonization of red raspberry (*Rubus idaeus*) and sugar maple (*Acer saccharum*) regeneration within the Goldie's fern habitat area. The current population area has a canopy of approximately 60%. The population of Goldie's fern is growing vigorously but increases of red raspberry as a result of the recent canopy opening may threaten portions of the population. Past observations and data collection by Stantec botanists indicate that Goldie's fern may not be tolerant of open canopy conditions.

Male fern

One population of male fern occurs approximately 100 feet east of the proposed North Line. This population is outside of the proposed construction area and will not be directly impacted by project activities.

Invasive Plants

Invasive plant species including common buckthorn (*Rhamnus cathartica*) and glossy buckthorn (*Frangula alnus*) were observed adjacent to the showy lady's-slipper and swamp honeysuckle populations along the Bridal Path. Section 10 of this permit application outlines the invasive species management plan that will be implemented as part of the long-term monitoring and management of the utility line corridor.

Exemplary Natural Community

The siting of the proposed Bridal Path Line through the exemplary natural community has minimized impacts to the greatest extent practicable. The proposed alignment crosses the natural community at its narrowest point and is located near the eastern periphery of the community, thereby leaving the interior portion of the community intact and undisturbed. In addition, the alignment is located adjacent to an existing transmission line through this community which minimizes additional fragmentation of the community. In summary, the construction of the Bridal Path Line will not adversely affect the long-term persistence and viability of this exemplary natural community based on the siting of the alignment through the community and the establishment of buffers to limit vegetation clearing and management.

9.4 SUMMARY

In summary, 15 RTE plant populations and 1 exemplary natural community are located within the proposed Project area. Through the use of clearing and management buffers around the RTE

plant populations and within the exemplary natural community, the proposed construction and continued operation of the proposed Project is not likely to result in adverse impacts to the long-term viability of the RTE plant populations or the exemplary natural community.

EXHIBIT 9-A RARE, THREATENED, AND ENDANGERED PLANT SURVEY REPORT

1 – 2014 Rare, Threatened, and Endangered Plant Survey Report

2 – 2015 Rare, Threatened, and Endangered Survey Addendum Report

Rare, Threatened, and Endangered Plant Survey Report

Number Nine Wind Farm
Aroostook County, Maine

Prepared for:
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Prepared by:
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January 14, 2015

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1.0 INTRODUCTION

In 2014, Stantec Consulting Services, Inc. (Stantec) initiated surveys for rare, threatened, and endangered (RTE) plant species at the Number Nine Wind Farm (Project) site in Aroostook County Maine. The proposed Project includes the construction of up to 119 turbines in six townships in Aroostook County, Maine (i.e. Turbine Area). These townships include T8 R3 WELS, T9 R3 WELS, T10 R3 WELS, TD R2 WELS, E Township, and St. Croix Township. The Turbine Area also includes associated 34.5-kilovolt (kV) electrical collector lines (collector line) and access roads, a project substation, and an Operations and Maintenance (O&M) building. The Project also includes two segments of a 345-kV electrical generator lead line (generator lead). The North Generator Lead Line (North Line) will consist primarily of a newly cleared 26.2-mile electrical corridor that will extend from the proposed substation in the Turbine Area south to an existing substation in Houlton, Maine. The Bridal Path Generator Lead Line (Bridal Path Line) will be located within an additional 25.4 miles of existing utility easement that was first cleared in the 1960's. The Bridal Path Line will extend south from the existing substation in Houlton to an existing 345-kv transmission line corridor in Haynesville, Maine (Figure 1). The Project components are identified broadly into the following three components:

1) Turbine Area

2) North Generator Lead Line

3) Bridal Path Generator Lead Line

To facilitate Project construction designs to avoid and minimize impacts to RTE plant species, surveys were conducted in 2014 to identify locations of RTE plant species within or adjacent to areas proposed for construction. The following sections summarize the methodology and results of the 2014 RTE plant surveys.

2.0 METHODOLOGY

2.1 DESKTOP ANALYSIS

Prior to conducting field surveys for RTE plant species, a desktop analysis was completed to identify areas within the Project area that had greater potential to support RTE plant species. Areas identified during the desktop analysis would be targeted for field surveys. The desktop analysis included the following:

1) Reviewing previously collected field data from 2014 wetland and waterbody delineations of the Project area by Stantec wetland scientists.

2) Reviewing high-resolution aerial imagery of the proposed Project area with the results of the wetland and waterbody delineations overlain in order to identify potential areas with land cover, habitat types, and landforms that are known to support RTE plant species within the region.

3) Utilizing the expertise and results of previous survey work and research by Stantec botanists within the southeastern Aroostook County region.

4) Reviewing the results of previously conducted RTE plant surveys along the Bridal Path Line corridor in 2008 (formerly known as the Bridal Path).

5) Reviewing data obtained from the Maine Natural Areas Program (MNAP) regarding known RTE plant species within the region surrounding the Project area (Appendix A).

2.2 FIELD METHODOLOGY

The areas identified during the desktop analysis as having potential to support RTE species were digitized using Geographic Information Software (GIS), loaded as a background layer onto Trimble® GeoExplorer6000 GPS units, and printed onto color field maps to be used for field navigation. Meander surveys were completed throughout each area identified during the desktop analysis to locate RTE plant species and characterize the existing habitat conditions. If RTE plants were identified, data on population size, condition, and associated habitat were collected along with representative and diagnostic photos of the population. RTE plant populations were located using the GPS unit. General habitat data (e.g., dominant species, hydrology, and past disturbances) and representative photographs were taken throughout each targeted area surveyed.

3.0 RESULTS

3.1 DESKTOP ANALYSIS

Based on the results of the desktop analysis, the following habitat types were identified as having higher potential for supporting RTE plant populations and were targeted for field surveys:

- Circumneutral wetlands dominated by northern white cedar (*Thuja occidentalis*);
- Graminoid-dominated riparian marshes;
- Shorelines and terrace floodplains of 2nd and 3rd order streams;
- Rich-mesic forests;
- Mature hardwood forests on moderate to steep slopes;

- Beaver (*Castor canadensis*) impoundments; and
- Mature red spruce (*Picea rubens*) – dominated forests.

The proposed approach and results of the desktop analysis were provided to MNAP for review and comment on October 3, 2014. MNAP concurred with the proposed approach (Appendix A).

The initial desktop analysis identified 59 areas for survey within the Project area. However, due to lack of landowner permission at the time of the field surveys, only 47 sites were surveyed.

3.2 FIELD SURVEY

Field surveys were completed from October 6 through October 10, 2014, by Stantec Botanists Matt Arsenault, Joshua Sulman, and Charles Ferris. As a result of the RTE plant surveys, 3 rare plants were documented in Survey Area 46 within the Bridal Path Generator Lead alignment. These species include:

- Showy lady's-slipper (*Cypripedium reginae*): State-Threatened[1];
- Swamp honeysuckle (*Lonicera oblongifolia*): State-Special Concern; and
- Lesser yellow water crowfoot (*Ranunculus gmelinii*): State-Threatened

An additional occurrence of lesser yellow water crowfoot was incidentally located in Survey Area 43 within the proposed North Generator Lead alignment on June 4, 2014, during wetland and waterbody delineations by Stantec. Several hundred ramets were observed growing in a small ponded scrub-shrub wetland area adjacent to London Road.

These RTE plant occurrences as well as the general habitat characteristics of each survey area are further described below. Representative photographs are included in Appendix B.

Field surveys were completed post-frost and many plant species had or had begun to senesce. Field efforts were largely focused on locating "indicator" species in order to further assess the potential for a survey area to contain RTE plants. Indicator species are often uncommon species that are frequently located with RTE plant populations or indicate slight differences in microhabitat conditions (e.g., nutrient enrichment) that could potentially favor RTE plant occurrences. Given the timing of the field surveys, follow-up surveys during the appropriate growing season are recommended below for 9 locations within the proposed Turbine Area and 9 areas within the proposed Bridal Path Line alignment to further evaluate the presence of RTE plants based on existing habitat observations. Field surveys are also recommended at 19 additional Survey Areas that were not visited during the October 2014 RTE plant surveys due to

[1] State rarity status is based on the Maine Natural Areas Program Rare, Threatened, and Endangered Plant Taxa list, as updated November 2012.

lack of land access at the time of the field surveys or subsequent alignment modifications. These include Survey Area 60 in the proposed Turbine Area, Survey Areas 42, 44, 45, and 61 through 74 in the proposed North Line alignment, and Survey Area 59 within the proposed Bridal Path Line alignment.

3.2.1 Turbine Area

The Turbine Area includes a series of low elevation ridges as well as a network of access road and collector line corridors. The Turbine Area consists of managed timberland dominated by northern hardwoods matrix forest communities. Evidence of past timber management is present throughout much of the forested area. Primary, secondary, and tertiary unpaved logging roads traverse the Turbine Area. The northern hardwood forest matrix is dominated by beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and yellow birch (*Betula alleghaniensis*). Coniferous species including red spruce, balsam fir (*Abies balsamea*), and hemlock (*Tsuga canadensis*) are present throughout the Turbine Area. The majority of the forested communities are not exemplary as a result of past and on-going timber management practices including forest thinning, selective harvesting, and regenerating stands. Forest substrates and hydrology have also been altered in many areas as a result of rutting, timber skidding, and grading from logging equipment.

Small wetland habitats and riparian habitats are also located through the Turbine Area in low-lying areas. Wetlands include a mosaic of emergent, scrub-shrub, and forested wetlands throughout the landscape. The wetland communities are typically small in size and similarly have been affected from past forest management activities. Larger wetland systems are located in low elevation areas and are crossed by several existing logging roads.

Thirty-one surveys areas were identified and surveyed as a result of the desktop analysis within the Turbine Area (Figure 2). No rare plants were located within these areas at the time of the field surveys. However, based on the timing of the surveys and the habitat conditions including the presence of rich-mesic or circumneutral indicator plant species, follow-up field surveys are recommended at 9 locations in the following surveys areas: 13, 15, 16, 17, 22, 23, 28, 29, and 30 if Project impacts are proposed. The results of the field surveys are described below. Subsequent to the field surveys, additional modifications were made to the proposed Turbine Area. A desktop analysis of these modifications resulted in the identification of one additional survey area in the Turbine Area (i.e., Survey Area 60) (Figure 31). Follow-up field surveys are recommended during the late spring or early summer to survey for RTE plants within this location.

Survey Area 1

No RTE plant species were located in Survey Area 1 on October 7, 2014. Survey Area 1 is an upland forest along a ridgeline in the northwestern portion of the project area (Figure 3). The forested is largely dominated by northern hardwood tree species including beech, sugar maple, and yellow birch. Conifer species including red spruce and eastern hemlock are located throughout the forest. Common understory species include evergreen wood fern (*Dryopteris*

intermedia), shining firmoss (*Huperzia lucidula*), red raspberry (*Rubus idaeus*), striped maple (*Acer pensylvanicum*), hobblebush (*Viburnum lantanoides*), and Canada mayflower (*Maianthemum canadense*).

Hardwood forest in Survey Area 1. Stantec. October 7, 2014

The western portion of the survey area is dominated by red spruce trees with eastern hemlock, beech, and yellow birch.

The forested habitat of Survey Area 1 is common of the surrounding region and no occurrences of plant species indicating rich-mesic forest microhabitat conditions were located within the survey area. No additional field surveys are recommended for this location.

Survey Area 2

No RTE plant species were located in Survey Area 2 on October 7, 2014. Survey Area 2 is located in the riparian area of West Branch Presque Isle Stream along an existing logging road (Figure 4). Beaver activity within this area has created multiple channels through a scrub-shrub floodplain wetland along the main branch of the stream. Common vegetation includes speckled alder (*Alnus incana*), American manna grass (*Glyceria grandis*), virgin's-bower (*Clematis virginiana*), tall meadow-rue (*Thalictrum pubescens*), bluejoint (*Calamagrostis canadensis*), and spotted Joe-Pye weed (*Eutrochium maculatum*). Forested portions of the wetland are dominated by balsam fir and red spruce. Based on the common vegetation types and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Areas 3 and 4

No RTE plant species were located in Survey Areas 3 and 4 on October 7, 2014 (Figure 5). The survey areas consist of second growth mixed forests dominated by sapling-sized tree species including beech, striped maple, yellow birch, red maple (*Acer rubrum*), and red spruce. The understory is sparsely vegetated with evergreen wood fern, hobblebush, red raspberry, red elderberry (*Sambucus racemosa*), white ash (*Fraxinus americana*), sharp-toothed nodding-aster (*Oclemena acuminata*), shining firmoss, bunchberry (*Chamaepericlymenum canadense*), and slender wood-reed (*Cinna latifolia*). The potential for RTE plant species at this location is low based on the common natural community types, absence of rich-mesic indicator species, and past forest disturbances. No further field surveys are recommended at this survey area.

Survey Area 5

Second growth hardwood forest in Survey Area 3. Stantec. October 7, 2014

No RTE plant species were located in Survey Area 5 on October 7, 2014. Survey Area 5 consists of a mature hemlock and northern hardwood forest on a side slope, rock outcrops, and a small rocky shrubland on a summit area (Figure 6). Common vegetation includes yellow birch, red spruce, sugar maple, white ash, and red maple. Species associated with rock outcrops include marginal wood fern (*Dryopteris marginalis*), slender wood-reed, fringed bindweed (*Fallopia cilinodis*), striped maple, hop-hornbeam (*Ostrya virginiana*), and false melic grass (*Schizachne purpurascens*). The potential for RTE plant species at this location is low based on the common natural community types and absence of rich-mesic indicator species. No further field surveys are recommended at this survey area.

Survey Area 6

No RTE plant species were located in Survey Area 6 on October 6, 2014. Survey Area 6 is located in the riparian area of West Branch Presque Isle Stream (Figure 7). The banks of the stream are characterized by a narrow scrub-shrub floodplain dominated by speckled alder, royal fern (*Osmunda regalis*), white turtlehead (*Chelone glabra*), and Canada lily (*Lilium canadense*). Beyond the floodplain, the riparian area is characterized by a balsam fir and northern white cedar seepage forested wetland dominated by evergreen wood fern, American honeysuckle (*Lonicera canadensis*), sharp-toothed nodding-aster, and nodding sedge (*Carex gynandra*) in the understory. Past forest management activities have been conducted in the riparian forests adjacent to the stream. The potential for RTE plant species at this location is low based on the common natural community types and past forest disturbances. No further field surveys are recommended at this survey area.

Survey Area 7

No RTE plant species were located in Survey Area 7 on October 6, 2014. Survey Area 7 is a beaver-impounded wetland located along an existing logging road (Figure 8). The wetland is dominated by speckled alder, nodding beggar-ticks (*Bidens cernua*), bluejoint, fowl blue grass (*Poa palustris*), vernal water-starwort (*Callitriche palustris*), simple-stemmed bur-reed (*Sparganium emersum*), and stiff three-petaled bedstraw (*Galium tinctorium*). Based on the

common vegetation types and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 8

No RTE plant species were located in Survey Area 8 on October 8, 2014. Survey Area 8 consists of the shoreline and riparian area associated with Burnt Land Brook (Figure 9). The area is dominated by a mixed forested wetland system with northern white cedar, red spruce, balsam fir, yellow birch, and red maple trees. Understory species include evergreen woodfern, northeastern manna grass (*Glyceria melicaria*), bunchberry, American honeysuckle, dwarf raspberry (*Rubus pubescens*), jewelweed (*Impatiens capensis*), twinflower (*Linnaea borealis*), northern long-awned wood grass and (*Brachyelytrum aristosum*). Past timber harvests have occurred throughout the community. The stream banks are rocky with virgin's-bower, white turtlehead, and tall meadow-rue present along the banks. Based on the common vegetation types, absence of circumneutral indicator species, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 9

No RTE plant species were located in Survey Area 9 on October 8, 2014 (Figure 10). Survey Area 9 consists of a small ridgetop forest. The forest community has been harvested for timber in the past and consists of dense red spruce regeneration with a few residual mature red spruce and white pine (*Pinus strobus*) trees scattered in the community and on steeper slopes below the summit. Additional understory species include northern wood sorrel (*Oxalis montana*), evergreen wood fern, red raspberry, hobblebush, sugar maple, red maple, pin cherry (*Prunus pennsylvanica*), and red elderberry. Based on the common vegetation types, past forest disturbances, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 10

No RTE plant species were located in Survey Area 10 on October 6, 2014. Survey Area 10 is a small black spruce (*Picea mariana*) bog along an existing logging road (Figure 11). Common vegetation includes woolgrass (*Scirpus cyperinus*), boreal bog sedge (*Carex magellanica*), tawny cottonsedge (*Eriophorum virginicum*), Labrador tea (*Rhododendron groenlandicum*), bunchberry, and three-leaved false Solomon's-seal (*Mainthemum*

Black spruce bog in Survey Area 10. Stantec. October 6, 2014

trifolium). Based on the common vegetation types, past disturbances from the logging road, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 11

No RTE plant species were located in Survey Area 11 on October 8, 2014. Survey Area 11 is a beaver-impounded wetland located along an existing logging road (Figure 12). The wetland area is dominated by speckled alder shrubs with bluejoint, woolgrass, fowl manna grass (*Glyceria striata*), and nodding sedge. Based on the common vegetation types, past disturbances from the adjacent road, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 12

No RTE plant species were located in Survey Area 12 on October 8, 2014 (Figure 13). Survey Area 12 is a forested wetland that has been disturbed by recent forest harvests. The wetland is dominated by red spruce, balsam fir, northern white cedar, and yellow birch trees. Ruts and regenerating canopy species are present within the survey area. Understory species include striped maple, beaked hazelnut (*Corylus cornuta*), sugar maple, hobblebush, floodplain avens (*Geum laciniatum*), and northeastern manna grass. Based on the common vegetation types, past disturbances from the forest harvests, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 13

No RTE plant species were located in Survey Area 13 on October 8, 2014. Survey Area 13 is a second growth forest on a moderate slope dominated by saplings and small-diameter trees of beech, sugar maple, hop hornbeam, and red spruce that leads up to a summit area (Figure 14). The summit area is rocky with rich-mesic indicator plants including sweet-cicely (*Osmorhiza* sp.), zig-zag goldenrod *(Solidago flexicaulis*), white baneberry (*Actaea pachypoda*), and silvery false spleenwort (*Deparia acrostichoides*). **Based on the rich-mesic indicator species, follow-up field surveys during late spring or early summer are recommended in this area**.

Survey Area 14

No RTE plant species were located in Survey Area 14 on October 8, 2014. Survey Area 14 is a beaver-impounded wetland located adjacent to an existing logging road (Figure 15). Standing dead trees and vegetated hummocks are present within the wetland. Common plant species include bluejoint, fowl manna grass, and greater bladder sedge (*Carex intumescens*). Based on the common vegetation types, past disturbances from the adjacent road, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 15

No RTE plant species were located in Survey Area 15 on October 8, 2014 (Figure 16). Survey Area 15 is a second growth forest on a moderate slope dominated by saplings and small-diameter trees of beech, sugar maple, hop hornbeam, yellow birch, red oak (*Quercus rubra*), and quaking aspen (*Populus tremuloides*). Understory species include marginal woodfern, blue wood-aster (*Symphyotrichum cordifolium*), red raspberry, zig-zag goldenrod, bland sweet cicely (*Osmorhiza claytonia*), bush-honeysuckle (*Diervilla lonicera*), and bracken fern (*Pteridium aquilinum*). **Based on the presence of rich-mesic indicator species, follow-up field surveys during late spring or early summer are recommended in this area.**

Survey Area 16

No RTE plant species were located in Survey Area 16 on October 8, 2014. Survey Area 16 includes the riparian area of Number Nine Stream (Figure 17). The survey area also includes areas of mixed second-growth forest as well as forested, emergent, and scrub-shrub wetlands. The survey area includes common vegetation communities with dominate species including red spruce, balsam fir, quaking aspen, yellow birch, hemlock, northern white cedar, sugar maple, and red maple trees. The understory is dominated by regenerating canopy species, speckled alder, beaked hazelnut, northeastern manna grass, tall meadow-rue, rough sedge (*Carex scabrata*), slender wood-reed, evergreen wood fern, and lady fern (*Athyrium angustum*). Rich medic indicator species including ostrich fern (*Matteuccia struthiopteris*) and zig-zag goldenrod are sparse within the riparian area. However, **follow-up field surveys are recommended in this area during the appropriate growing season** if impacts are proposed within this riparian area.

Survey Area 17

No RTE plant species were located in Survey Area 17 on October 10, 2014. Survey Area 17 consists of a second growth mesic hardwood forest along a small unnamed stream dominated by sugar maple, beech, and yellow birch trees (Figure 18). The understory includes rich-mesic indicator species including zig-zag goldenrod and white baneberry. **Based on the presence of rich-mesic indicator species, follow-up field surveys during late spring or early summer are recommended in this area.**

Survey Area 18

No RTE plant species were located in Survey Area 18 on October 8, 2014. Survey Area 18 includes the riparian area of Number Nine Stream (Figure 18). The adjacent floodplain wetlands are dominated by speckled alder, red spruce, and yellow birch with occasional northern white cedar and balsam fir trees. Understory herbaceous species include cinnamon fern (*Osmundastrum cinnamomeum*), avens (*Geum* sp.), tall meadow-rue, wood horsetail (*Equisetum sylvaticum*), and northern long-awned wood grass. Based on the common vegetation types, absence of circumneutral or rich-mesic indicator species, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 19

No RTE plant species were located in Survey Area 19 on October 8, 2014. Survey Area 19 consists of the riparian area of Number Nine Stream (Figure 19). The survey area also includes an existing logging road and bridge crossing the stream. Vegetation along the stream includes tall meadow-rue, bluejoint, red elderberry, rough-stemmed goldenrod (*Solidago rugosa*), hemp nettle (*Galeopsis* sp.), virgin's bower, sensitive fern (*Onoclea sensibilis*), dwarf raspberry, and pin cherry. Based on the common vegetation types, existing road crossing with bridge, and absence of RTE plant observations during the initial field surveys, no additional surveys are recommended at this location.

Survey Area 20

No RTE plant species were located in Survey Area 20 on October 8, 2014 (Figure 19). Survey Area 20 is a hardwood forest on a moderate slope dominated by yellow birch and beech that has been recently logged. Based on the recent logging disturbances, no additional field surveys are recommended at this location.

Survey Area 21

No RTE plant species were located in Survey Area 21 on October 8, 2014. Survey Area 21 is a large open wetland that has been impounded by beavers (Figure 20). The wetland is located adjacent to an existing logging road. Standing dead northern white cedar and balsam fir trees are present in the wetland. Aquatic plants include bur-reed (*Sparganium* sp.), golden-saxifrage (*Chrysosplenium americanum*), and manna grass (*Glyceria* sp.). No further field surveys are recommended in this area based on the common wetland community type and absence of RTE plant observations during the initial field surveys.

Northern hardwood forest in Survey Area 22. Stantec. October 8, 2014

Survey Area 22

No RTE plant species were located in Survey Area 22 on October 8, 2014. Survey Area 22 is a maturing second-growth mixed forest along a small ridgeline (Figure 21). Tree species include

sugar maple, yellow birch, beech, balsam fir, red spruce, hemlock, and white ash. The understory includes dense patches hobblebush. Herbaceous plants are sparse within the community and include evergreen wood fern, sharp-toothed nodding-aster, shining firmoss, and Indian cucumber root (*Medeola virginiana*). Rich-mesic indicator species within the community were limited to a few individuals of white baneberry. There is limited potential for RTE plants within this community, however, **based on the limited presence of rich-mesic indicator species, follow-up field surveys during the late spring or early summer growing season are recommended.**

Survey Area 23

No RTE plant species were located in Survey Area 23 on October 9, 2014 (Figure 22). Survey Area 23 is a small black spruce-dominated forested wetland. Other tree species include northern white cedar, balsam fir, and yellow birch. Understory plants include velvet-leaved blueberry (*Vaccinium myrtilloides*), sheep laurel (*Kalmia angustifolia*), bunchberry, twinflower, mountain holly (*Ilex mucronata*), northern wood sorrel, wintergreen (*Gaultheria procumbens*), cinnamon fern, withe-rod (*Viburnum nudum*), pitcher plant (*Sarracenia purpurea*), three-leaved false Solomon's-seal, leatherleaf (*Chamaedaphne calyculata*), Labrador tea, and three-seeded sedge (*Carex trisperma*). **Follow-up field surveys for RTE plants are recommended during the growing season in this area if project impacts are proposed.**

Survey Area 24

No RTE plant species were located in Survey Area 24 on October 9, 2014. Survey Area 24 consists of a steep and rocky east-facing slope below a ridgeline that is dominated by mature red spruce (Figure 23). The forest understory is dominated by yellow birch and red maple saplings, evergreen woodfern, shining firmoss, hobblebush, sharp-toothed nodding-aster, goldthread (*Coptis trifolia*), bunchberry, and blue-bead lily (*Clintonia borealis*). Timber harvests have occurred along the top of the ridgeline and at the base of the slope adjacent to the survey area. Based on the habitat characteristics and absence of RTE plant observations during the initial field surveys, follow-up field surveys are not recommended at this location given the low potential for RTE species in this habitat type.

Survey Area 25

No RTE plant species were located in Survey Area 25 on October 8, 2014. Survey Area 25 includes the riparian area associated with South Brook (Figure 24). The floodplain along the stream is a scrub-shrub wetland dominated by speckled alder, sweetgale (*Myrica gale*), royal fern, meadowsweet (*Spiraea alba*), and northeastern sedge (*Carex cryptolepis*). The scrub-shrub wetland transitions into a northern white cedar swamp further from the stream shore. Based on the absence of circumneutral indicator species, the presence of an existing road and bridge, and absence of RTE plant observations during the initial field survey, no additional field surveys are recommended at this location.

Survey Area 26

No RTE plant species were located in Survey Area 26 on October 8, 2014. Survey Area 26 is a ponded wetland area adjacent to an existing logging road (Figure 25). Standing dead trees, speckled alder, meadowsweet, and woolgrass dominate the wetland community. The wetland community has low potential for RTE plants based on the present species composition, hydrology, past disturbances from the adjacent logging road, and absence of RTE plant observations during the initial field survey. No additional field surveys are recommended at this location.

Survey Area 27

No RTE plant species were located in Survey Area 27 on October 8, 2014. Survey Area 27 includes the riparian area along South Brook along an existing logging road (Figure 26). The riparian area consists of a second-growth upland forest dominated by northern white cedar and balsam fir. The stream banks include royal fern and zig-zag goldenrod. No additional field surveys are recommended at this location due to the absence of RTE plant observations during the initial field survey and the presence of an existing road and crossing.

Survey Area 28

No RTE plant species were located in Survey Area 28 on October 8, 2014. Survey Area 28 is an approximately 4-acre northern white cedar swamp (Figure 27). The community is maturing with northern white cedar trees between 20 and 40 inches in diameter with balsam fir and northern white cedar shrubs and saplings in the understory. The herbaceous stratum is dominated by bunchberry, evergreen wood fern, and northern wood sorrel. The community may contain circumneutral conditions and could potentially support RTE plant species. **If impacts to this wetland are proposed as part of the project, additional surveys during the growing season are recommended.**

Survey Area 29

No RTE plant species were located in Survey Area 29 on October 9, 2014 (Figure 28). Survey Area 29 includes areas of emergent, scrub-shrub, and forested wetlands. The eastern portion of the survey area includes a slow-flowing perennial stream through an emergent wetland dominated by bluejoint. The wetland transitions into a young forest dominated by northern white cedar, red spruce, balsam fir, and larch (*Larix laricina*). Recent forest thinning has occurred throughout the forests of the survey area. A large open wetland that has been impounded by beavers is located in the western portion of the survey area. A mature northern white cedar forested wetland is located along the fringe of the open wetland. The potential for rare plants is low based on past disturbances and hydrology of the wetland and upland areas within the survey area. However, the small northern white cedar fringe may provide circumneutral conditions based on initial field observations. **Follow-up field surveys in the**

northern white cedar swamp community of the survey area are recommended during the growing season.

Survey Area 30

No RTE plant species were located in Survey Area 30 on October 8, 2014. Survey Area 30 includes a large forested and scrub-shrub wetland located along an existing logging road (Figure 29). The south side of the road includes a forested wetland dominated by northern white cedar, larch, and balsam fir with an understory dominated by canopy regeneration, cinnamon fern, three-seeded sedge, and bunchberry. The north side of the road includes a scrub-shrub wetland dominated by northern white cedar and larch saplings with bluejoint, American manna grass, and three-seeded sedge present in the herbaceous stratum. Open and forested wetlands may provide habitat for RTE plant species with affinities for circumneutral habitats. Therefore, **follow up surveys during the appropriate growing season are recommended if project impacts are proposed within the wetland habitat.**

Survey Area 31

No RTE plant species were located in Survey Area 31 on October 8, 2014 (Figure 30). Survey Area 31 consists of a regenerating forest dominated by beech, yellow birch, and sugar maple that has been affected from past timber harvests. The understory is dense and includes striped maple, sugar maple, beech, hobblebush, beaked hazelnut, evergreen woodfern, and shining firmoss. A small forested wetland is also present within the survey area. This wetland is dominated by yellow birch trees with black ash (*Fraxinus nigra*), northern white cedar, balsam fir, speckled alder, and interrupted fern (*Osmunda claytoniana*). Due to the absence of rich-mesic indicator species and past forest disturbances, no additional field surveys are recommended.

3.2.2 North Generator Lead Line

The North Generator Lead Line (North Line) alignment extends approximately 26.2 miles from a proposed substation in the Turbine Area south to an existing substation on Ludlow Road in Houlton (Figure 32).

Subsequent to field surveys, a portion of the North Line corridor was modified considerably to include an alternative alignment extending south from the Turbine Area and several miles west of the previously surveyed corridor. As a consequence, several survey areas were removed from the Project area. These include Survey Areas 32 through 41. The results of the field surveys within these areas are not reported herein. A desktop analysis was undertaken to identify potential survey areas along the modified North Line alignment. The results of the subsequent desktop analysis of the revised North Line alignment are summarized below in Section 4.0.

Landowner permission was not granted for two survey areas along the North Line alignment at the time of the October 2014 field surveys. These include Survey Areas 42 and 45. **Follow-up field surveys are recommended in these unsurveyed areas during the appropriate growing season should landowner permission be obtained.**

Lesser yellow water crowfoot in Survey Area 43. Stantec. June 4, 2014

Survey Area 43

Lesser yellow water crowfoot was located in this survey area on June 4, 2014, during wetland and waterbody surveys by Stantec. Several hundred ramets were growing within a small ponded shrub-dominated wetland area adjacent to London Road in Houlton (Figure 45). At the time of the field survey, water depths were approximately 6 to 8 inches deep. Associated vegetation includes willows (*Salix* spp.), broad-leaved cattail (*Typha latifolia*), and woolgrass. No additional field surveys were conducted in this area in October 2014.

Survey Area 44

No RTE plant species were located in Survey Area 44 on October 10, 2014. Survey Area 44 consists of a mixed mature forested community on a steep slope (Figure 46). Dominant trees include balsam fir, yellow birch, beech, and sugar maple. The understory includes balsam fir, red maple, and beech saplings with evergreen wood fern, bracken fern, and long beech fern (*Phegopteris connectilis*) in the herbaceous stratum. Subsequent to the field surveys, the alignment was modified through this area. Therefore, **additional field surveys are recommended during the appropriate growing season within areas beyond the area surveyed during the preliminary RTE plant field surveys.**

3.2.3 Bridal Path Generator Lead Line

The Bridal Path Generator Lead Line (Bridal Path Line) is approximately 25.4 miles long and extends from an existing substation on Ludlow Road in Houlton south to an existing 345-kv transmission line in Haynesville (Figure 48). Much of the Bridal Path Line was historically cleared of vegetation in the 1960s for a previously proposed utility line corridor. The project was abandoned and the vegetation within the Bridal Path Line corridor continues to regenerate and mature.

The Bridal Path Line traverses a mixed landscape dominated by second- and third-growth mixed forests dominated by balsam fir, red spruce, red maple, sugar maple, and yellow birch. Recent and on-going timber management practices are prevalent along the Bridal Path Line corridor.

Wetland communities are also prevalent along the Bridal Path Line and include several large wetland complexes with a mosaic of emergent, forested, and scrub-shrub communities. The proposed Bridal Path Line alignment also crosses several first, second, and third order streams.

Previous rare plant surveys were conducted in 2008 by others as part of a past project proposal to utilize the Bridal Path corridor. The results of those surveys were reviewed as part of the desktop analysis. Fourteen survey areas were identified and surveyed along the Bridal Path Line. Rare plants were located in Survey Area 46 at the time of the 2014 field surveys. Additional field surveys are recommended at 9 locations in the following survey areas during the appropriate growing season due to the timing of the 2014 surveys and the presence of circumneutral or rich-mesic indicator species: 46, 47, 49, 50, 51, 55, 56, 57, and 58.

Survey Area 46

Three rare plants were located in Survey Area 46 on October 9, 2014. These include showy lady's-slipper, swamp honeysuckle, and lesser yellow water crowfoot (Figure 49).

Senesced show lady's-slipper specimen in Survey Area 46. Stantec. October 9, 2014

Approximately 20 showy lady's slipper plants were located on the eastern edge of the Bridal Path Line corridor within a calcareous northern white cedar swamp. The plants were senesced but were identifiable based on remnant leaf, stem, and seed capsule characteristics. It is possible that additional individuals exist in this vicinity but were not identifiable during the fall field surveys. Associated species include northern white cedar, bluejoint, sensitive fern, soft-leaved sedge (*Carex disperma*), and bristly-stalk sedge (*Carex leptalea*). Showy lady's slipper was previously identified in this area during the 2008 surveys of the Bridal Path Line.

Approximately 20 swamp honeysuckle individuals were located on the western edge of the Bridal Path Line corridor on the edge of the calcareous northern white cedar swamp. Associated species include northern white cedar, skunk currant (*Ribes glandulosum*), fowl manna grass, dwarf raspberry, naked miterwort (*Mitella nuda*), and large-leaved avens (*Geum macrophyllum*). Recent timber harvests have occurred on the west side of the Bridal Path Line

corridor adjacent to the swamp honeysuckle plants. Invasive species including common buckthorn (*Rhamnus cathartica*) and glossy buckthorn (*Frangula alnus*) occur near the population.

Lesser yellow water crowfoot was located in the northern portion of the survey area within an apparent historically excavated ditch within a scrub-shrub wetland. The population consisted of several hundred ramets. The associated species included broad-leaved cattail, bluejoint, and red-osier dogwood (*Swida sericea*).

The RTE surveys in 2008 also documented marsh valerian (*Valeriana uliginosa*) and white adder's-mouth (*Malaxis monophyllos*) near the showy lady's slipper and swamp honeysuckle occurrences. These species were not relocated during the 2014 field surveys. The seasonal timing of the 2014 field surveys would make detection of these two species difficult. Therefore, **follow-up field surveys during the growing season are warranted in this survey location.**

With the exception of lesser yellow water crowfoot, the other RTE species are located on the edge of the historically cleared Bridal Path Line corridor. The interior portion of the corridor contains a dense broad-leaved cattail colony and deep mucky soils that are periodically inundated. This interior portion does not contain suitable habitat for additional showy lady's-slipper, swamp honeysuckle, marsh valerian, or white adder's-mouth.

Lesser yellow water crowfoot in Survey Area 46. Stantec. October 9, 2014

To the south, the circumneutral northern white cedar fen transitions into an acidic black spruce and larch-dominated peatland wetland system. Characteristic bog species include Labrador tea, leatherleaf, few-flowered sedge (*Carex pauciflora*), cottonsedges (*Eriophorum* spp.), creeping spicy-wintergreen (*Gaultheria hispidula*), and boreal bog sedge. The historic clearing of the Bridal Path Line corridor remains evident through this bog area.

Survey Area 47

No RTE plants were located in Survey Area 47 during field surveys on October 9, 2014. The survey area is located along the banks and adjacent riparian forests of the Meduxnekeag River (Figure 50). The north side of the river abuts Porter Settlement Road and consists of road fill material, rip-rap, and weedy species. The south side of the river consists of a small area of a rich-mesic

hardwood forest dominated by sugar maple, hop-hornbeam, and black cherry (*Prunus serotina*) trees. Rich-mesic indicator species in the understory included zig-zag goldenrod and a few individuals of blue cohosh (*Caulophyllum thalictroides*). **Follow-up field surveys in the late spring or early summer growing season are recommended at this location based on the presence of rich-mesic species.**

Survey Area 48

No RTE plants were located in Survey Area 48 on October 9, 2014. The survey area consists of an even-aged forested wetland dominated by larch within the Bridal Path Line corridor (Figure 51). A maintained snowmobile trail extends along the Bridal Path Line corridor in this location. Areas of emergent wetland are located in the southern portion of the survey area and include large colonies of broad-leaved cattail as well as speckled alder. Additional species include bluejoint, river horsetail (*Equisetum fluviatile*), sensitive fern, tall white aster (*Doellingeria umbellata*), rough-stemmed goldenrod, and purple loosestrife (*Lythrum salicaria*). The survey area includes common habitat characteristics and lacks indicator species or other microhabitat conditions that would indicate a higher potential for RTE species. No further field surveys are recommended for this area.

Survey Area 49

No RTE plants were located in Survey Area 49 on October 9, 2014 (Figure 52). The majority of the survey area consists of an emergent and scrub-shrub wetland dominated by broad-leaved cattail with red-osier dogwood, balsam willow (*Salix pyrifolia*), long-beaked willow (*Salix bebbiana*), and northern white cedar shrubs and saplings. The density of broad-leaved cattail within the survey area indicates a low potential for RTE species within the wetland habitats.

Dense broad-leaved cattail in Bridal Path corridor in Survey Area 49. Stantec. October 9, 2014

Wild hound's-tongue (*Cynoglossum virginianum* ssp. *boreale*) was located within an upland area within this survey area during RTE surveys in 2008. Utilizing maps, sketches, and field forms from the 2008 surveys, this upland area was searched for wild hound's-tongue but did not relocate the population. **Follow-up field surveys during the appropriate growing season are recommended to further evaluate the potential occurrence of wild hound's-tongue at this location.**

Survey Area 50

No RTE plants were located in Survey Area 50 in October 9, 2014 (Figure 53). The southern and northern portion of the survey area consists of a forested seepage wetland bisected by the historically cleared Bridal Path Line corridor that is dominated by northern white cedar, balsam fir, white spruce (*Picea glauca*), and larch trees. Broad-leaved cattail dominates the open wetlands within the cleared portions of the Bridal Path Line corridor. The interior portion of the survey area consists of a mature northern white cedar swamp. Limited indicators of circumneutral habitat conditions were observed during the field surveys. Alder-leaved buckthorn (*Rhamnus alnifolia*) occurred sparingly within the mature northern white cedar swamp portion of the survey area. This species is often associated with RTE species in calcareous northern white cedar swamps. **Follow-up field surveys are recommended during the appropriate growing seasons within the mature northern white cedar swamp interior portion of the survey area.**

Survey Area 51

No RTE plants were located in Survey Area 51 in October 9, 2014 (Figure 54). Survey Area 51 consists of an extensive wetland system including areas of open and forested peatland communities, graminoid fens, and beaver impoundments. The south portion of the survey area consists of an open graminoid fen along a slow-flowing stream within the historically cleared Bridal Path Line corridor dominated by tussock sedge (*Carex stricta*) and bluejoint.

Open peatland in Bridal Path corridor in Survey Area 51. Stantec. October 9, 2014

Further to the north, forested wetland systems dominated by northern white cedar, black spruce, and balsam fir trees occur within the survey corridor. Understory vegetation consists of tussock sedge, bluejoint, rough-stemmed goldenrod, crested wood fern (*Dryopteris cristata*), cinnamon fern, smooth goldenrod (*Solidago gigantea*), and purple-stemmed aster (*Symphyotrichum puniceum*). No indicators of circumneutral wetland conditions were observed suggesting a low potential for RTE plant species.

The central portion of the survey area is dominated by an acidic peatland community with characteristic bog species including black spruce, rhodora (*Rhododendron canadense*),

Labrador-tea, tawny cottonsedge, cinnamon fern, few-flowered sedge, and three-leaved false Solomon's-seal (*Maianthemum trifolium*).

The northern portion of the survey area consists of an extensive northern white cedar swamp. Portions of the wetland system have been flooded by beavers recently which have created dieback of northern white cedar trees and shrubs. Yellow-green sedge (*Carex flava*) is a dominant understory species within this area and is occasionally associated with RTE plants with affinities for circumneutral wetland habitats. Therefore, **follow-up field surveys during the appropriate growing season are recommended in the northern portion of the survey area.**

Survey Area 52

No RTE plants were located in Survey Area 52 in October 8, 2014. The survey area consists of a beaver impounded wetland within the historically cleared Bridal Path Line corridor (Figure 55). The wetland is dominated by woolgrass, bluejoint, and tall cottonsedge (*Eriophorum angustifolium*). Based on the absence of RTE plant observations during the 2014 surveys, no additional field surveys are recommended at this location.

Survey Area 53

No RTE plants were located in Survey Area 53 in October 8, 2014. The survey area consists of a regenerating forested wetland within the Bridal Path Line corridor (Figure 55). Common species are located throughout the wetland including northern white cedar, larch, meadowsweet, speckled alder, balsam willow, bluejoint, marsh fern (*Thelypteris palustris*), and broad-leaved cattail. Beaver activity has inundated portions of the wetland. No additional field surveys are recommended at this location due to the density of common plant species and absence of circumneutral enrichment indicators.

Survey Area 54

No RTE plants were located in Survey Area 54 in October 8, 2014. The survey area consists of an open emergent graminoid marsh within the historically cleared Bridal Path Line corridor (Figure 56). The wetland is dominated by bluejoint, tussock sedge, beaked sedge (*Carex utriculata*), woolgrass, three-petaled bedstraw (*Galium trifidum*), sweetgale, rattlesnake manna grass (*Glyceria canadensis*), meadowsweet, leatherleaf, and speckled alder. No additional field surveys are recommended at this location due to the density of common plant species and absence of circumneutral enrichment indicators.

Survey Area 55

No RTE plants were located in Survey Area 55 in October 8, 2014. The survey area consists of riparian habitats along the East Branch of the Mattawamkeag River (Figure 57). An open emergent floodplain wetland is located on the south shore of the river. The wetland is dominated by bluejoint, spotted Joe-Pye weed, tall white-aster, and reed canary grass (*Phalaris arundinacea*). A forested wetland dominated by an even-aged stand of larch is present north

of the river. Based on the community types and absence of RTE plant indicator species, no further field surveys are recommended in these locations.

A small area of rich-mesic hardwood forests is present at the base of a slope and in the high terrace floodplain on the south side of the river. Rich-mesic indicator species including maidenhair fern (*Adiantum pedatum*) and blue cohosh are present in this location. **Follow-up field surveys in the late spring or early summer growing season are recommended at this location.**

Survey Area 56

No RTE plants were located in Survey Area 56 in October 8, 2014 (Figure 58). The survey area consists of a northern white cedar-dominated fen. Portions of the wetland have been harvested for timber and historically cleared within the Bridal Path Line corridor. Dominant species include northern white cedar, balsam willow, larch, boreal bog sedge, marsh fern, spotted Joe-Pye weed, tall white-aster, broad-leaved cattail, three-leaved false Solomon's-seal, hoary sedge (*Carex canescens*), bluejoint, and Billing's sedge (*Carex billingsii*). Alder-leaved buckthorn is occasional along the edge of the Bridal Path Line corridor. Field surveys in 2008 of the Bridal Path Line documented showy lady's slipper in this wetland area. However, the occurrence was not relocated in 2014. **Follow-up field surveys during the appropriate growing season are recommended in this area due to the presence of circumneutral indicator species and past documentation of showy lady's-slipper.**

Northern white cedar fen in Bridal Path corridor in Survey Area 56. Stantec. October 8, 2014

Survey Area 57

No RTE plants were located in Survey Area 57 in October 8, 2014. Survey Area 57 is a small northern white cedar swamp that is regenerating from past timber clearing in the Bridal Path Line corridor (Figure 59). Broad-leaved cattail is dense throughout much of the wetland within the Bridal Path Line corridor. Additional species include speckled alder, black ash, balsam willow, mountain honeysuckle (*Lonicera villosa*), river horsetail, dwarf raspberry, cinnamon fern, crested wood fern, and marsh fern. The eastern edge of the open Bridal Path Line corridor contains conditions potentially suitable for RTE plants such as showy lady's slipper. A few individuals of chestnut sedge (*Carex castanea*) were located in this area. This species is often located with RTE plant species characteristic of circumneutral northern white cedar swamps.

The survey area is close to Survey Area 56 where showy lady's-slipper was previously documented in 2008. Therefore, **follow-up field surveys are recommended during the appropriate growing season.**

Survey Area 58

No RTE plants were located in Survey Area 58 in October 8, 2014. The survey area is located in the riparian area of the West Branch Mattawamkeag River (Figure 60). The shoreline is scoured and is dominated by speckled alder, royal fern, carrion-flower (*Smilax herbacea*), bluejoint, rough-stemmed goldenrod, and lesser bladder sedge (*Carex vesicaria*).

A large northern white cedar swamp is located to the north of the survey area that exhibits indications of calcareous enrichment and could potentially support RTE plant species. The wetland has been disturbed from past timber harvests as well as historic Bridal Path Line clearing activities. **Follow-up field surveys are recommended in this wetland area during the appropriate growing season.**

Survey Area 59

No RTE plants were located in Survey Area 59 in October 8, 2014. The survey area consists of a scrub shrub wetland dominated by speckled alder along a slow-flowing tributary stream to Alder Brook (Figure 61). Additional plant species include meadowsweet, withe-rod, black elderberry (*Sambucus nigra* ssp. *canadensis*), tall white-aster, bluejoint, red raspberry, rough-stemmed goldenrod, virgin's-bower, and crested wood fern. The wetland is part of an exemplary Streamshore Ecosystem as identified by MNAP with known populations of rare plants located in a circumneutral northern white cedar swamp to the west of the proposed corridor. No circumneutral northern white cedar swamp habitat conditions were observed within the proposed Bridal Path Line corridor.

Subsequent to the October 2014 field surveys, the alignment was modified south of the stream to include an area not included in the initial RTE plant survey. Therefore, **follow-up field surveys are recommended in this additional area during the appropriate growing season.**

4.0 NORTH LINE DESKTOP ANALYSIS

As noted above, the proposed North Line alignment was reconfigured and shifted several miles west of the originally surveyed corridor subsequent to the 2014 RTE plant field surveys. A desktop analysis was conducted to identify habitat locations along the new alignment that could potentially support RTE plant species. These areas are recommended for field survey during the growing season.

Based on the desktop analysis, a total of 14 locations were identified as potentially supporting habitat conditions for RTE plant species (Figures 33-45). These areas include riparian habitats

along Meduxnekeag River and other smaller streams, forested wetlands dominated by northern white cedar, and northern hardwood forests along moderate slopes with rich-mesic habitat indicators.

5.0 SUMMARY

In summary, field surveys of the Number Nine Wind Farm in October 2014 were targeted in areas determined to have a potentially higher likelihood of supporting RTE plant species based on a desktop analysis of existing field data, past RTE surveys, landforms, regional geology and hydrology, and past disturbances. Field surveys were conducted in 31 areas within the Turbine Area, including access roads; 2 areas along the current North Line alignment; and 14 areas along the Bridal Path Line alignment.

A total of four rare plant populations were located. These include lesser yellow water crowfoot in Survey Area 43 within the proposed North Line alignment as well as show lady's slipper, swamp honeysuckle, and lesser yellow water crowfoot in Survey Area 46 within the proposed Bridal Path Line alignment.

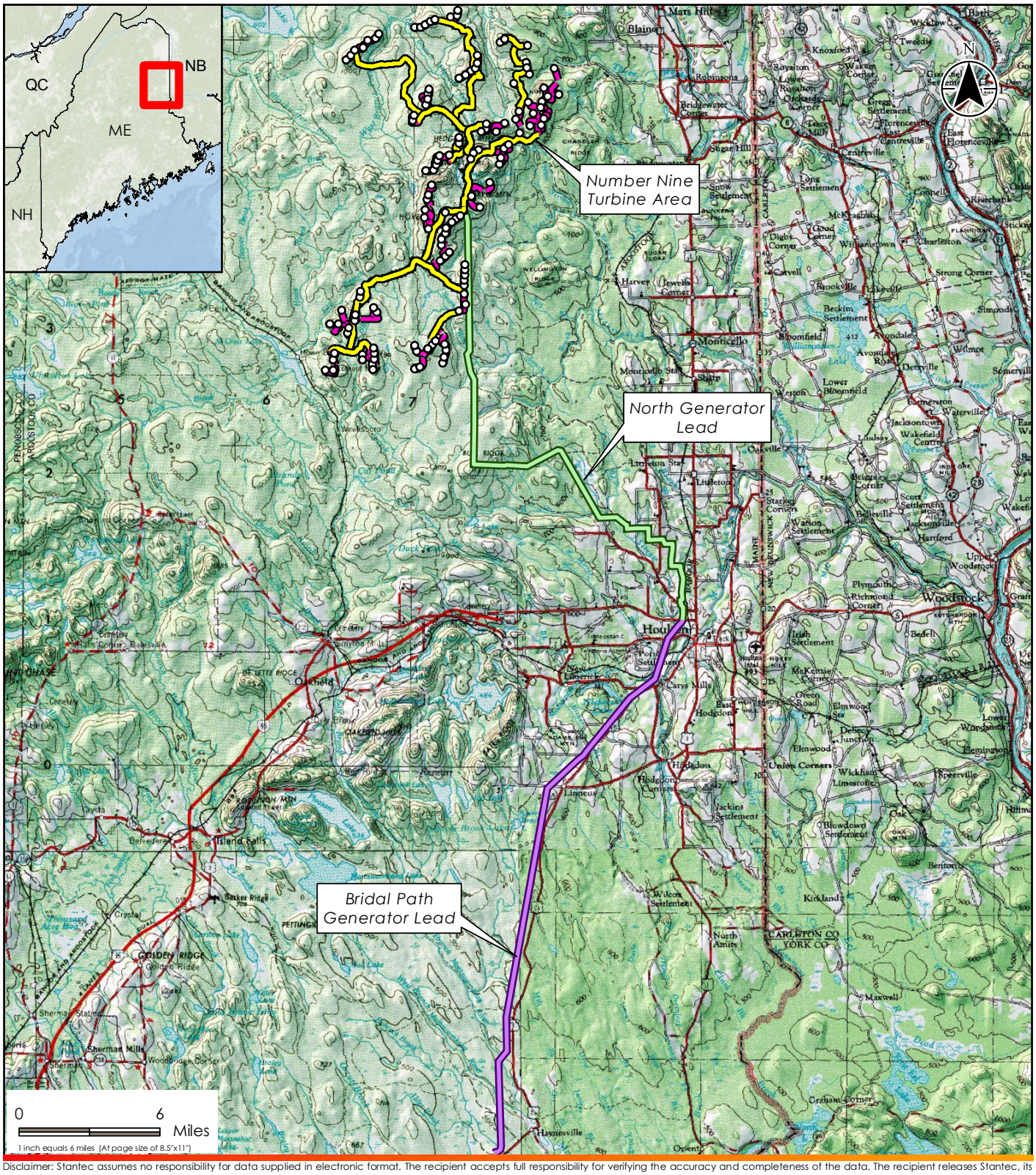
Based on existing habitat conditions observed during the October 2014 field surveys, follow-up field surveys are recommended during the growing season (e.g., late spring through mid-summer) in 9 areas in the Turbine Area and 9 areas along the Bridal Path Line if Project impacts are proposed within these areas.

Subsequent to the October 2014 field surveys, portions of the proposed North Line alignment were shifted several miles to the west. Based on a desktop analysis, 14 additional potential survey locations (Survey Areas 61 through 74) were identified along the new alignment. Field surveys are recommended for these areas during the growing season.

In addition, the proposed North Line alignment through Survey Areas 44 and the proposed Bridal Path Line alignment through Survey Area 59 were modified subsequent to the field surveys. Additional field surveys are recommended in these locations within the new alignment area adjacent to the previously surveyed areas. Field surveys are also recommended in Survey Areas 42 and 45 along the proposed North Line alignment and Survey Area 60 in the Turbine Area as land owner permission was not granted at the time of the October 2014 field surveys.

In summary, follow-up field surveys are recommended at a total of 37 locations across the three segments of the Project.

Figures



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Legend

- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Bridal Path Generator Lead (3/16/15)

Client/Project

EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.

1

Title

Site Locus Map

4/8/2015

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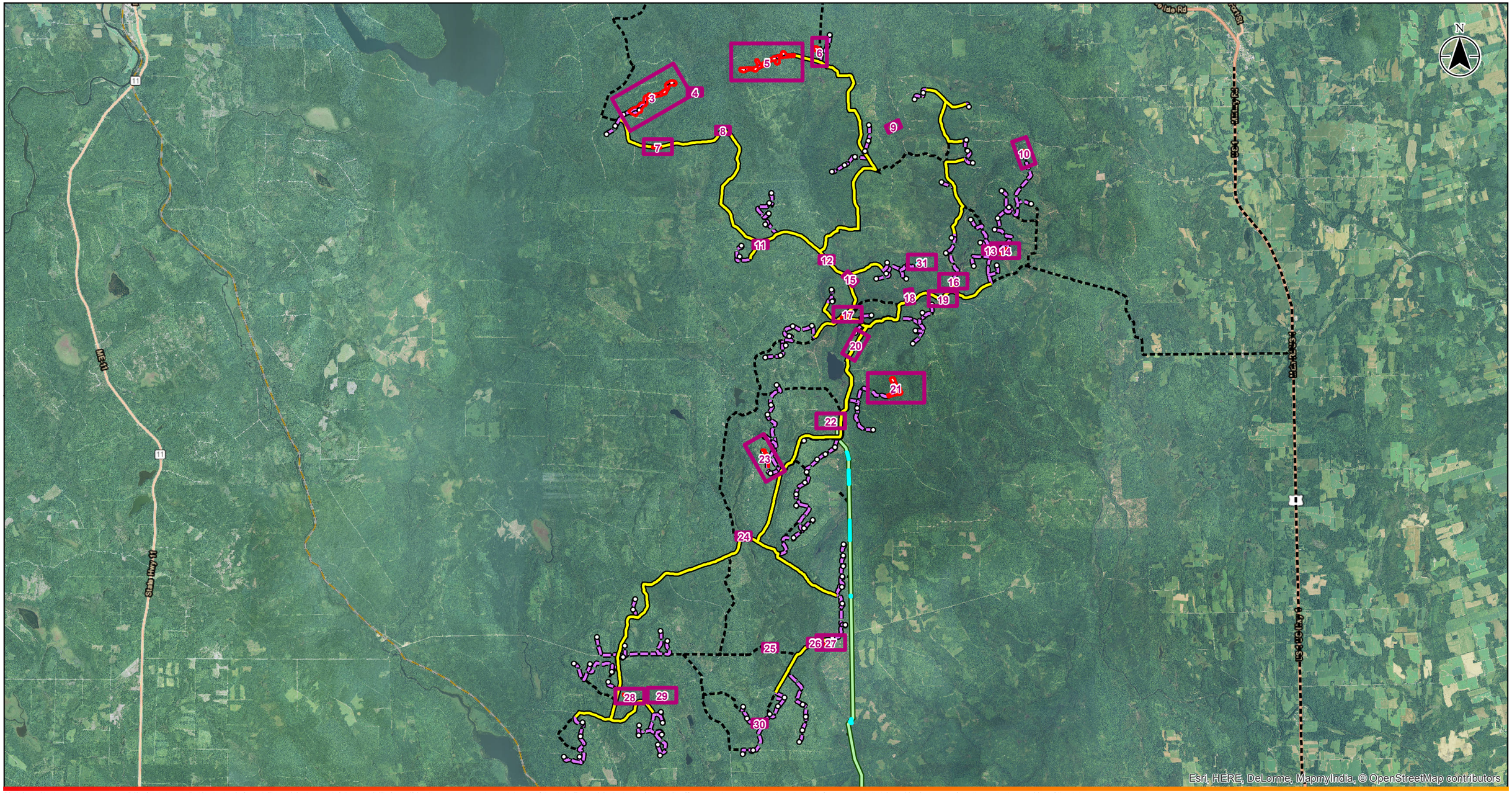
Reviewed by MPA on 2014-12-18

00919_01_Locus.mxd



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00919_02_Summit_RTE_Plant_Survey_Areas.mxd

Legend

- Turbine Layout (4/3/15)
- RTE Survey Area
- RTE Desktop Analysis Survey Area
- Map Extent
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Access Road (4/3/15)

0 2 Miles
1 inch = 2 miles (At page size of 11"x17")

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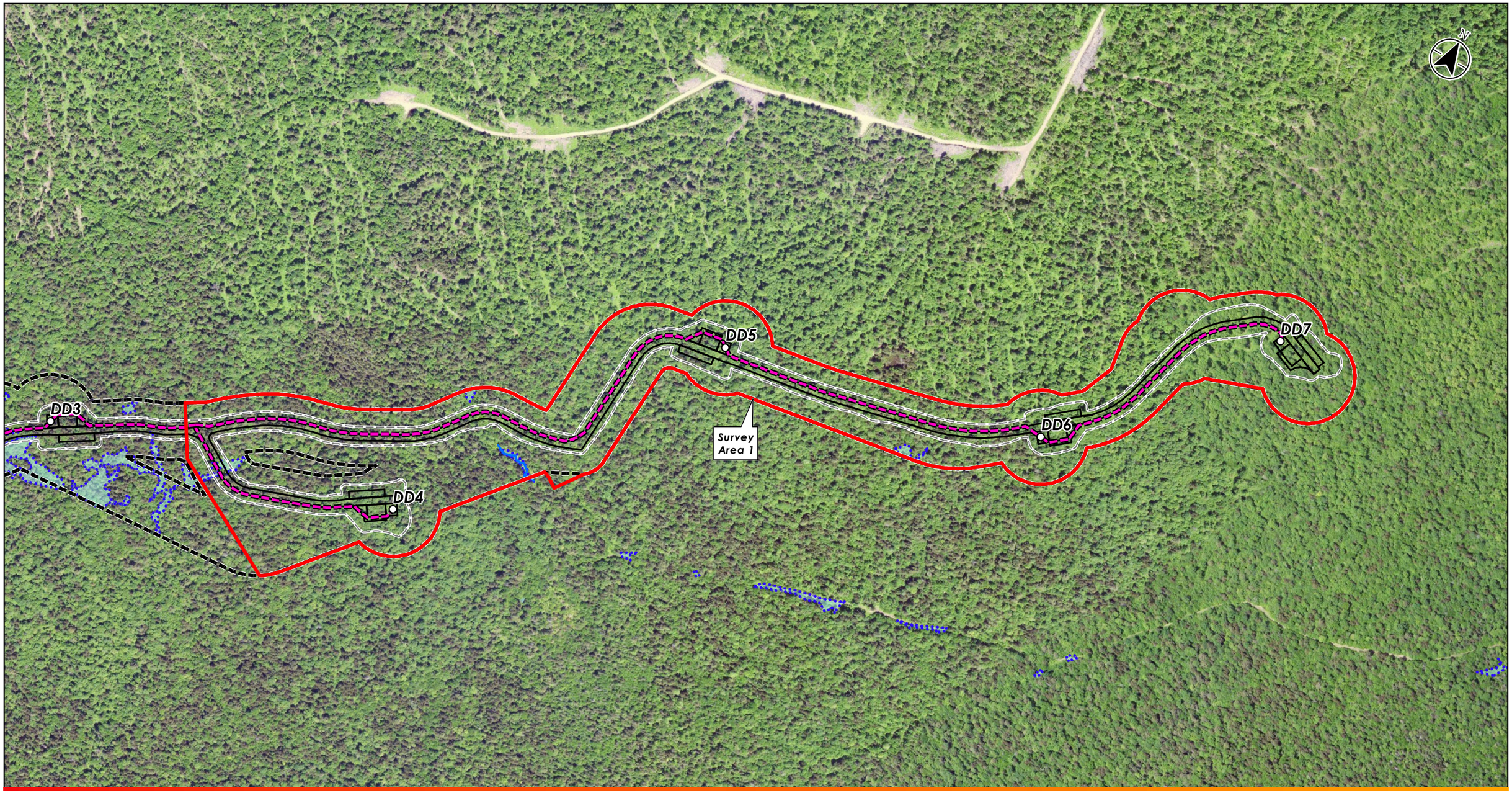
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
2

Title
Turbine Area
RTE Plant Survey Areas Overview

5/5/2015



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00919_03_Summit_RTE_Plant_MapBk.mxd

Legend

- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 500 Feet
1 inch = 500 feet (At page size of 11"x17")

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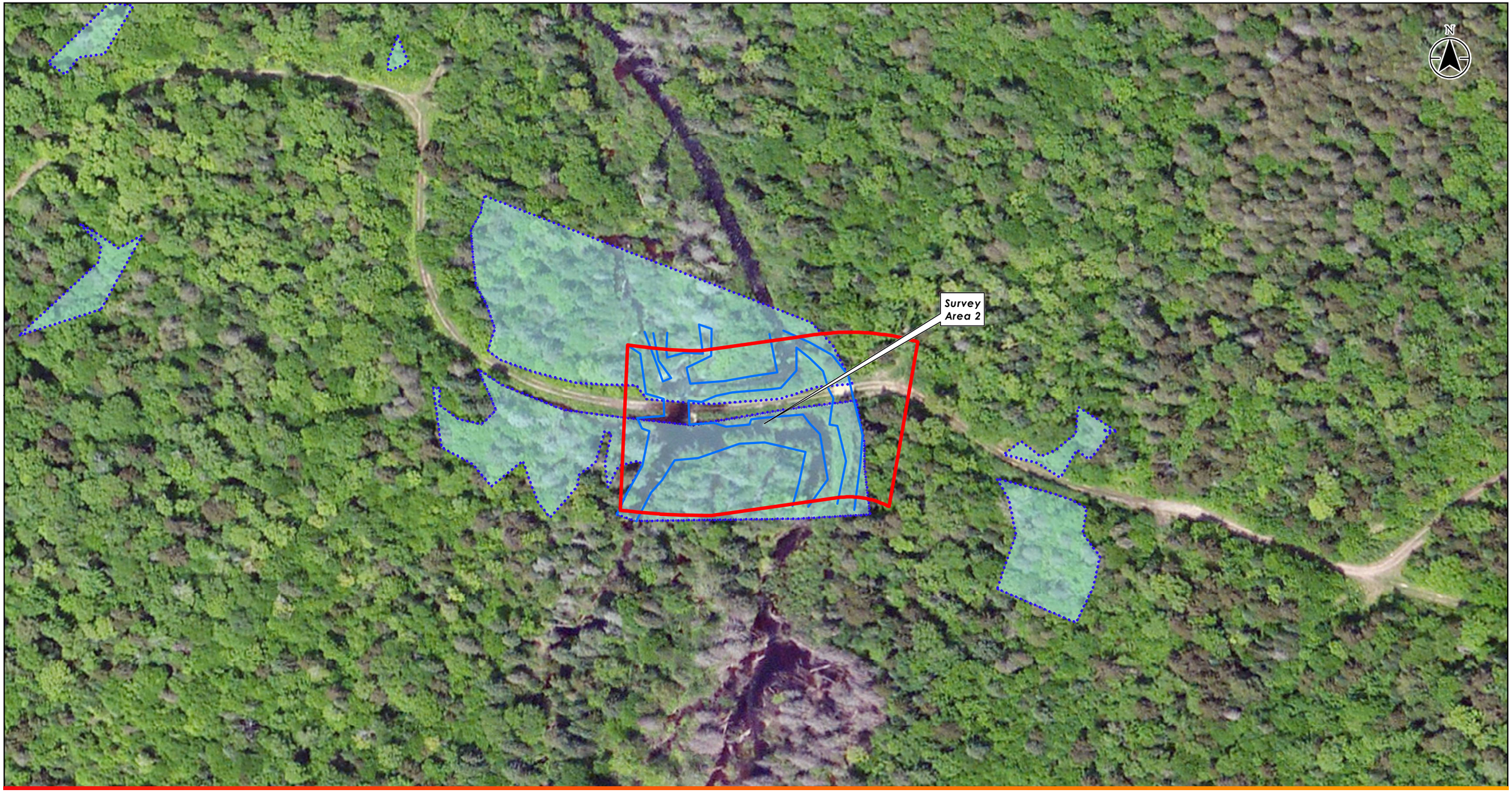
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
3

Title
Turbine Area
RTE Plant Survey Areas

4/8/2015



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Legend

- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

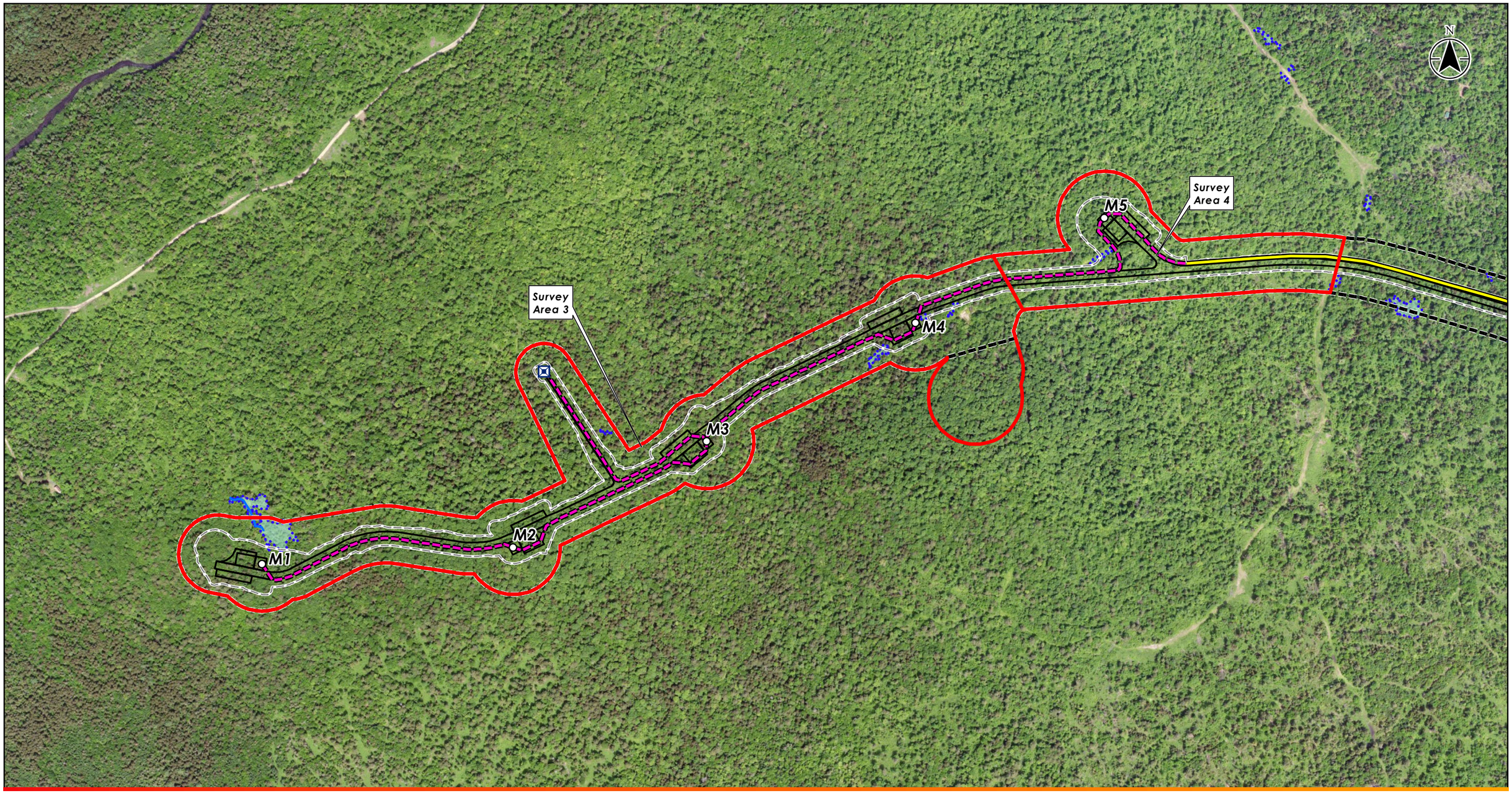
0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
4

Title
Turbine Area
RTE Plant Survey Areas

4/8/2015



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Legend

- Turbine Layout (4/3/15)
- MET Tower (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 500 Feet
1 inch = 500 feet (At page size of 11"x17")

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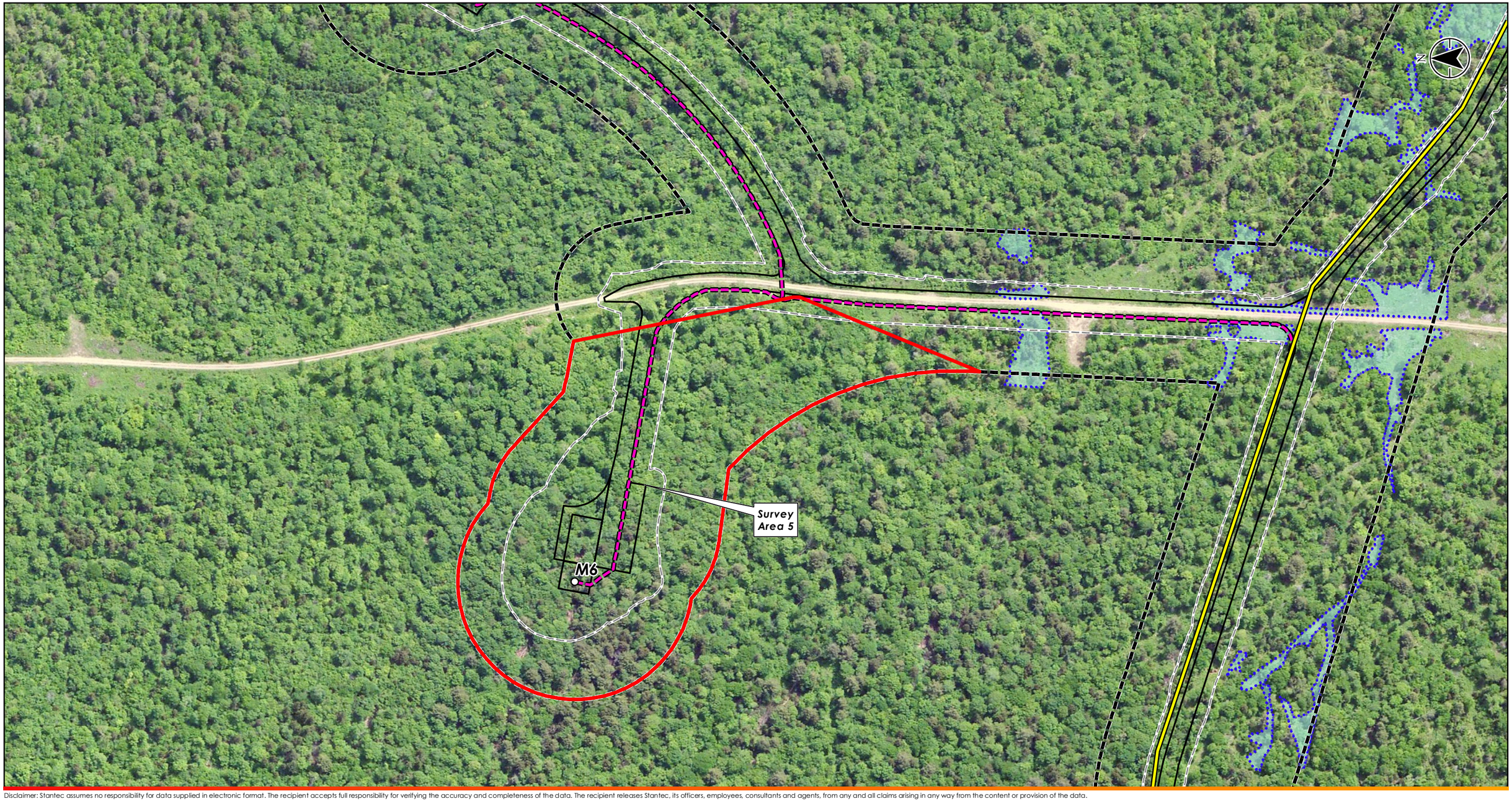
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
5

Title
Turbine Area
RTE Plant Survey Areas

4/8/2015



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Legend

- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

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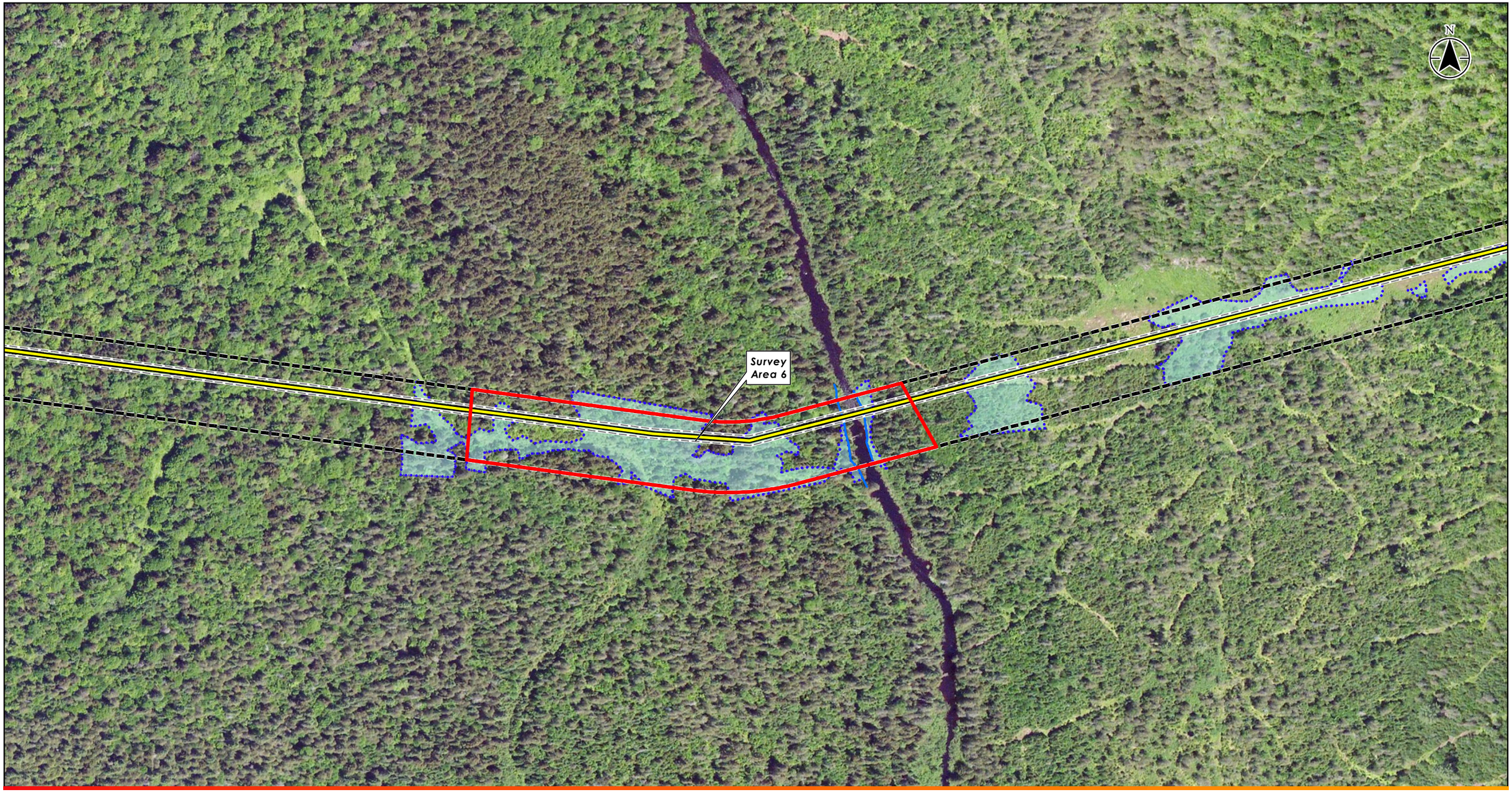
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
6

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

- Overhead Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 200 Feet
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Figure No.
7

Title
Turbine Area
RTE Plant Survey Areas
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Legend

- Overhead Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

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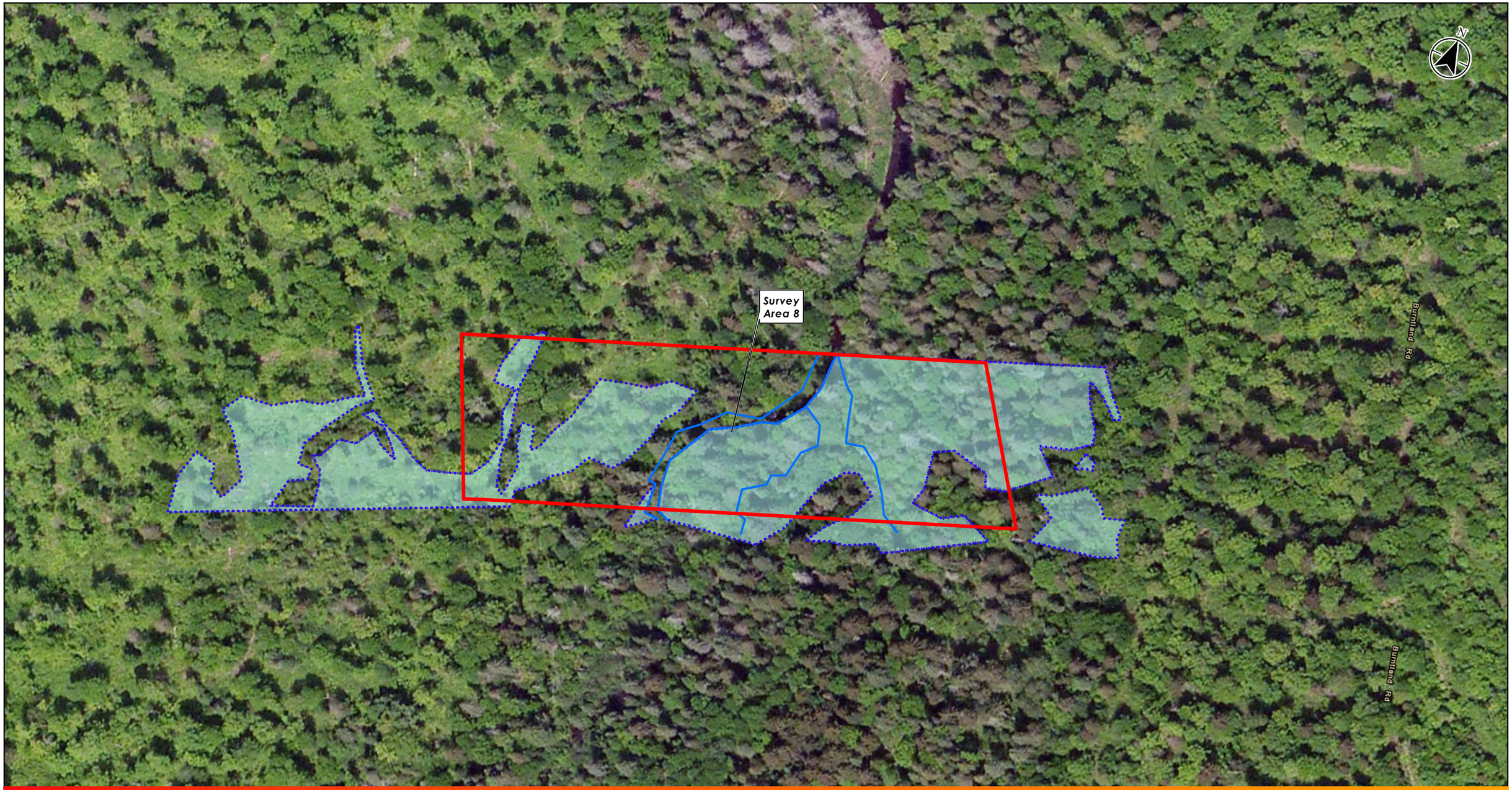
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
8

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 100 Feet
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Figure No.
9

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015

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Legend

- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

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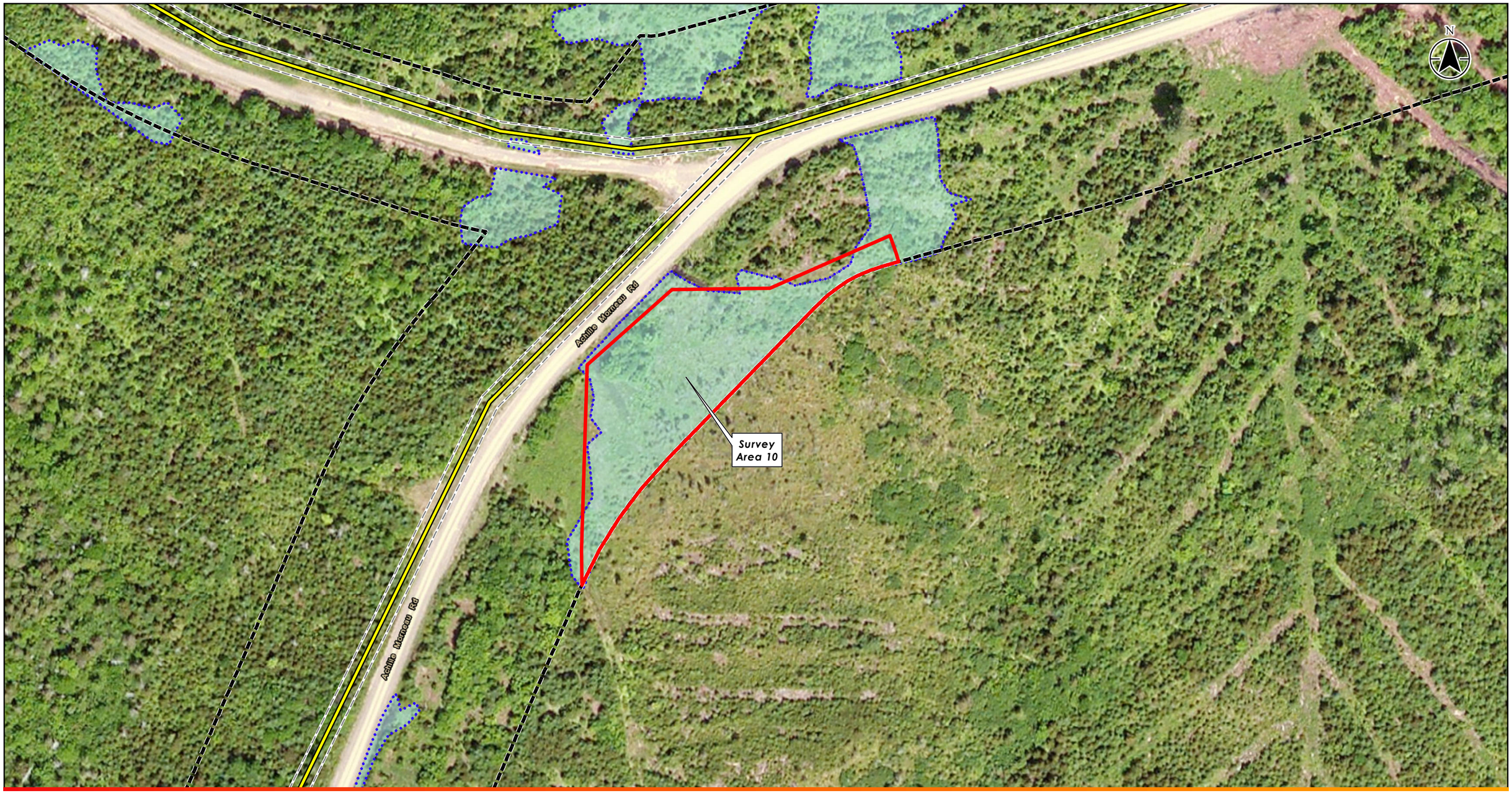
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
10

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

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0 100 Feet
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Figure No.
11

Title
Turbine Area
RTE Plant Survey Areas

4/8/2015

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Legend

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0 100 Feet
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Figure No.
12

Title
Turbine Area
RTE Plant Survey Areas
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Legend

- Underground Collector (4/3/15)
- Limit of Disturbance
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- RTE Field Survey Area

0 100 Feet
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Figure No.
13

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015

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Legend

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- Delineated Wetland
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0 200 Feet
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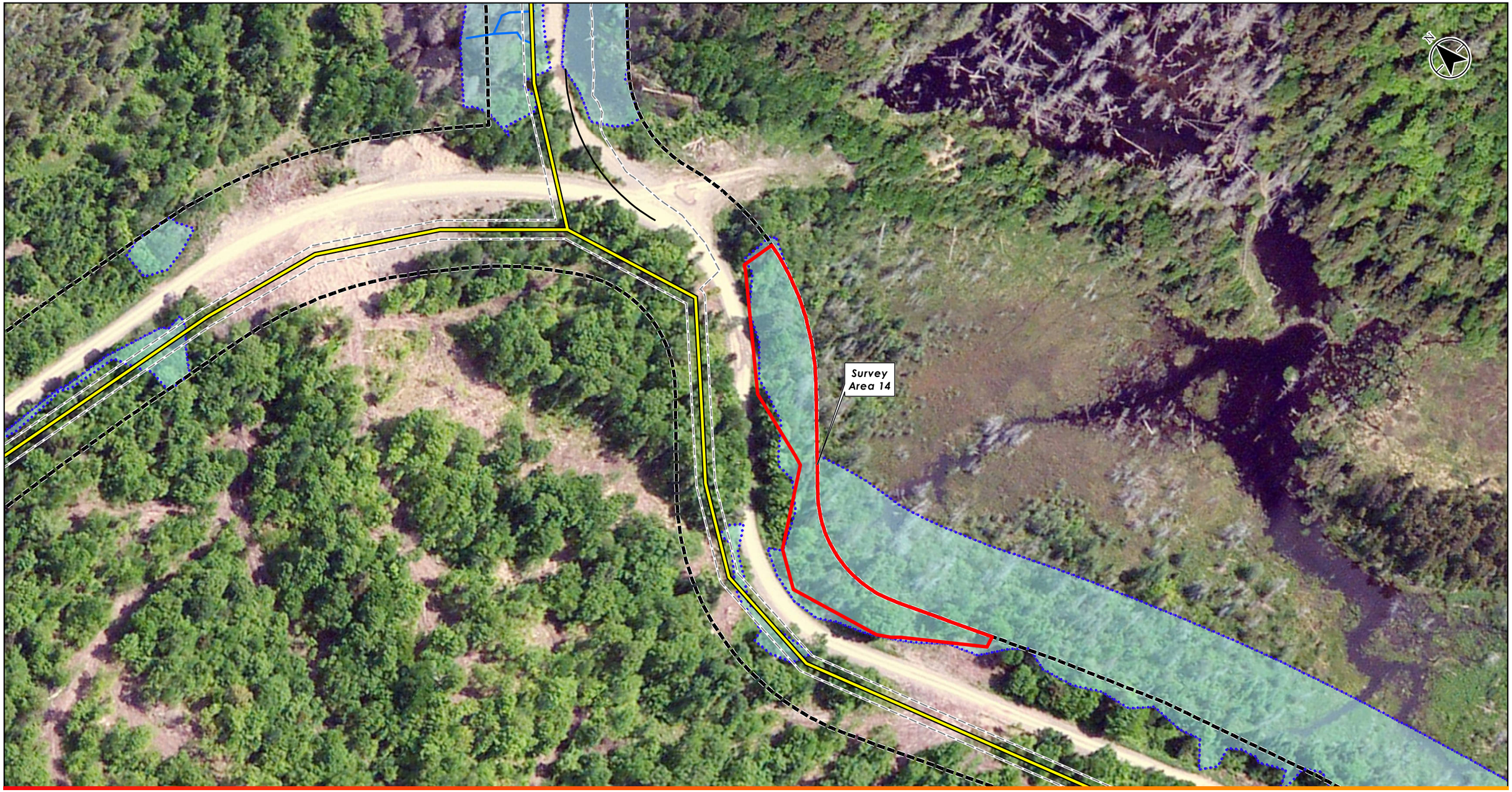
Figure No.
14

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

- Overhead Collector (4/3/15)
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- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

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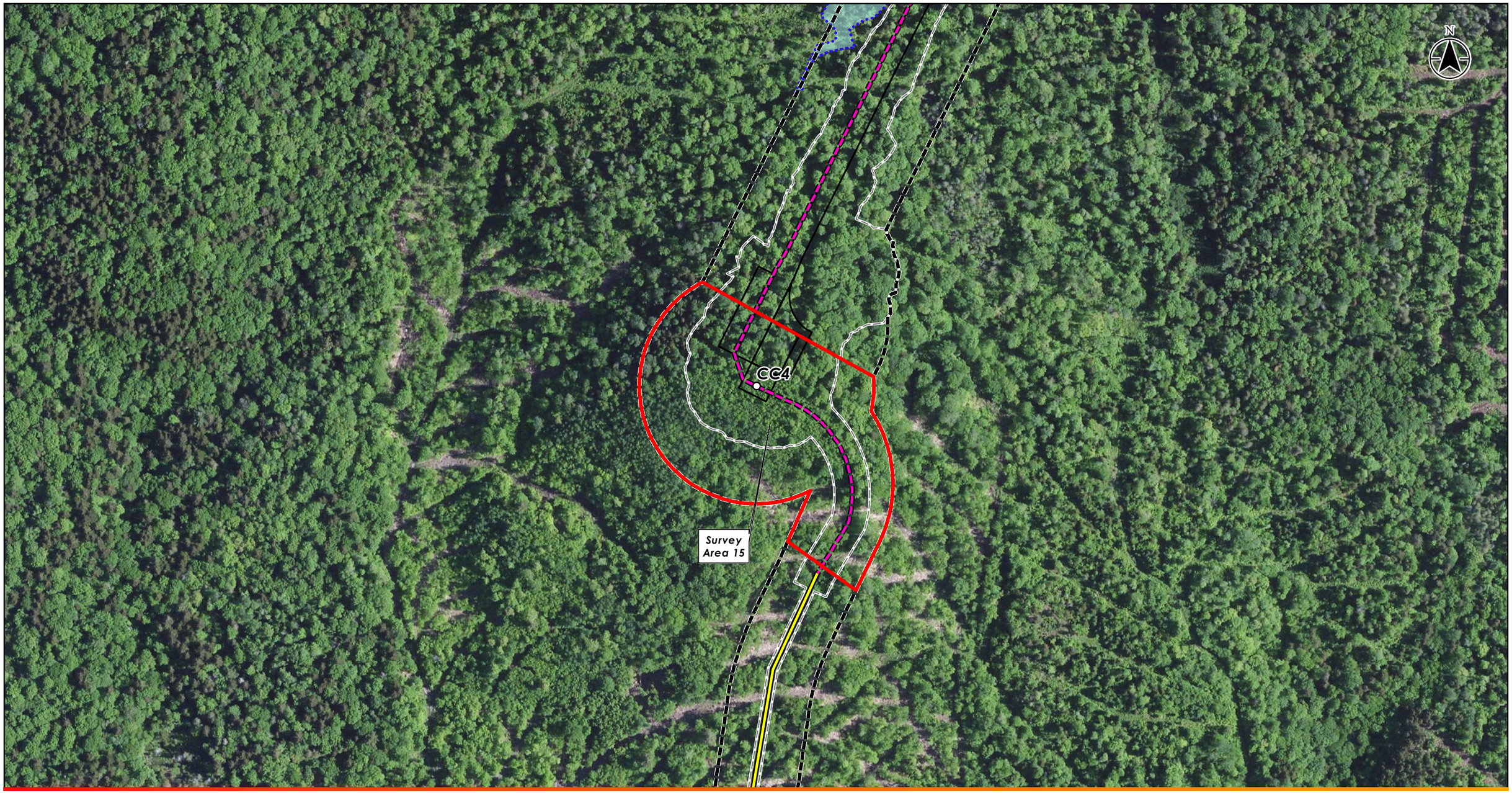
Figure No.
15

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

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0 200 Feet
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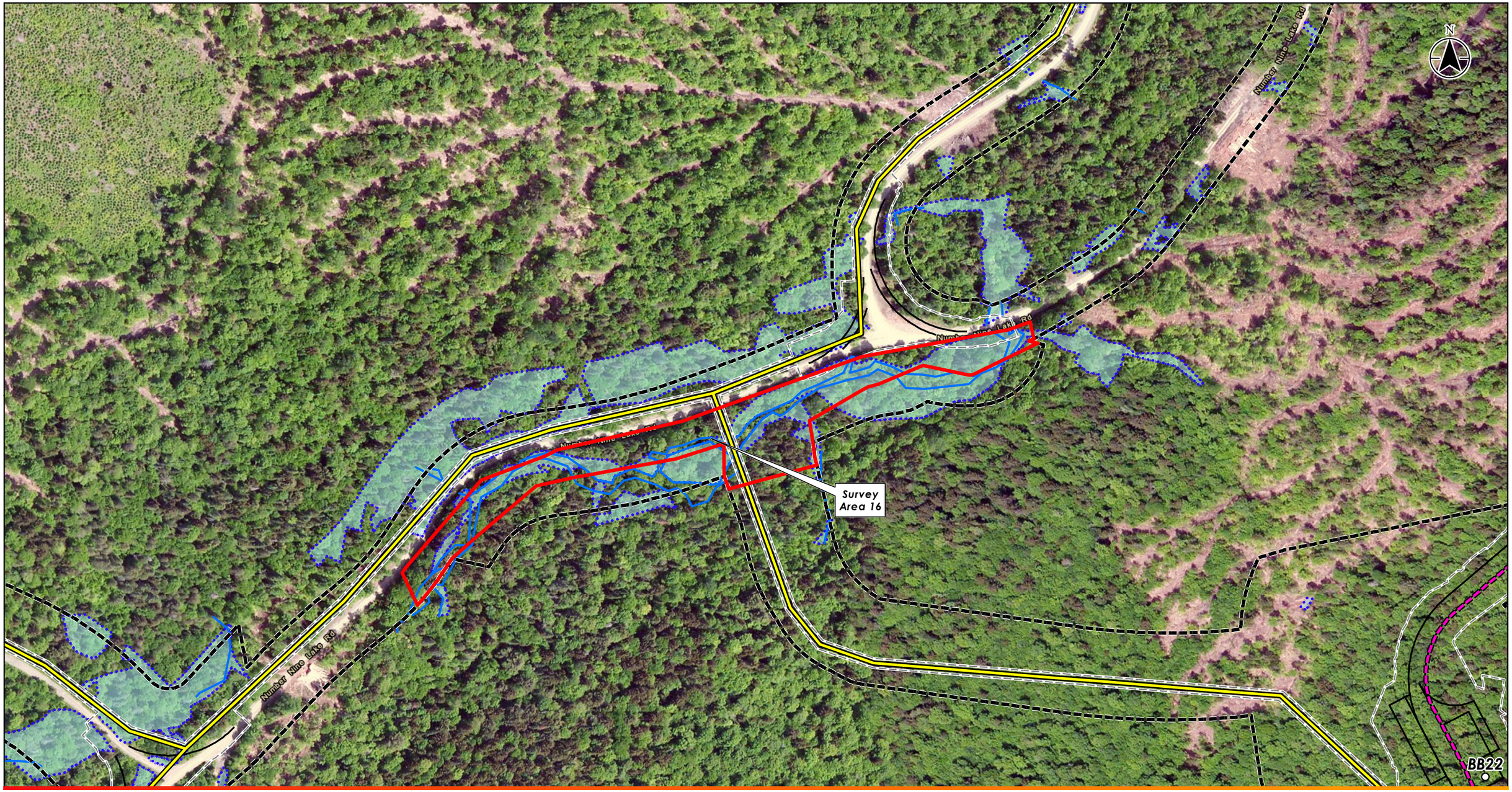
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
16

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 200 Feet
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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
17

Title
Turbine Area
RTE Plant Survey Areas

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Legend

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- Limit of Disturbance
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- Delineated Wetland
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- RTE Field Survey Area

0 100 Feet
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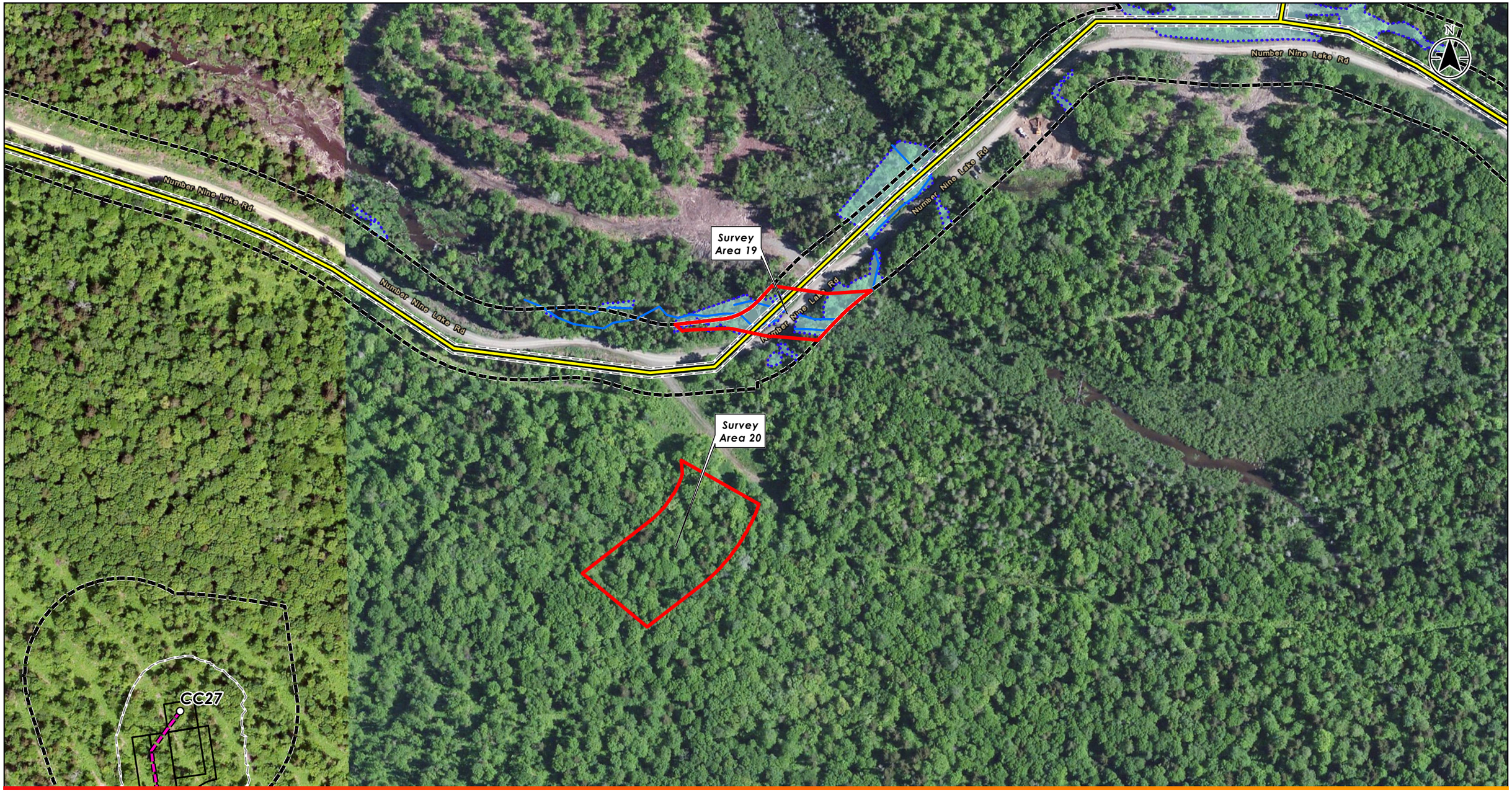
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
18

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

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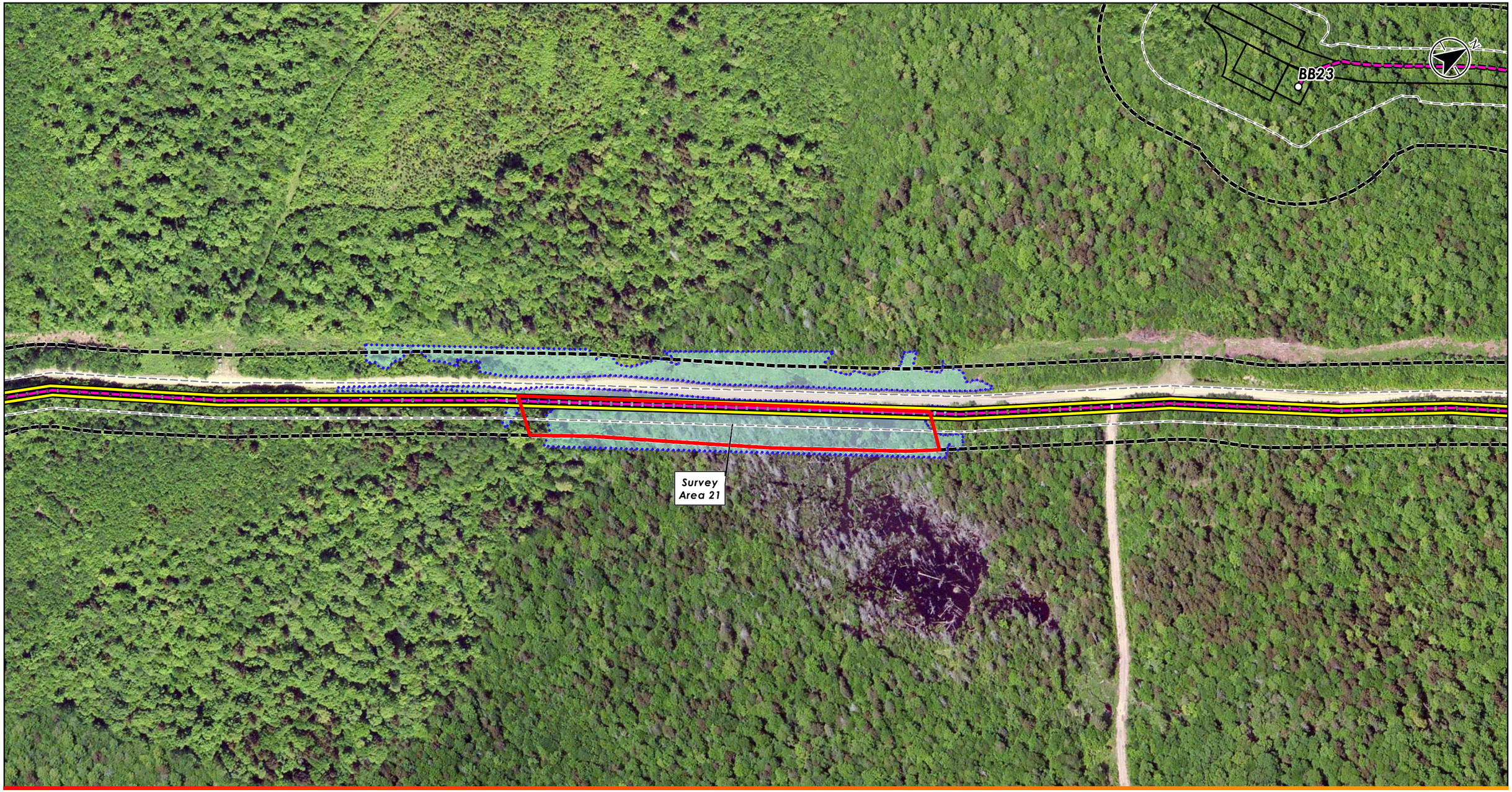
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
19

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Client/Project
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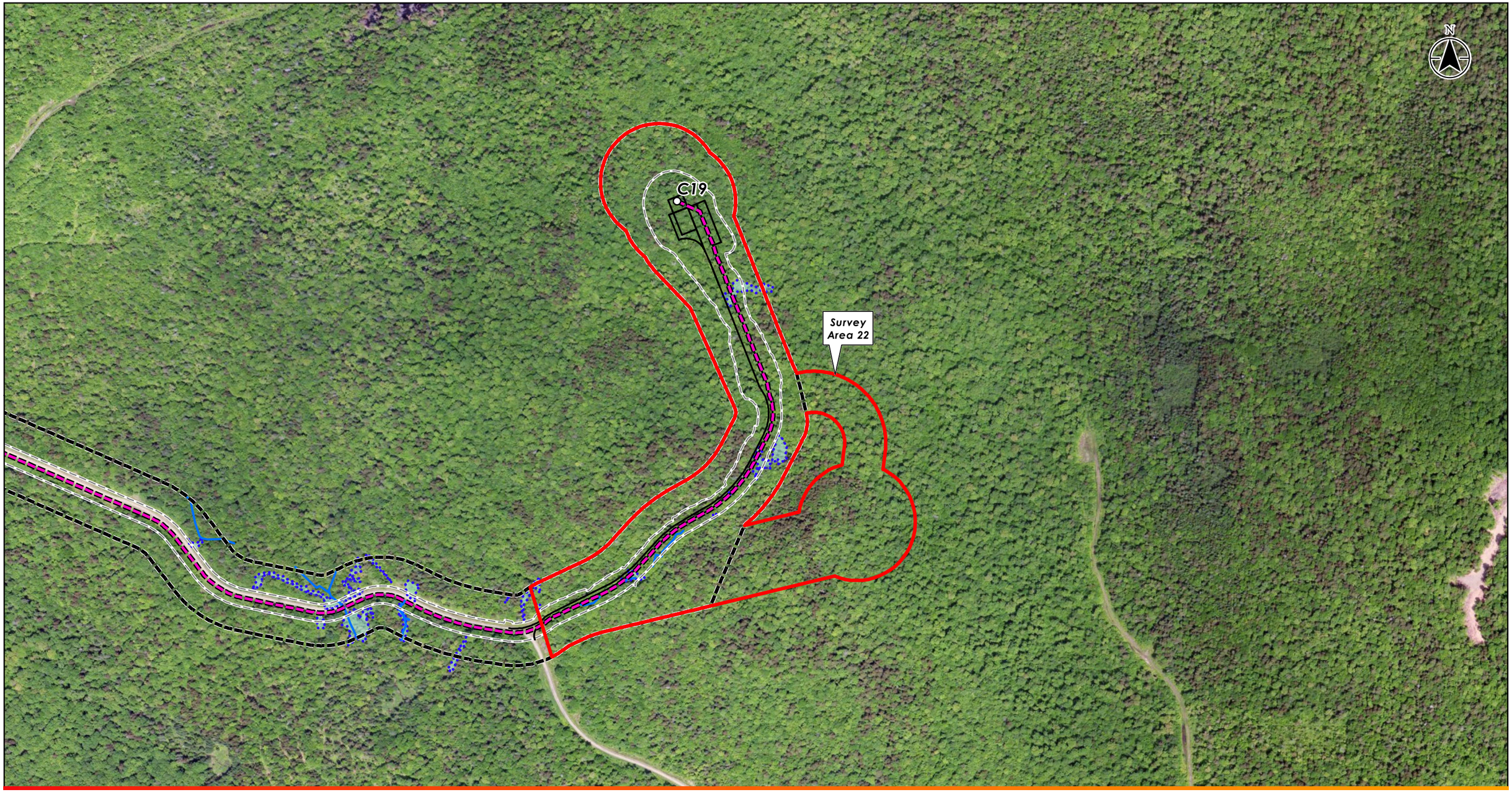
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
20

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Phone (207) 729-1199

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Reviewed by MPA on 2014-12-18

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Legend

- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

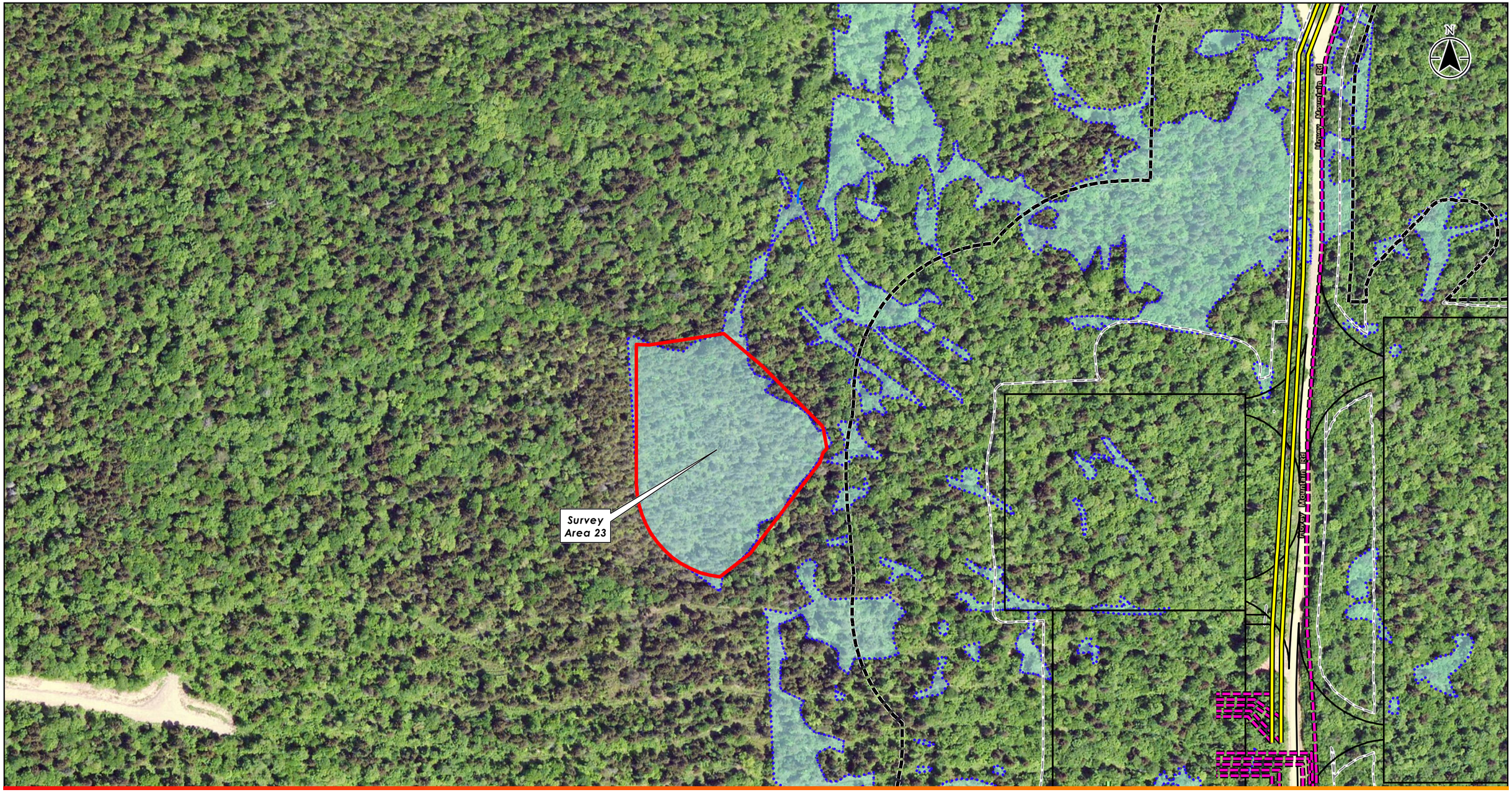
0 400 Feet
1 inch = 400 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
21

Title
Turbine Area
RTE Plant Survey Areas

4/8/2015



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Legend

- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
22

Title
Turbine Area
RTE Plant Survey Areas

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Legend

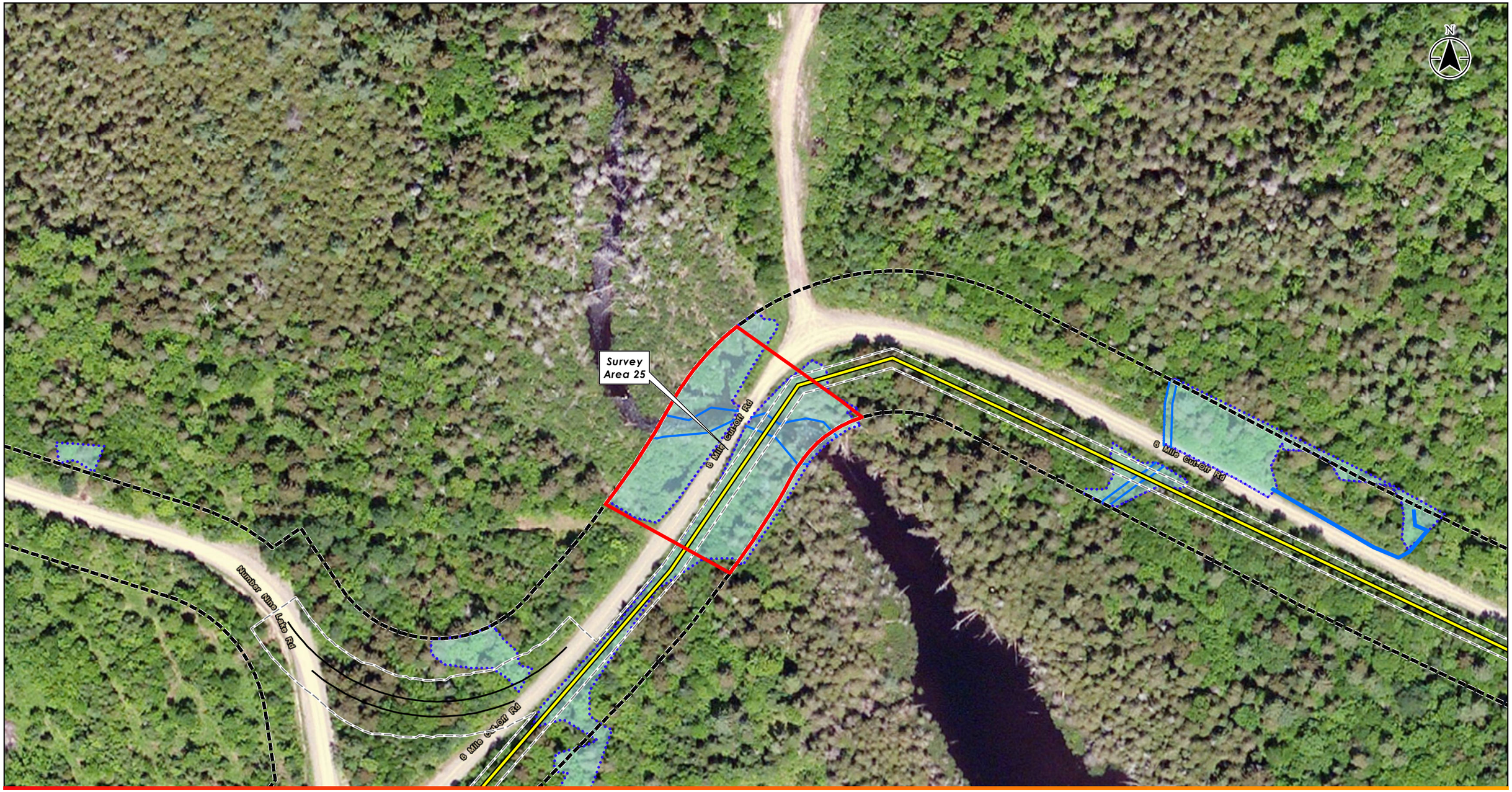
- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
23

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

- Overhead Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

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Figure No.
24

Title
Turbine Area
RTE Plant Survey Areas

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Legend

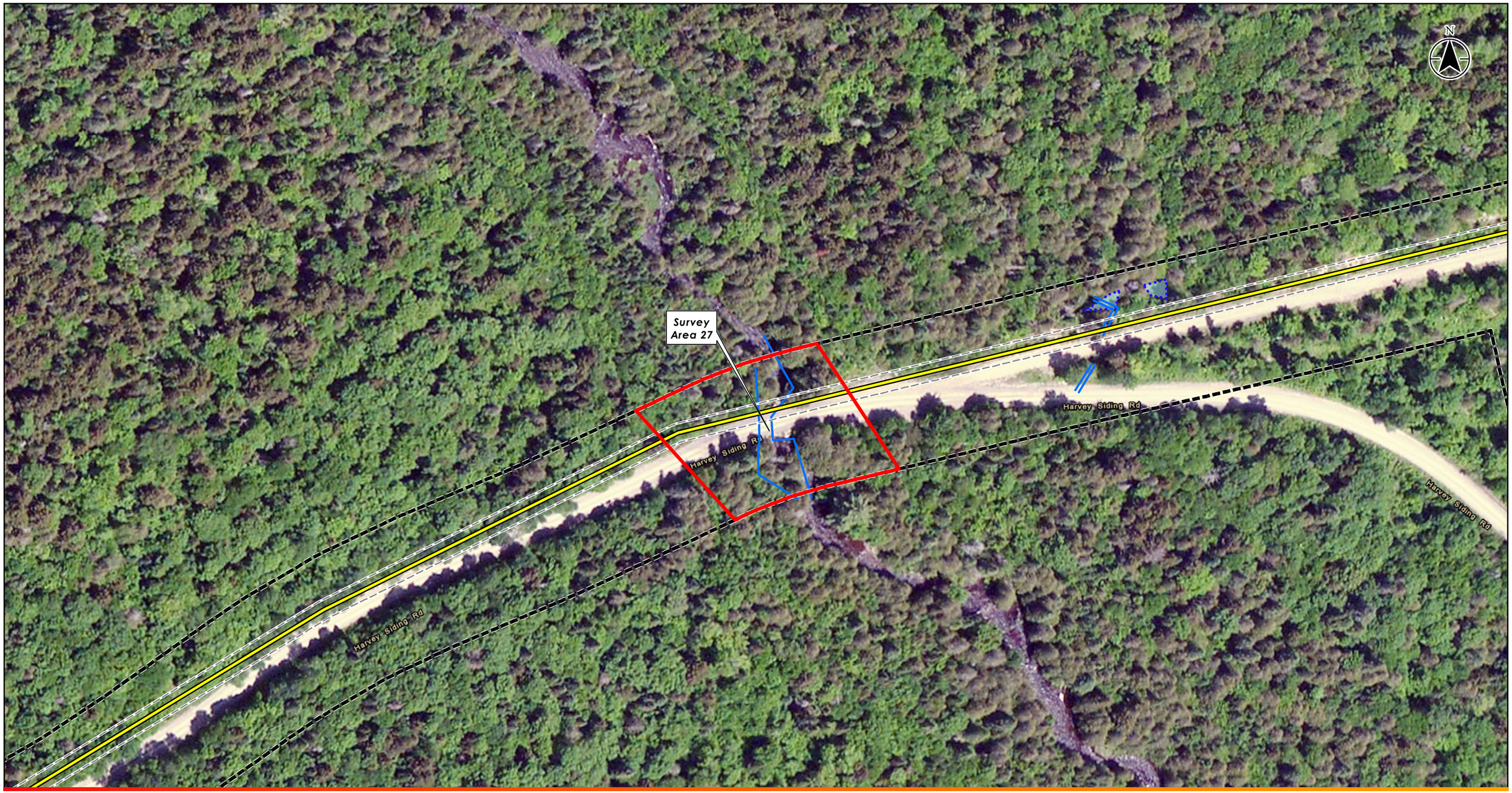
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
25

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

- Overhead Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
26

Title
Turbine Area
RTE Plant Survey Areas
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Legend

- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

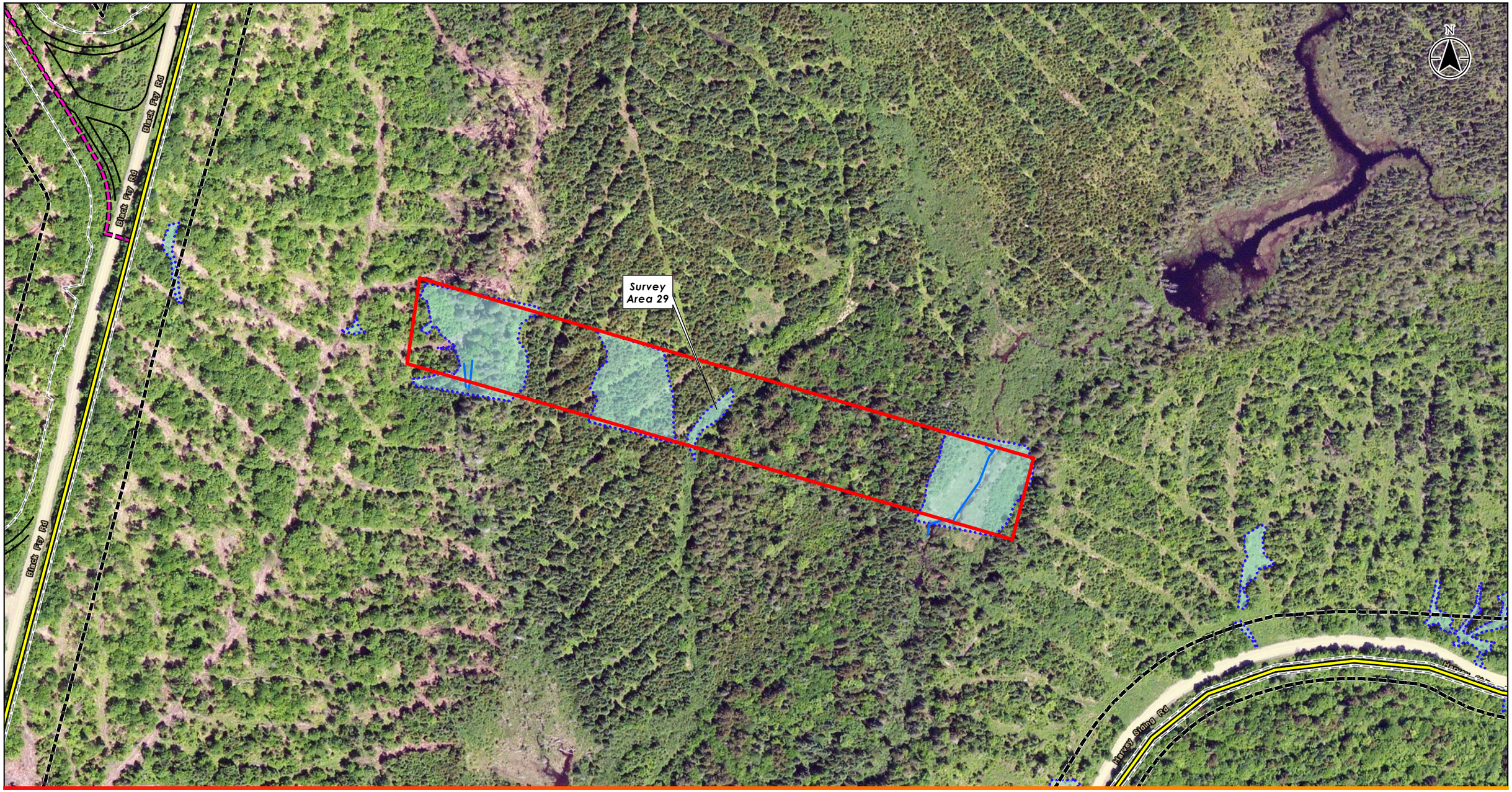
0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
27

Title
Turbine Area
RTE Plant Survey Areas

4/8/2015



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Legend

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- Underground Collector (4/3/15)
- Limit of Disturbance
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- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 200 Feet
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Client/Project
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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
28

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015

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Legend

- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

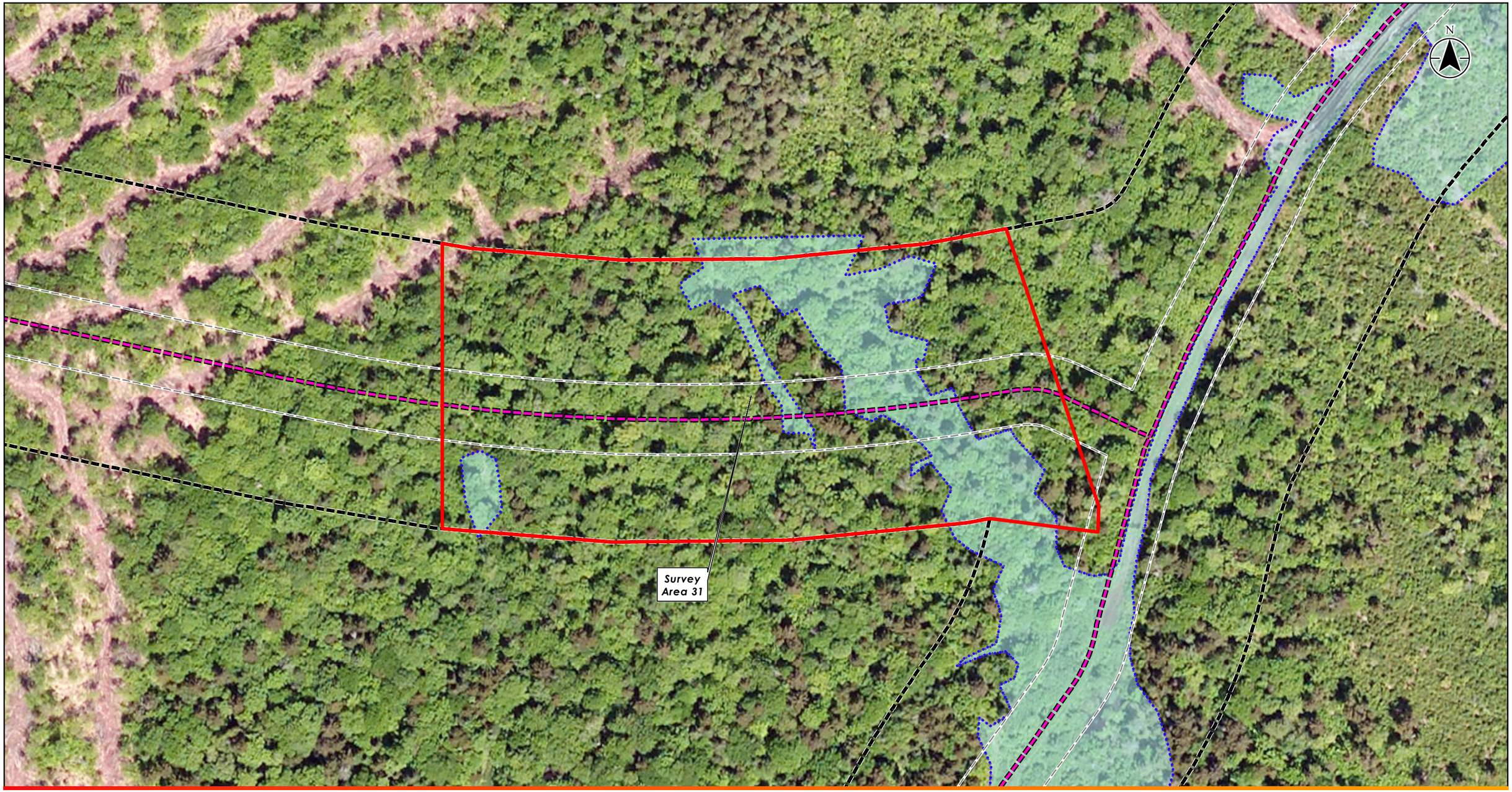
0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
29

Title
Turbine Area
RTE Plant Survey Areas

4/8/2015



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Legend

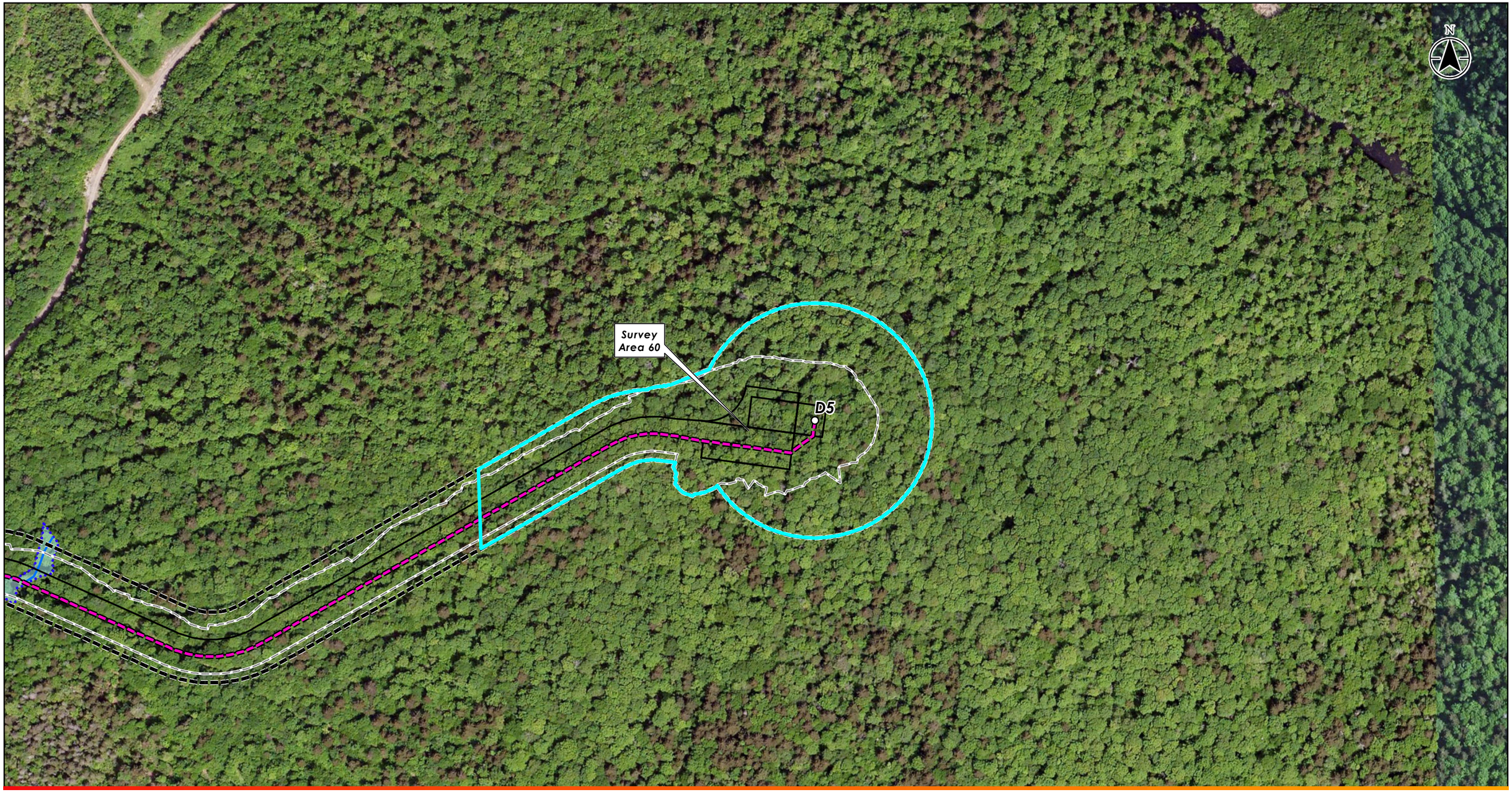
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Field Survey Area

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
30

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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Legend

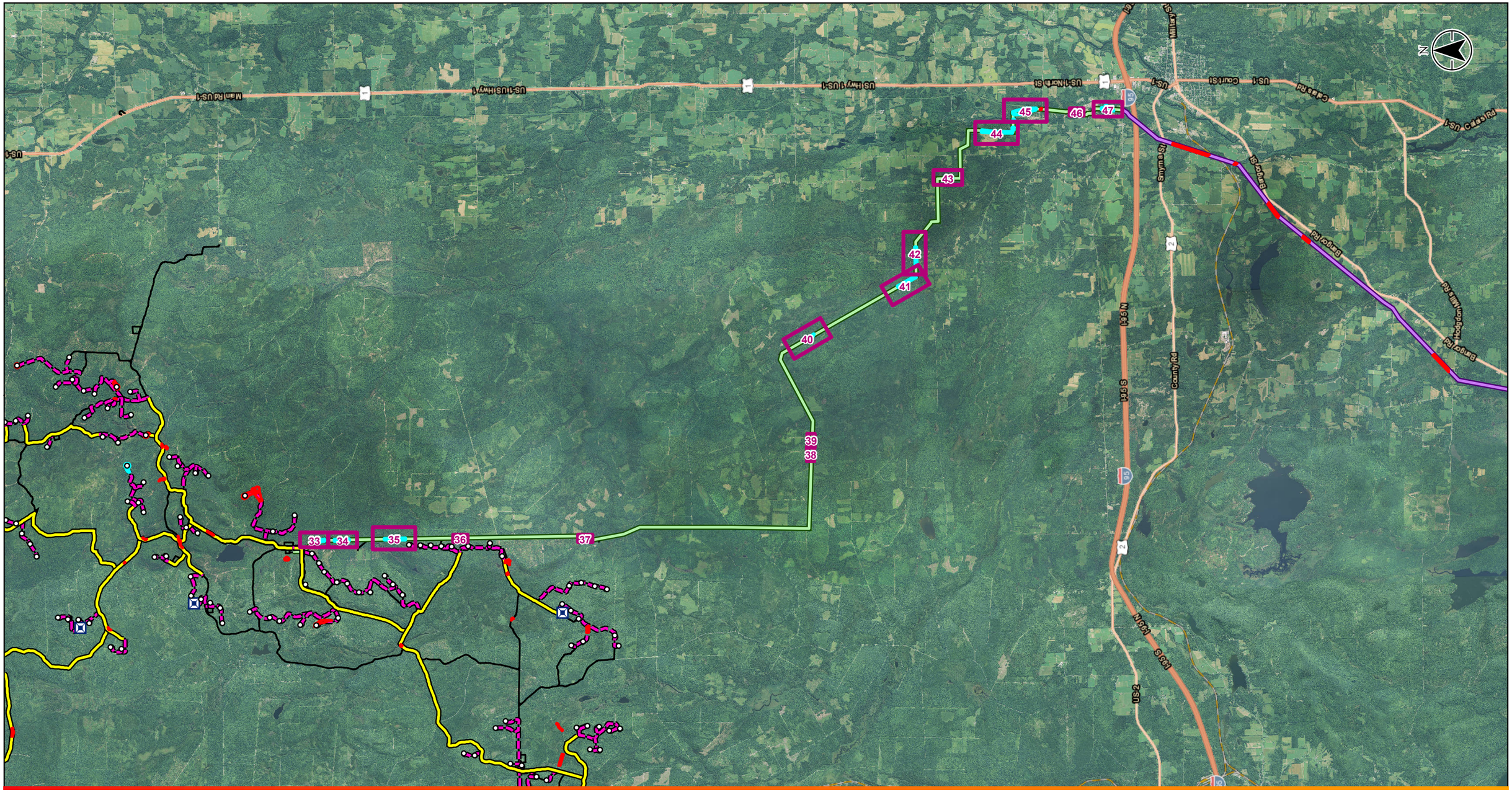
- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- RTE Desktop Analysis Survey Area

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
31

Title
Turbine Area
RTE Plant Survey Areas
4/8/2015



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00919_32_NorthGenLead_Survey_Areas.mxd

Legend

- Turbine Layout (4/3/15)
- MET Tower (4/3/15)
- RTE Desktop Survey Area
- RTE Desktop Analysis Survey Area
- Map Extent
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Bridal Path Generator Lead (3/16/15)
- Project Design (4/3/15)

0 2 Miles

1 inch = 2 miles (At page size of 11"x17")

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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
32

Title
North Generator Lead
RTE Plant Survey Areas Overview

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00919_33_NorthGenLead_RTE_Plant_MapBk.mxd

Legend

- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
33

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015

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Legend

- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

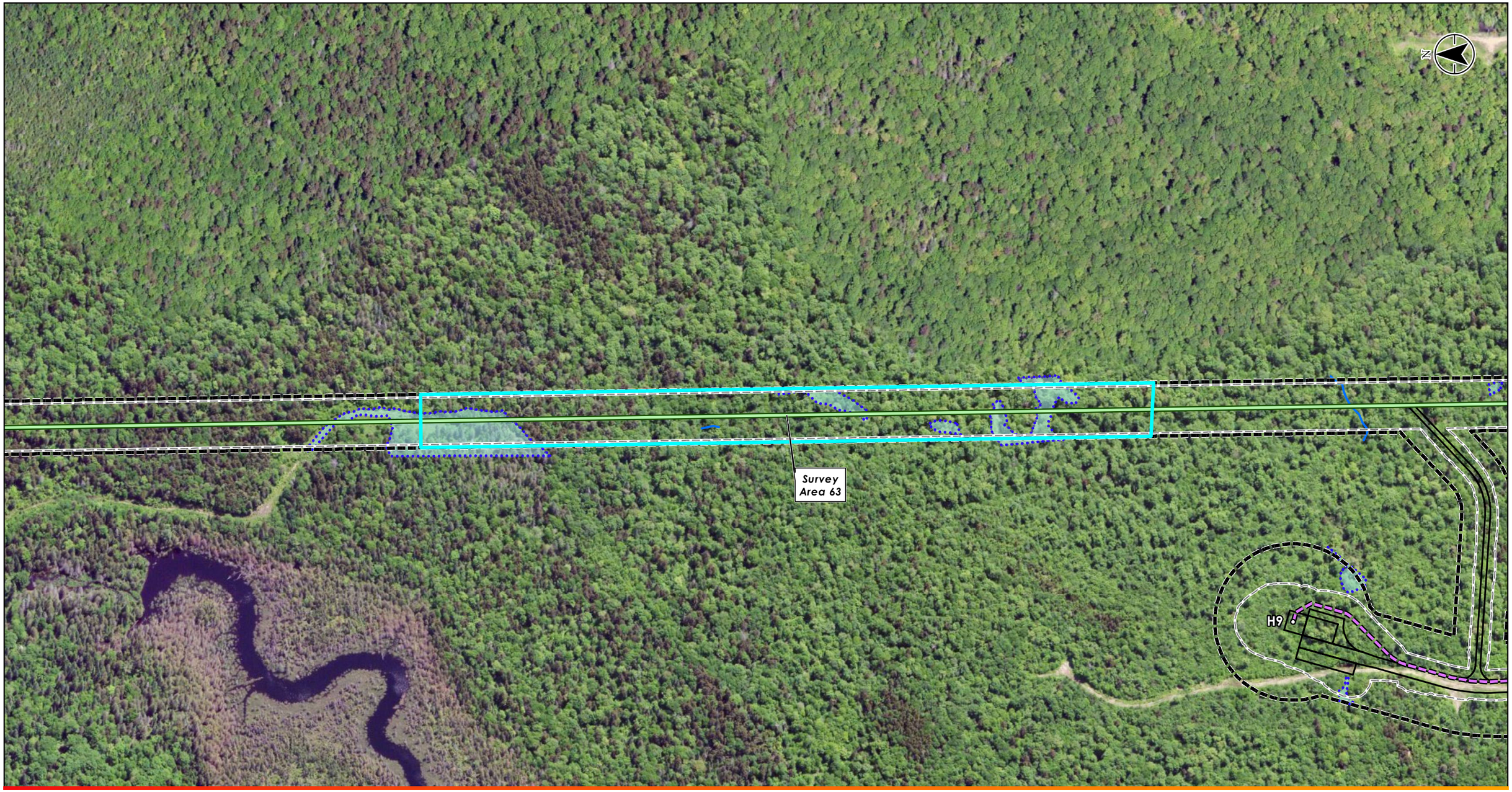
0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
34

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

- Turbine Layout (4/3/15)
- RTE Desktop Analysis Survey Area
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Project Design (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
35

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015

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Legend

- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

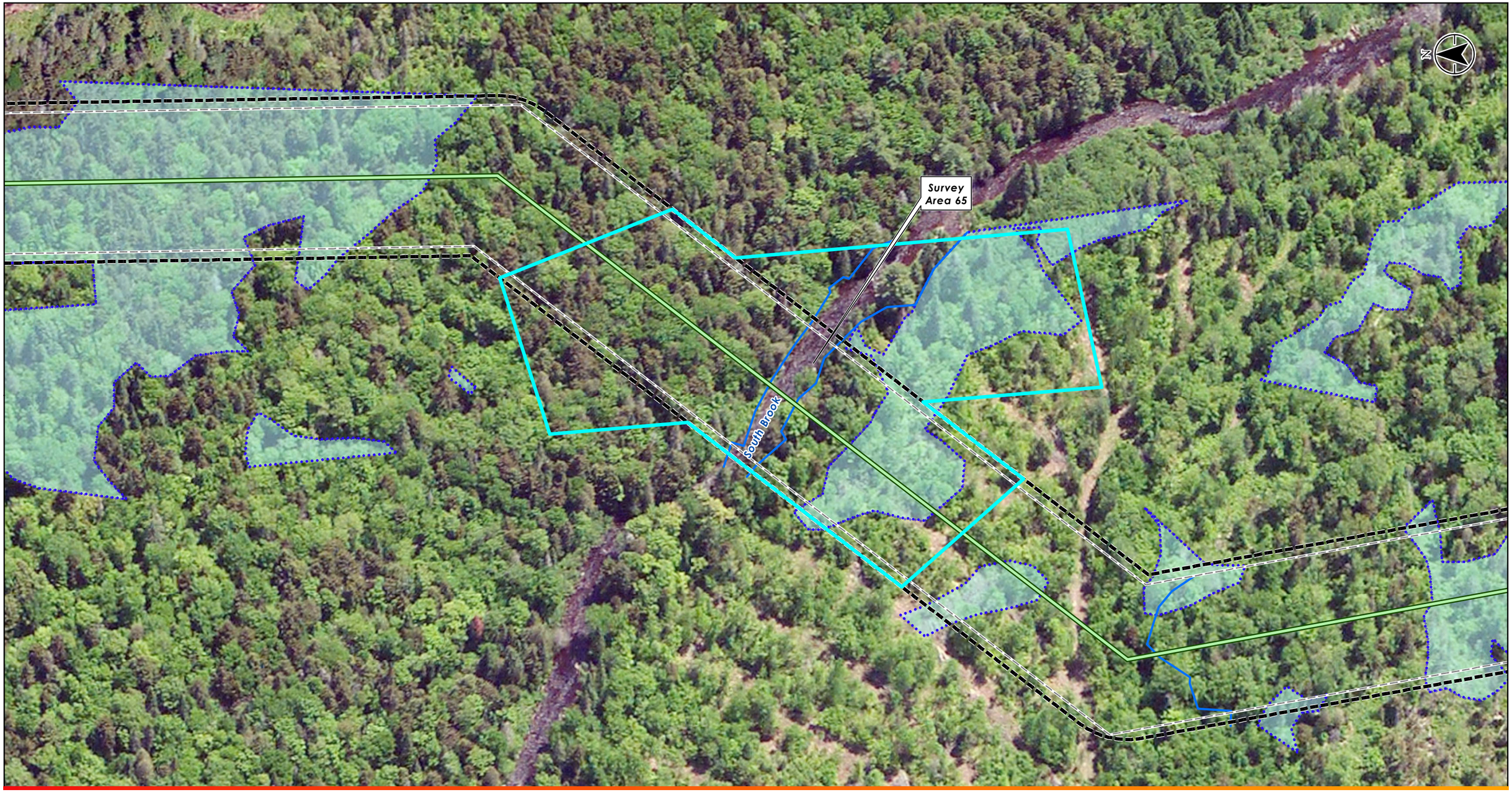
0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
36

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

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- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
37

Title
North Generator Lead
RTE Plant Survey Areas

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Legend

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- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
38

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015

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Legend

- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
39

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015

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Legend

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- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

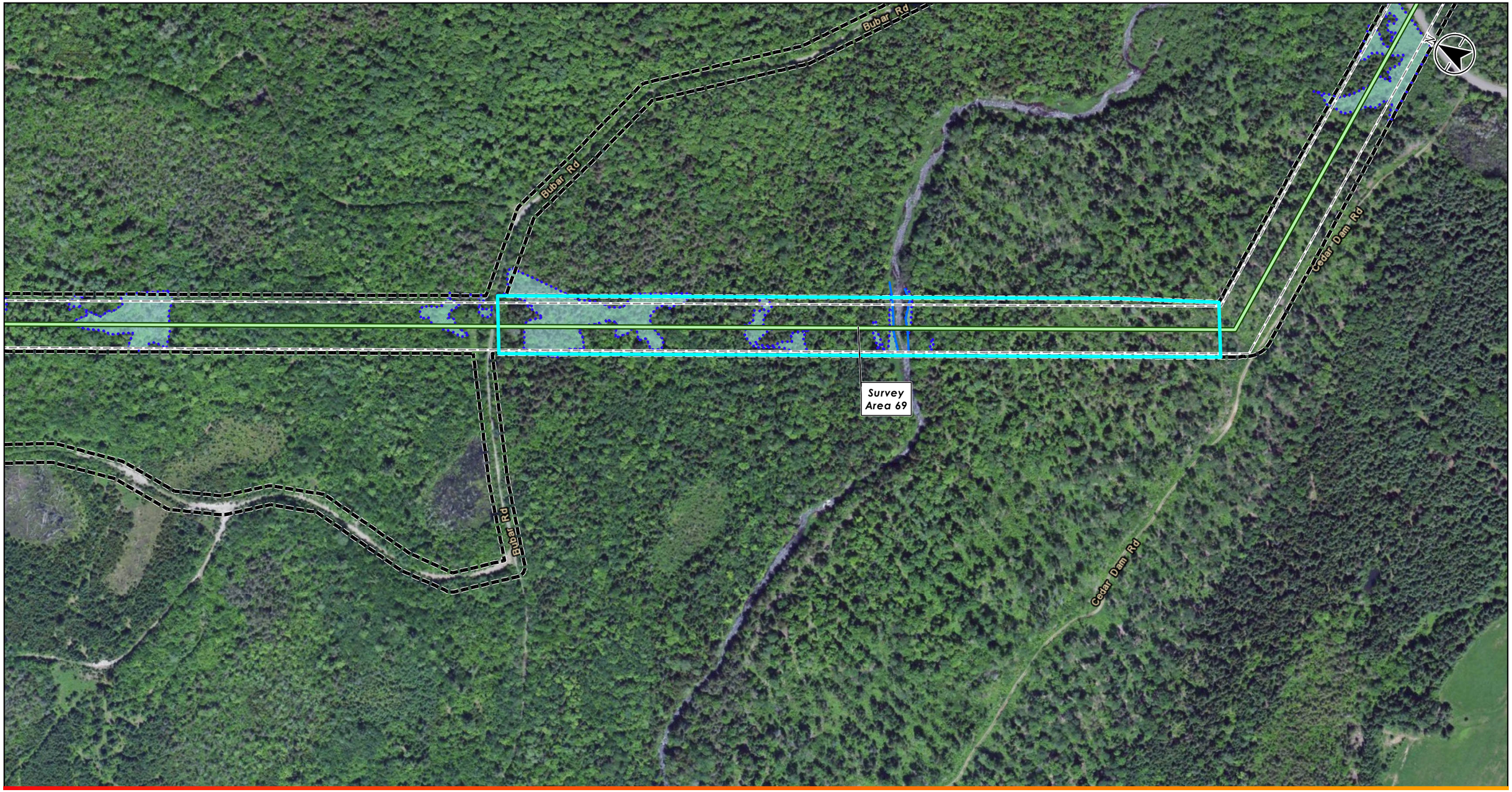
0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
40

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

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- Delineated Wetland
- Reporting Limits

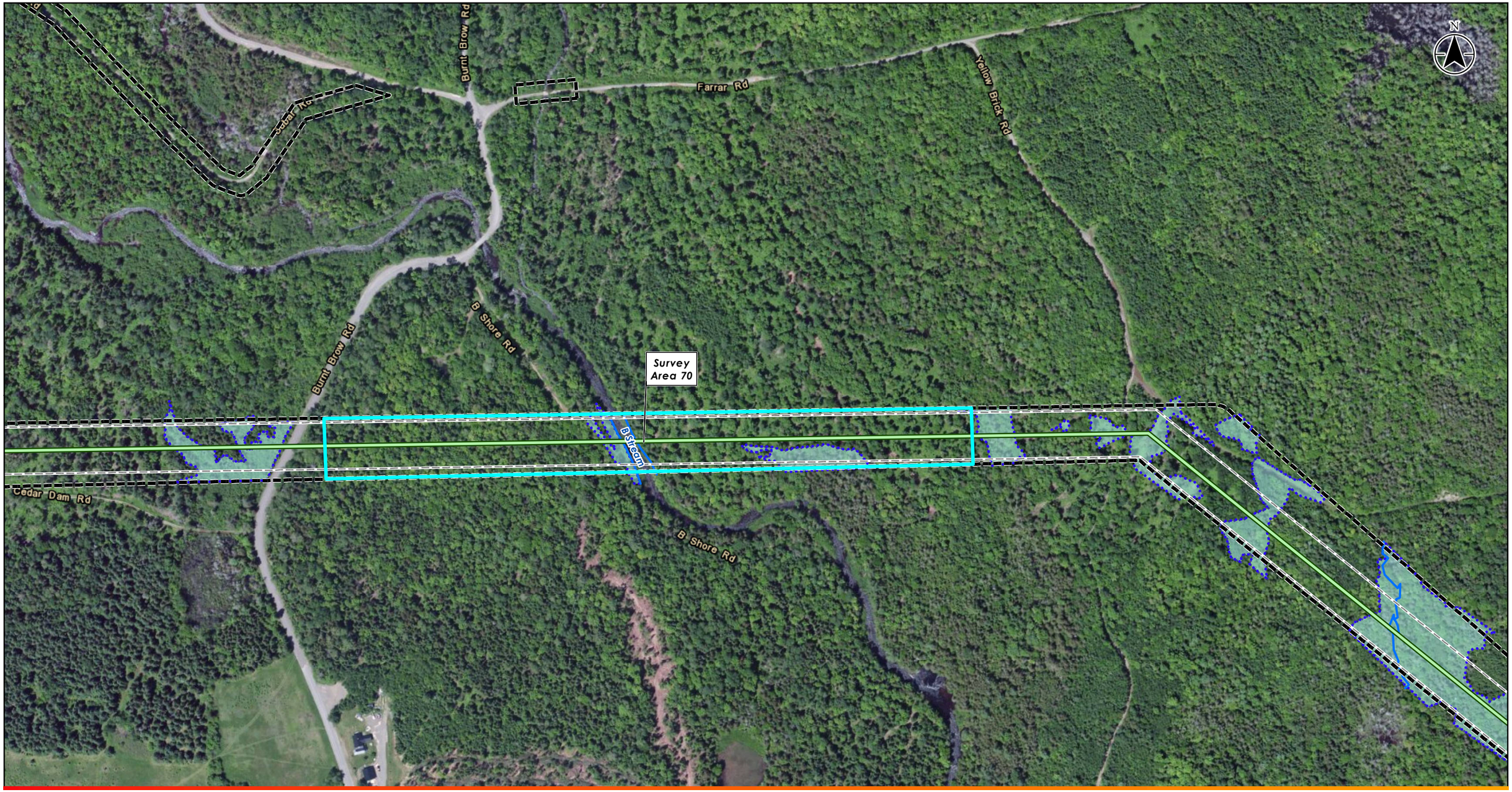
0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
41

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015



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- Delineated Wetland
- Reporting Limits

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Client/Project
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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
42

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015

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00919_33_NorthGenLead_RTE_Plant_MapBk.mxd

Legend

- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

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EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
43

Title
North Generator Lead
RTE Plant Survey Areas

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Legend

- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
44

Title
North Generator Lead
RTE Plant Survey Areas

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Legend

- Ranunculus gmelinii
- RTE Field Survey Area
- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 300 Feet
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Client/Project
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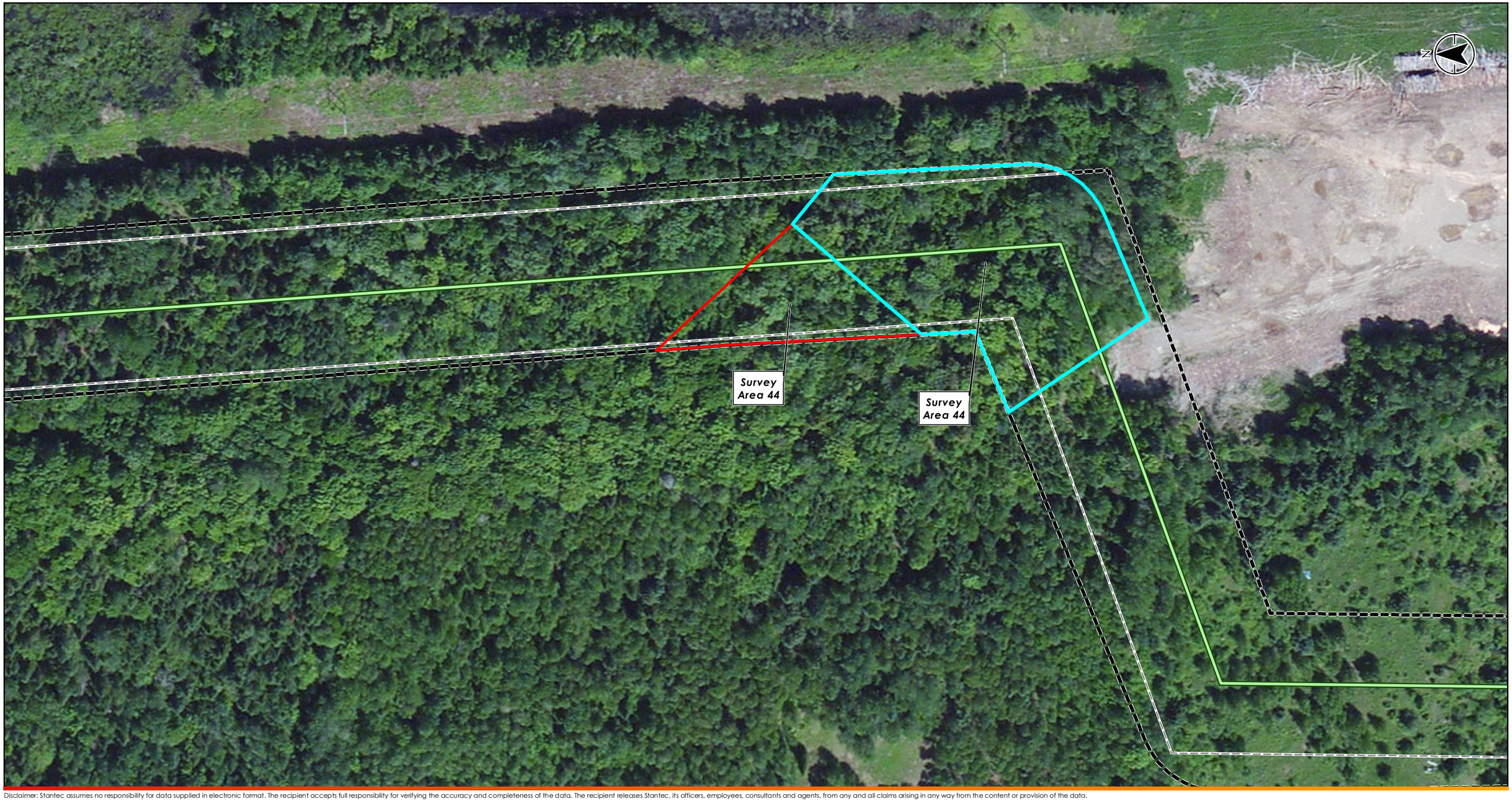
Aroostook County, Maine

Figure No.
45

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

- RTE Field Survey Area
- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Limit of Disturbance
- Reporting Limits

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
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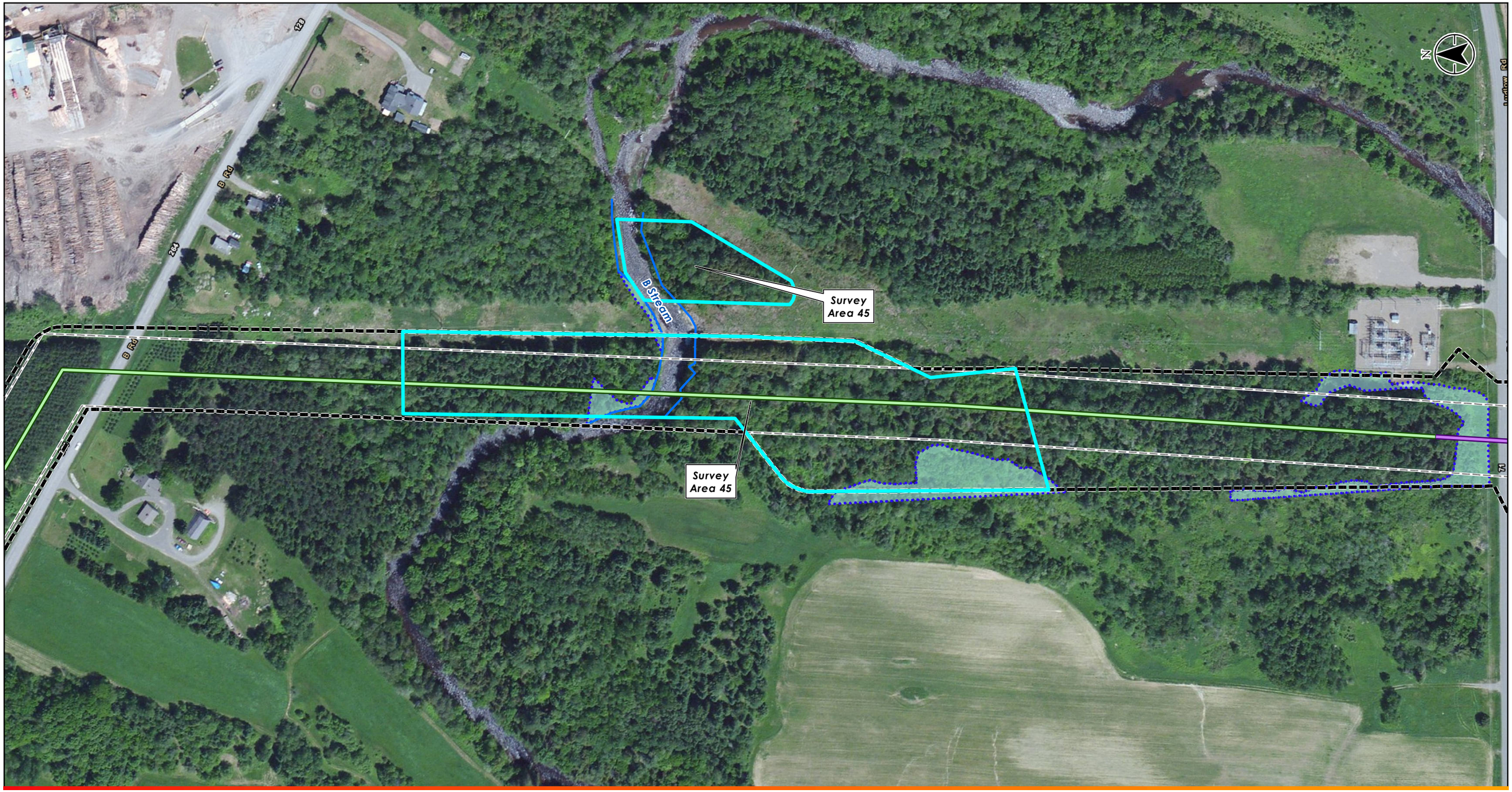
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
46

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015



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00919_33_NorthGenLead_RTE_Plant_MapBk.mxd

Legend

- RTE Desktop Analysis Survey Area
- North Generator Lead (3/16/15)
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

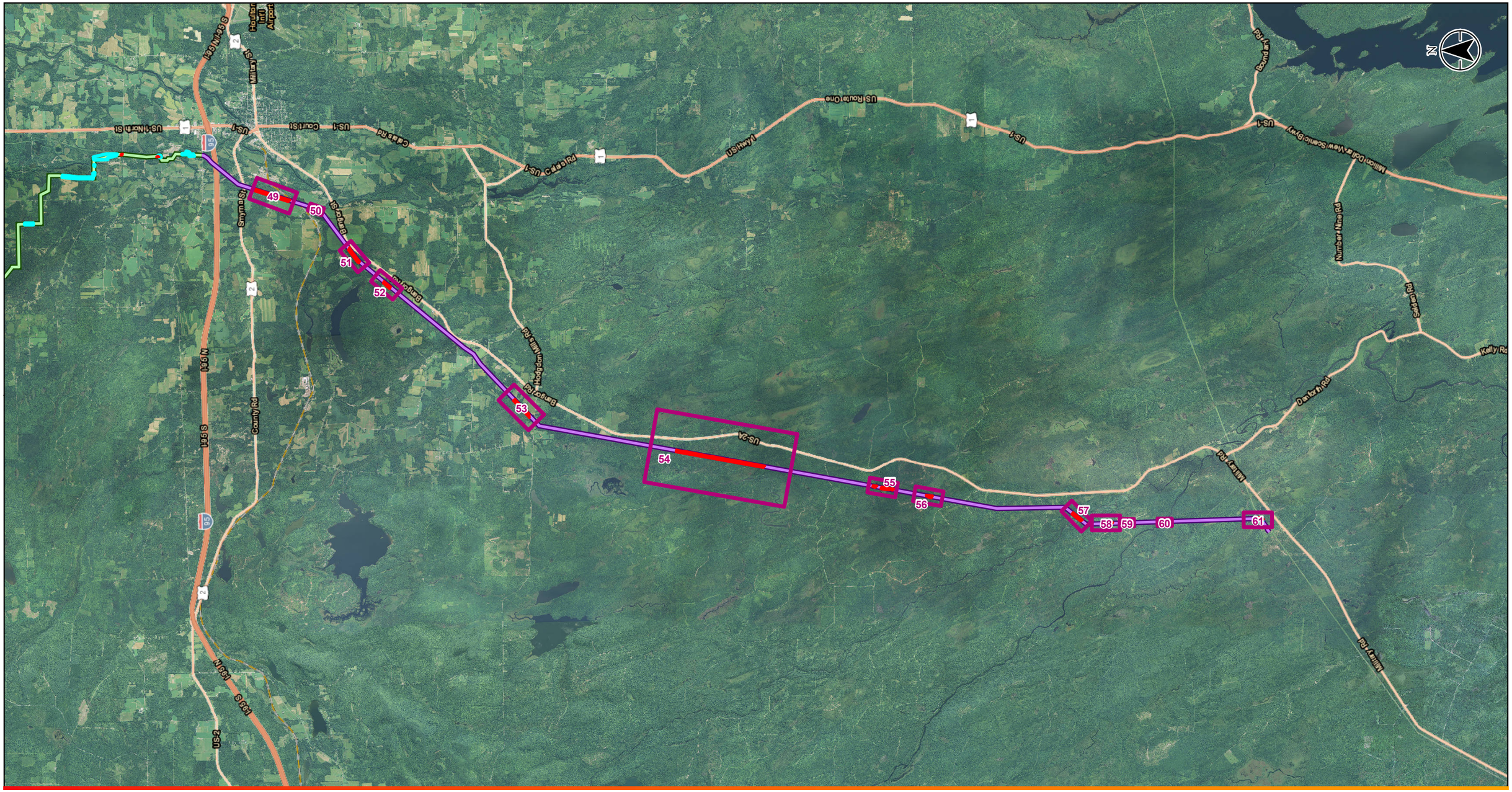
0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
47

Title
North Generator Lead
RTE Plant Survey Areas

4/8/2015



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00919_48_BridalPath_Survey_Areas.mxd

Legend

- Bridal Path Generator Lead (3/16/15)
- North Generator Lead (3/16/15)
- RTE Field Survey Area
- RTE Desktop Analysis Survey Area
- Map Extent

0 2 Miles

1 inch = 2 miles (At page size of 11"x17")

Client/Project

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Aroostook County, Maine

Figure No.

48

Title

Bridal Path Generator Lead
RTE Plant Survey Areas Overview

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00919_49_BridalPath_RTE_Plant_MapBk.mxd

Legend

- RTE Field Survey Area
- Cypripedium reginae
- Lonicera oblongifolia
- Ranunculus gmelinii
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Wetland
- Reporting Limits

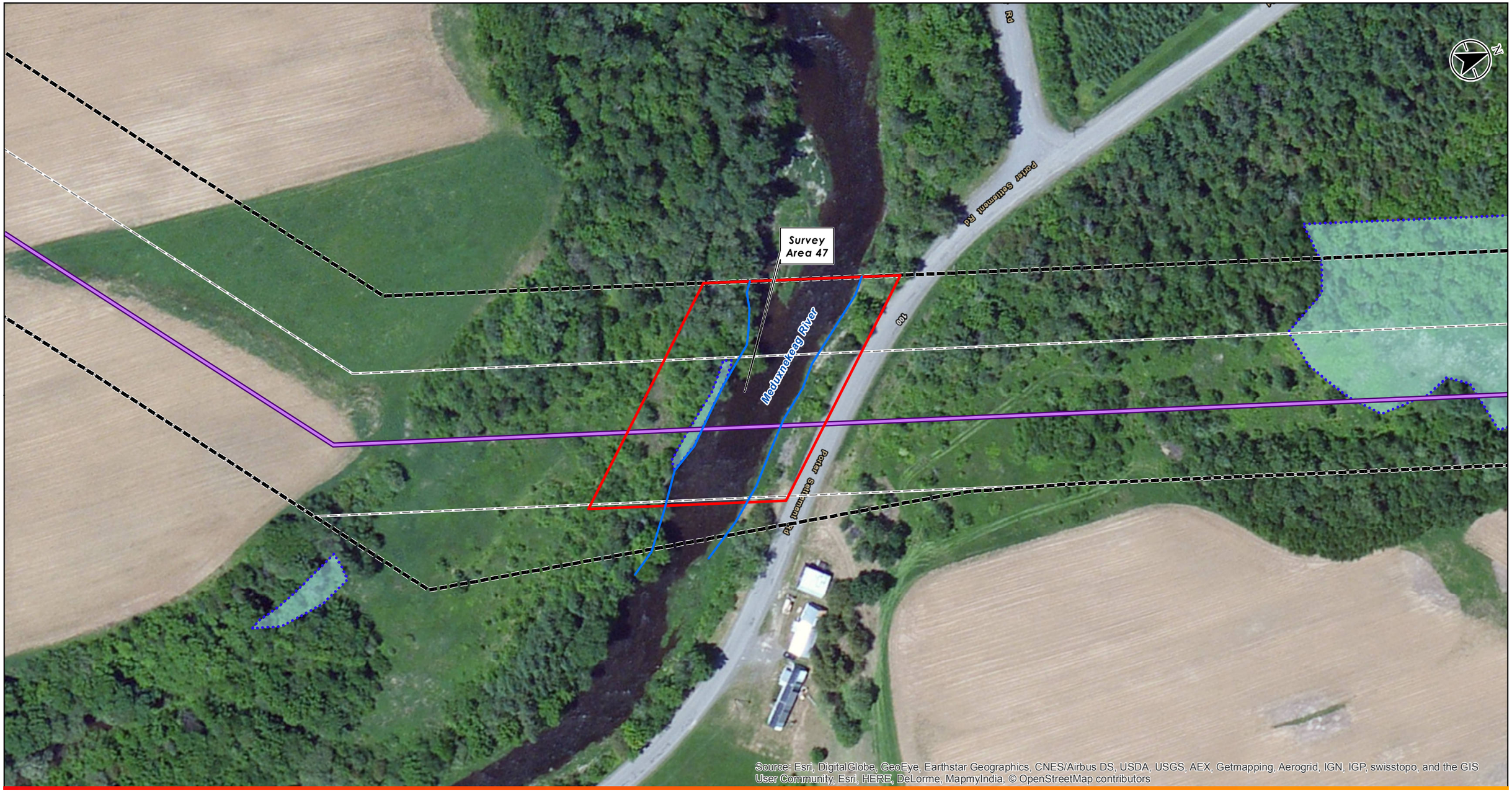
0 310 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
49

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

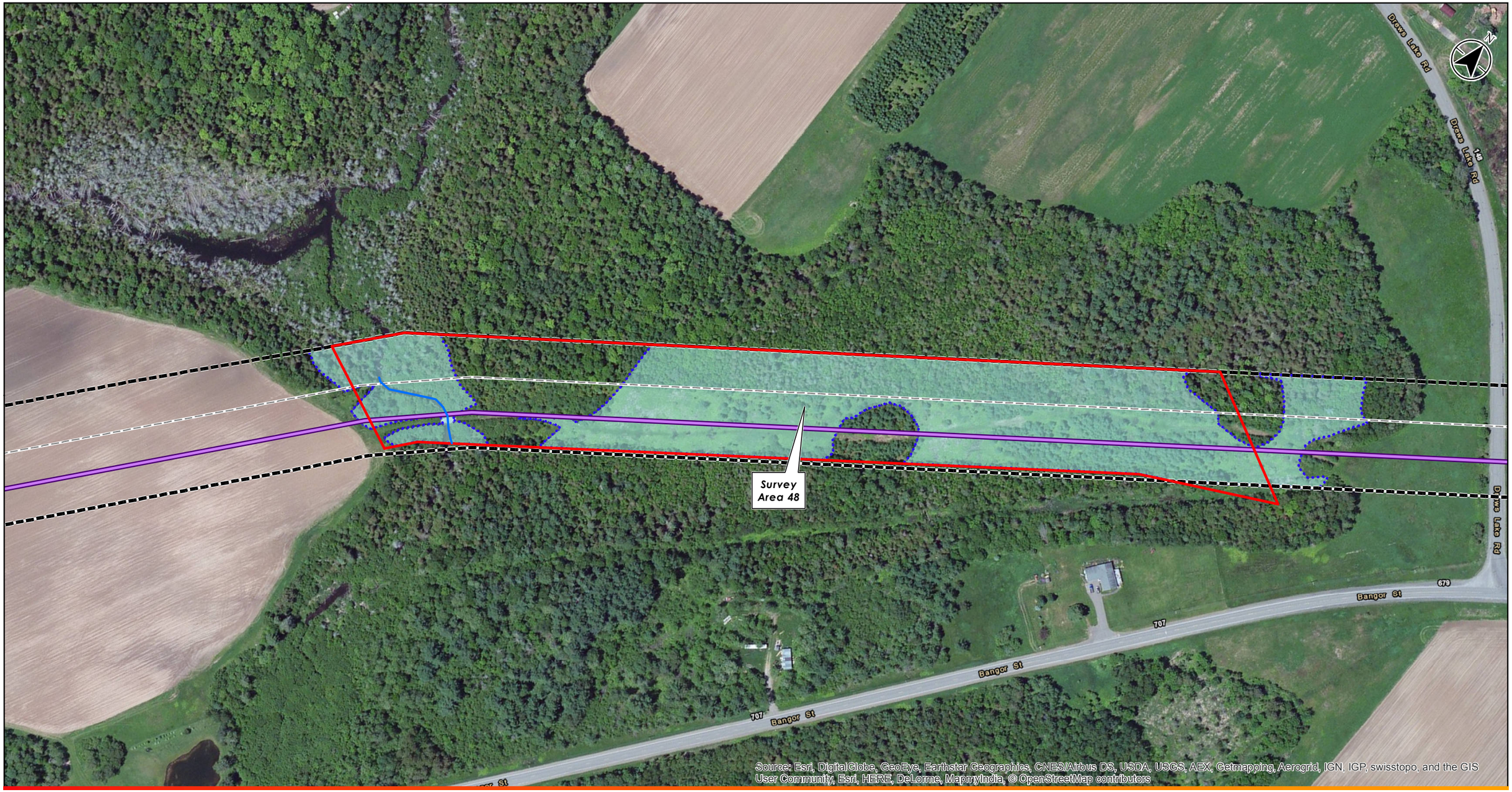
0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
50

Title
Bridal Path Generator Lead RTE Plant Survey Areas

4/8/2015



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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet

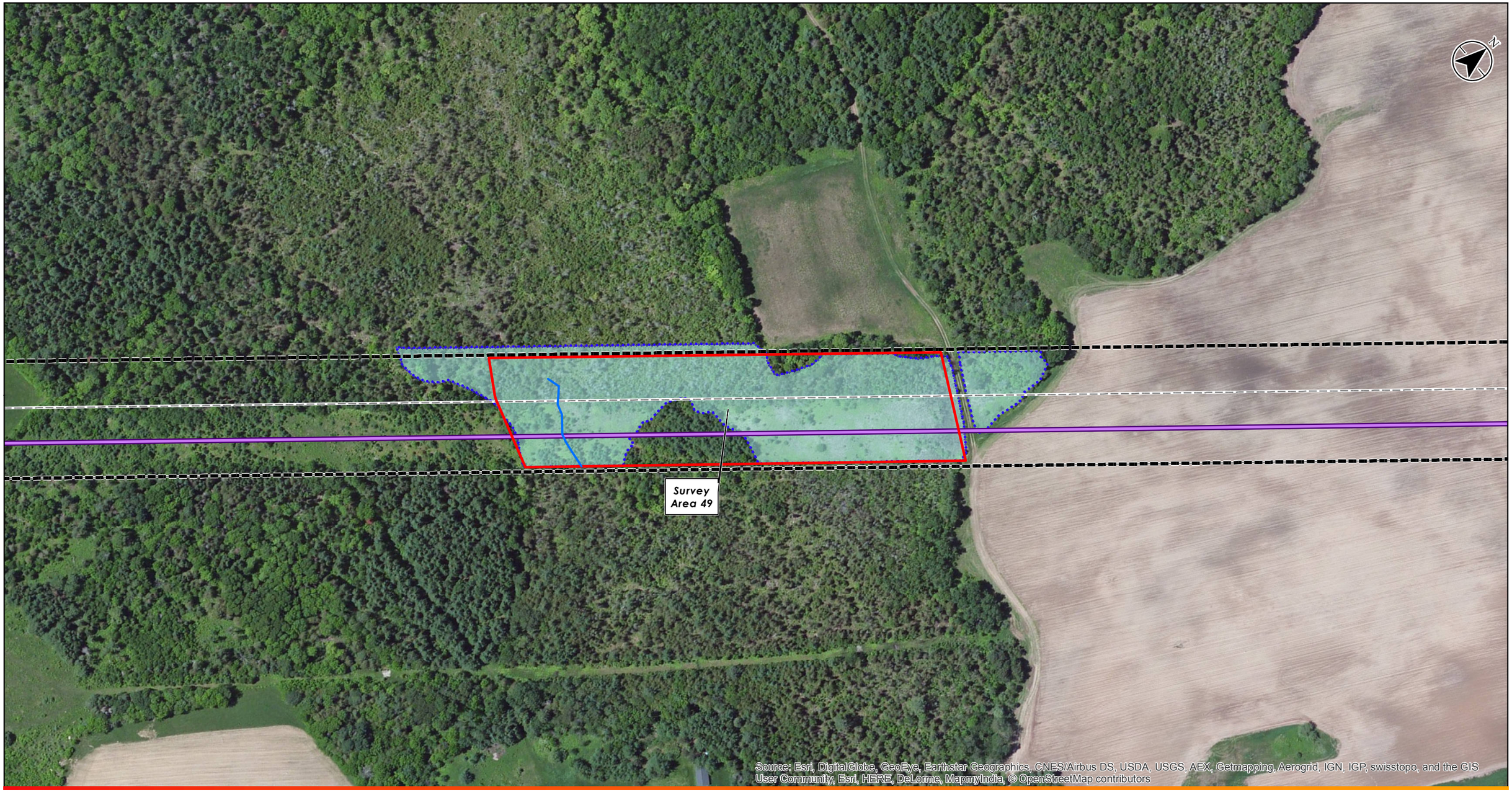
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
51

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

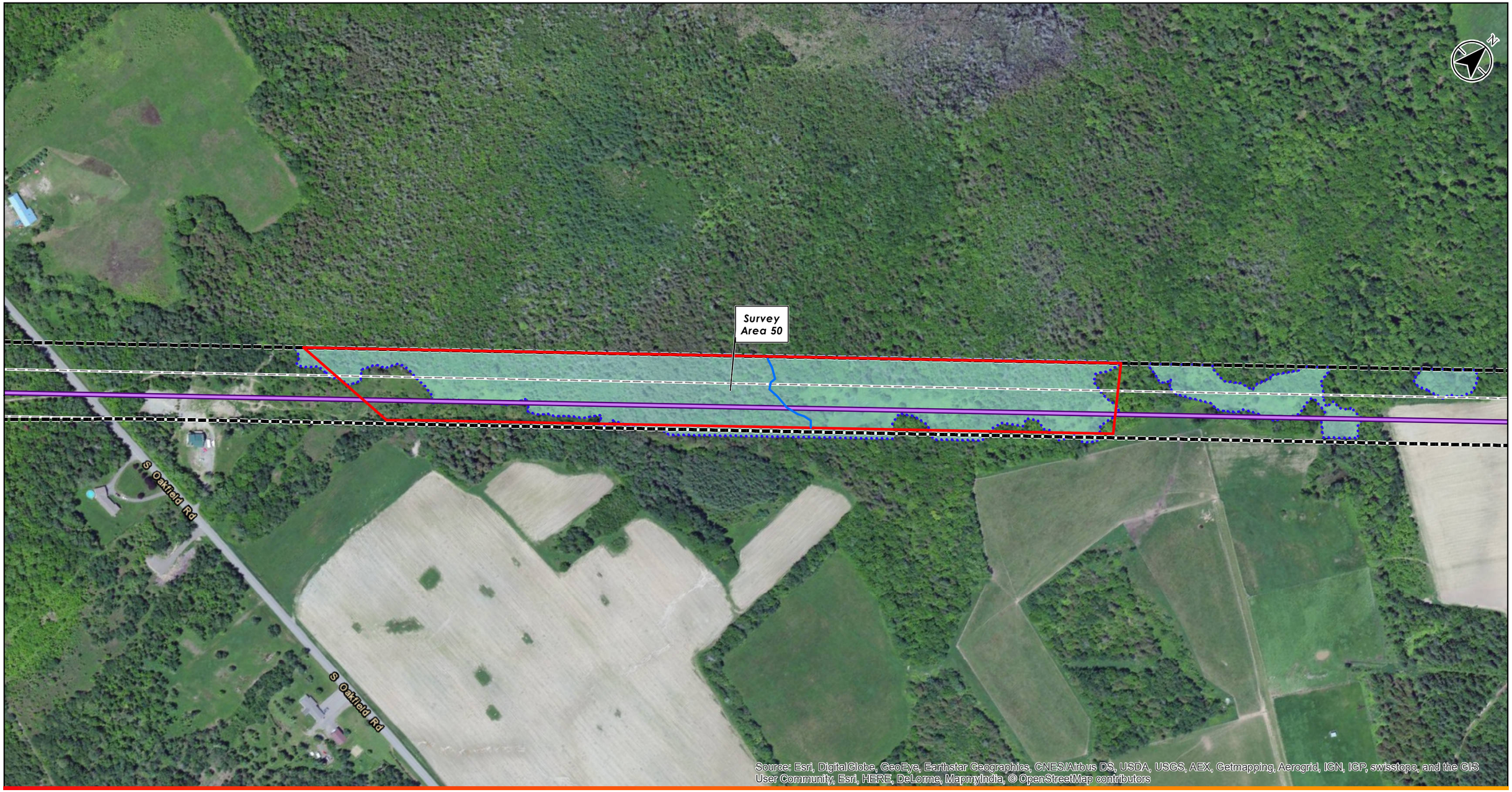
0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
52

Title
Bridal Path Generator Lead RTE Plant Survey Areas

4/8/2015



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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

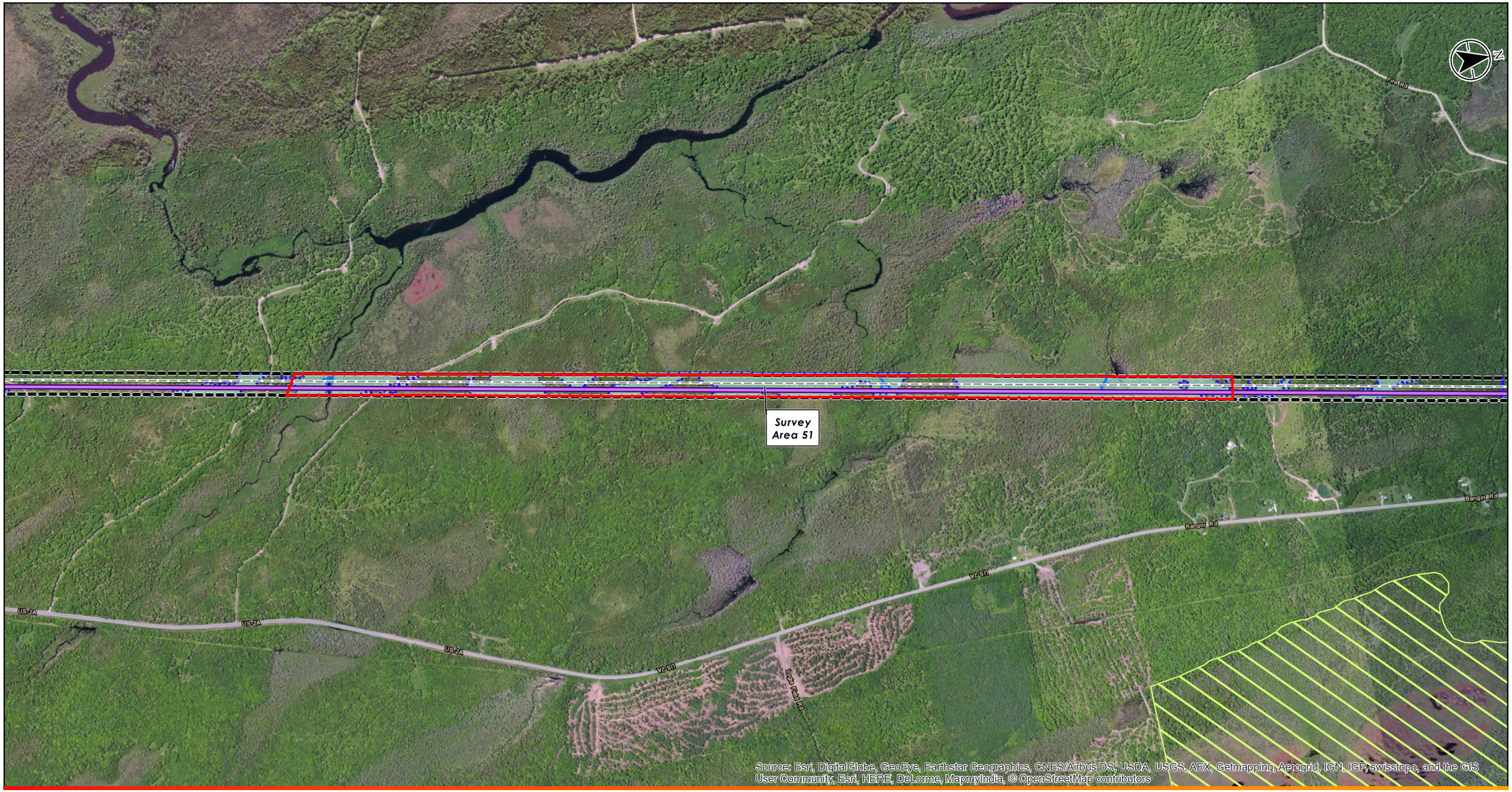
0 310 Feet
1 inch = 300 feet (At page size of 11'x17')

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
53

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

4/8/2015



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00919_49_BridalPath_RTE_MNAP_MapBk.mxd

Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- MNAP Streamshore Ecosystem

Notes:
1. MNAP Streamshore Ecosystem data provided by the Maine Natural Areas Program 2011.

0 1,000 Feet
1 inch = 1,000 feet(At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
54

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Wetland
- Reporting Limits

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
55

Title
Bridal Path Generator Lead RTE Plant Survey Areas

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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet

1 inch = 200 feet (At page size of 11"x17")

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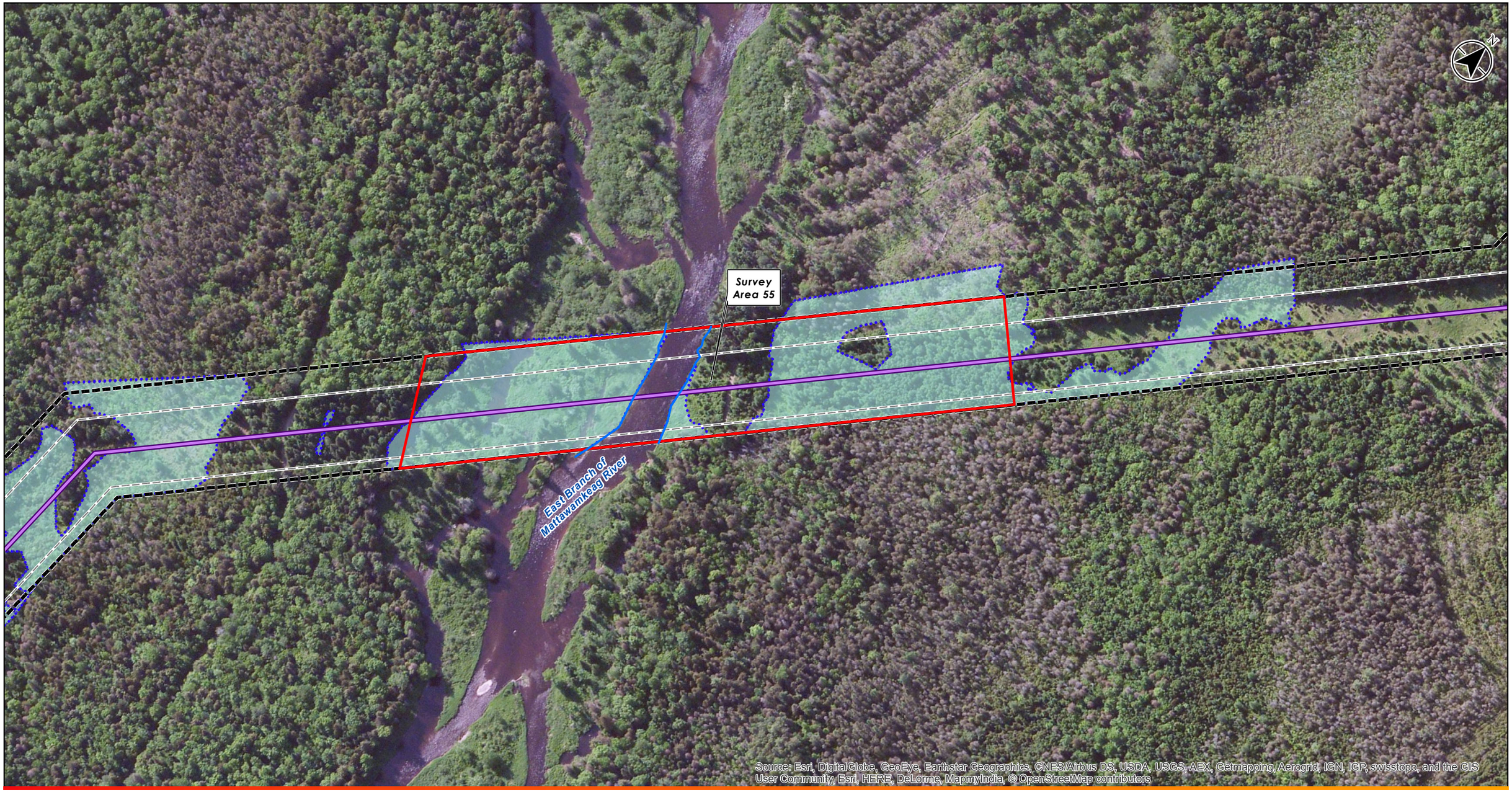
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
56

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

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- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet

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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
57

Title
Bridal Path Generator Lead RTE Plant Survey Areas

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Legend

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- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Wetland
- Reporting Limits

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

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Aroostook County, Maine

Figure No.
58

Title
Bridal Path Generator Lead RTE Plant Survey Areas

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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Wetland
- Reporting Limits

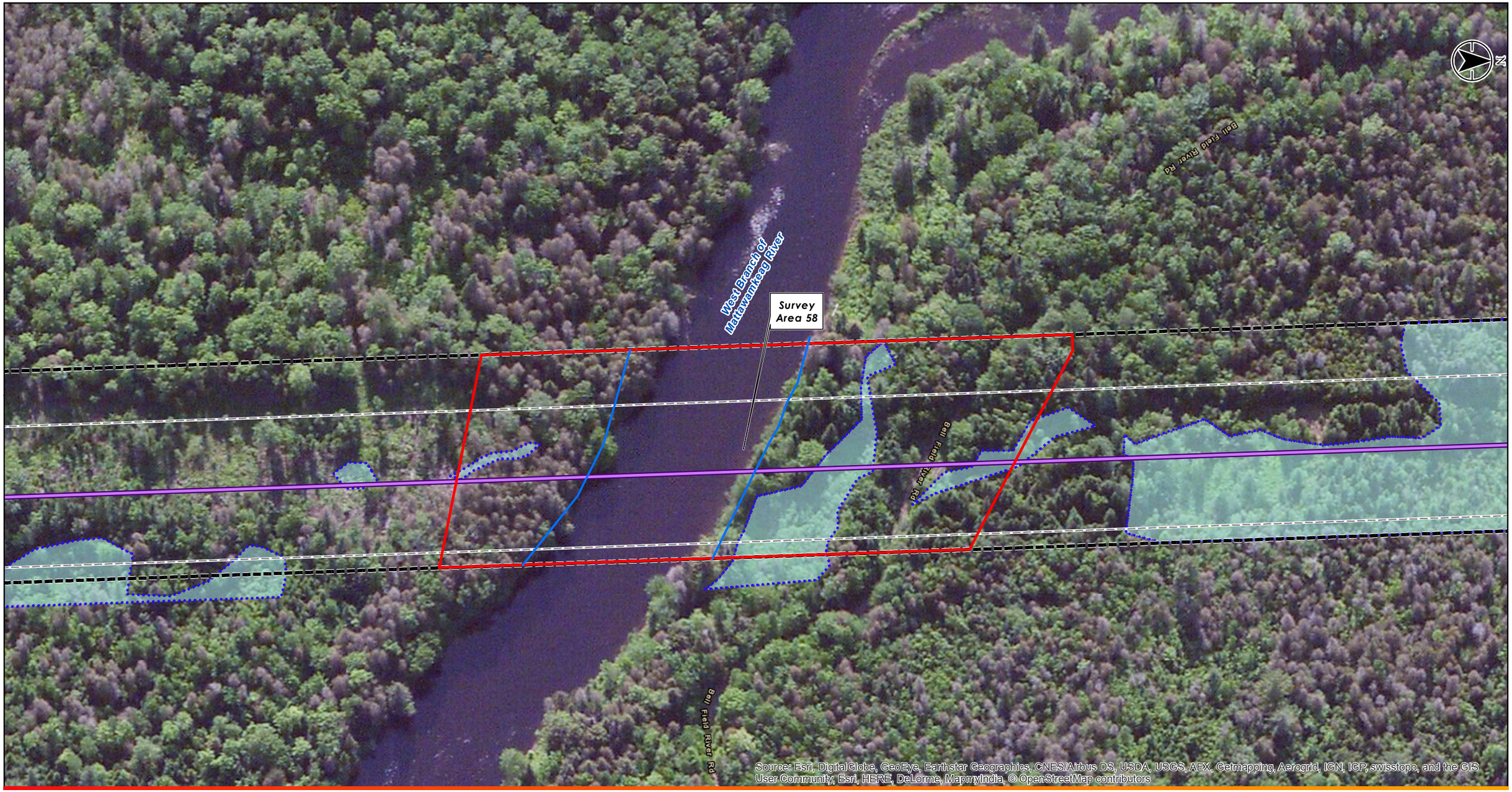
0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
59

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

4/8/2015



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Legend

- RTE Field Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 100 Feet

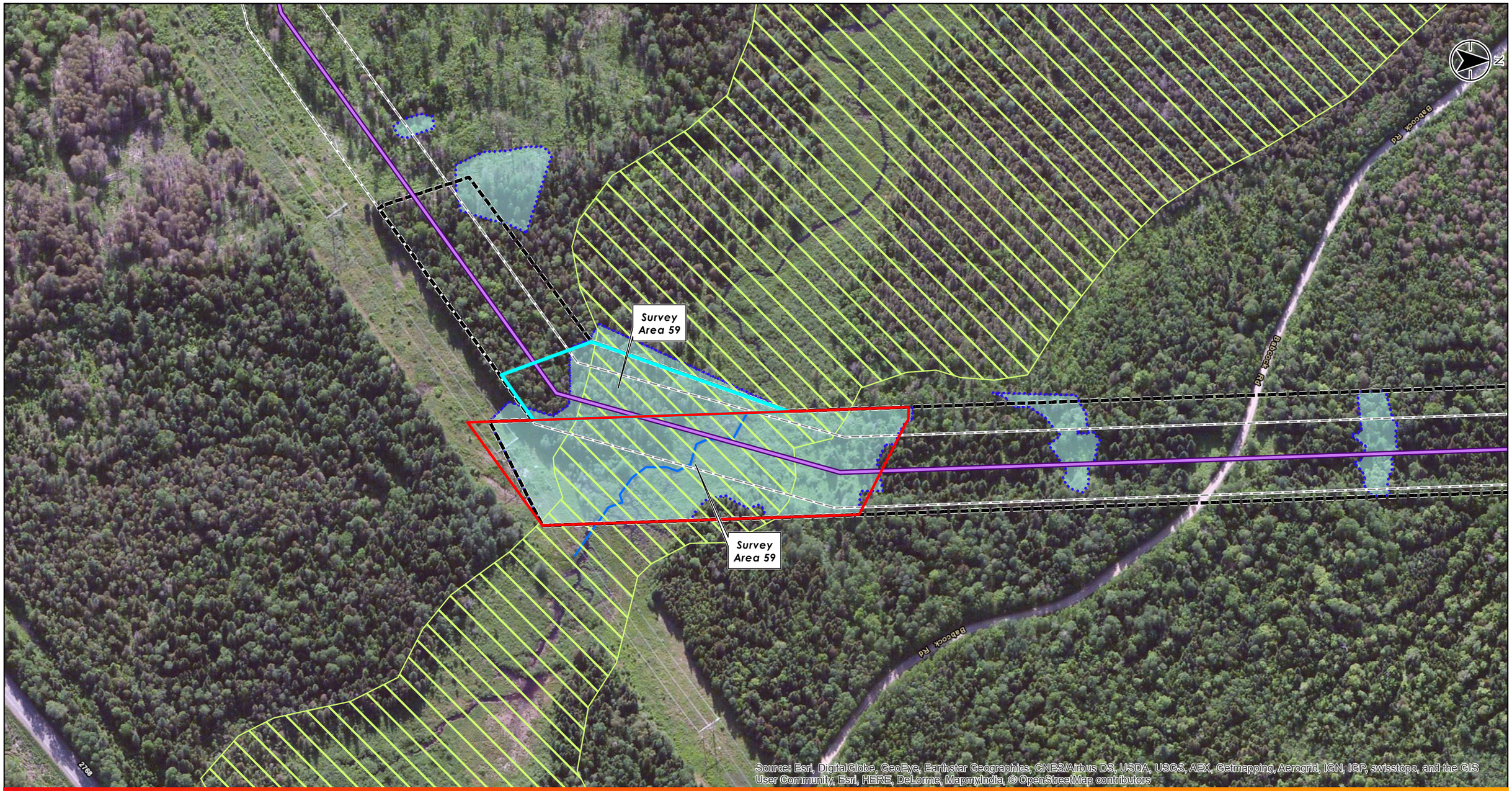
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
60

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

4/8/2015



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00919_49_BridalPath_RTE_MNAP_MapBk.mxd

Legend

- RTE Field Survey Area
- RTE Desktop Analysis Survey Area
- Bridal Path Generator Lead (3/16/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits
- MNAP Streamshore Ecosystem

Notes:
1. MNAP Streamshore Ecosystem data provided by the Maine Natural Areas Program 2011.

0 200 Feet
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Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
61

Title
Bridal Path Generator Lead
RTE Plant Survey Areas

4/8/2015

APPENDIX A
List of RTE Plants within Vicinity of Project Area

List of Rare, Threatened, and Endangered Species in Number Nine Wind Project Area Region

List provided by Maine Natural Areas Program on October 3, 2014

Species Name	Common Name	Global Rank	State Rank	Federal Protection Status	State Protection Status
Allium tricoccum	Wild Leek	G5	S3		SC
Amerorchis rotundifolia	Small Round-leaved Orchis	G5	S2		T
Asarum canadense	Wild Ginger	G5	S1S2		T
Betula pumila	Swamp Birch	G5	S2S3		SC
Calamagrostis stricta ssp. *inexpansa*	New England Northern Reed Grass	G5T5	S1		E
Cardamine concatenata	Cut-leaved Toothwort	G5	S1		E
Cardamine maxima	Large toothwort	G5	S3		SC
Carex capillaris	Capillary Sedge	G5	S2		SC
Carex eburnea	Ebony Sedge	G5	S1		E
Carex garberi	Garber's Sedge	G5	S2		SC
Carex gynocrates	Northern Bog Sedge	G5	S2		SC
Carex livida var. *radicaulis*	Livid Sedge	G5T5	S2		SC
Carex oronensis	Orono Sedge	G3	S3		T
Carex prairea	Prairie Sedge	G5?	S1		T
Carex rostrata	Blueleaf Sedge	G5	S2		SC
Carex sterilis	Dioecious Sedge	G4	S3		SC
Carex tenuiflora	Sparse-flowered Sedge	G5	S3		SC
Clematis occidentalis var. *occidentalis*	Purple Clematis	G5T5	S3		SC
Cynoglossum virginianum var. *boreale*	Northern Wild Comfrey	G5T4T5	S1		E
Cypripedium reginae	Showy Lady's-slipper	G4	S3		T
Dryopteris goldiana	Goldie's Wood-fern	G4	S2		SC
Eleocharis quinqueflora	Few-flowered Spikerush	G5	S2		SC
Geocaulon lividum	Northern Comandra	G5	S3		SC
Goodyera oblongifolia	Giant Rattlesnake-plantain	G5?	S1		E
Isoetes prototypus	Prototype Quillwort	G2G3	S1		T
Lonicera oblongifolia	Swamp Fly-honeysuckle	G4	S3		SC
Malaxis monophyllos	White Adder's-mouth	G5	S1		E
Panax quinquefolius	American Ginseng	G3G4	S3		E
Potamogeton friesii	Fries' Pondweed	G4	S1		E
Potamogeton strictifolius	Straight-leaved Pondweed	G5	S1		T
Potamogeton vaseyi	Vasey's Pondweed	G4	S2		SC
Ranunculus gmelinii var. *purshii*	Small Yellow Water Crowfoot	G5T5	S2		T
Ranunculus lapponicus	Lapland Buttercup	G5	S2		T
Stuckenia filiformis ssp. *alpinus*	Northern Slender Pondweed	G5T5	S2		SC
Valeriana uliginosa	Marsh Valerian	G4Q	S2		SC
Zosterella dubia	Water Stargrass	G5	S3		SC

APPENDIX B
Representative Photographs

Photo 1: Second growth northern hardwood forest in Survey Area 1. Stantec. October 7, 2014

Photo 2: West Branch Presque Isle Stream in Survey Area 2. Stantec. October 7, 2014

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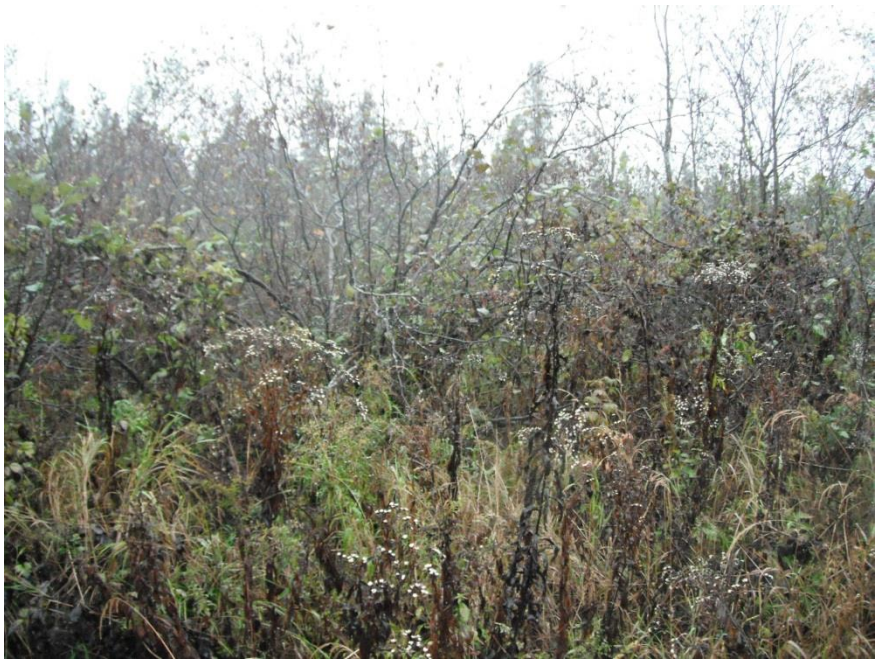

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Rare, Threatened, and Endangered Plant Survey Addendum Report

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Aroostook County, Maine

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1.0 INTRODUCTION

In 2014, Stantec Consulting Services, Inc. (Stantec) initiated surveys for rare, threatened, and endangered (RTE) plant species at the Number Nine Wind Farm (Project) site in Aroostook County Maine. The proposed Project includes the construction of up to 119 turbines in six townships in Aroostook County, Maine (i.e. Turbine Area). These townships include T8 R3 WELS, T9 R3 WELS, T10 R3 WELS, TD R2 WELS, E Township, and St. Croix Township. The Turbine Area also includes associated 34.5-kilovolt (kV) electrical collector lines (collector line) and access roads, a project substation, and an Operations and Maintenance (O&M) building. The Project also includes two segments of a 345-kV electrical generator lead line (generator lead). The North Generator Lead Line (North Line) will consist primarily of a newly cleared 26.2-mile electrical corridor that will extend from the proposed substation in the Turbine Area south to an existing substation in Houlton, Maine. The Bridal Path Generator Lead Line (Bridal Path Line) will be located within an additional 25.4 miles of existing utility easement that was first cleared in the 1960's. The Bridal Path Line will extend south from the existing substation in Houlton to an existing 345-kv transmission line corridor in Haynesville, Maine (Figure 1). The Project components are identified broadly into the following three components:

1) Turbine Area

2) North Generator Lead Line

3) Bridal Path Generator Lead Line

To facilitate Project construction designs to avoid and minimize impacts to RTE plant species, surveys were initiated in October 2014 to identify locations of RTE plant species within or adjacent to areas proposed for construction. The results of the 2014 RTE plant surveys are included in the *Rare, Threatened, and Endangered Plant Survey Report* (Stantec January 14, 2015).

Based on the 2014 field surveys, several areas were identified by Stantec that contained habitat conditions potentially suitable for RTE plant species. Recommendations were made for follow-up surveys in 2015 during the appropriate growing season conditions to re-survey for RTE plants. In addition, portions of the Project components were reconfigured subsequent to the 2014 field surveys which resulted in additional areas being added to the overall Project area. A desktop analysis was conducted to assess the likelihood of these additional Project areas to contain habitat potentially suitable for RTE plants. Areas that were determined to have potential RTE plant habitat were surveyed in 2015.

The following sections summarize the methodology and results of the 2015 RTE plant surveys.

2.0 METHODOLOGY

2.1 DESKTOP ANALYSIS

In 2014, a desktop analysis was completed to identify areas within the Project area that had greater potential to support RTE plant species. Areas identified during the desktop analysis would be targeted for field surveys. The results of the desktop analysis have been previously summarized in the *Rare, Threatened, and Endangered Plant Survey Report* (Stantec January 14, 2015).

2.2 FIELD METHODOLOGY

In 2015, field surveys were conducted within areas surveyed in 2014 that were determined to have potentially suitable RTE plant habitat based on observations of existing natural community conditions. Field surveys were also completed in the additional areas that were identified during the desktop analysis subsequent to the 2014 field surveys as a result of Project component reconfiguration or in areas where landowner permission was not obtained at the time of the 2014 field surveys.

The survey area locations were loaded as a background layer onto Trimble® GeoExplorer6000 GPS units and printed onto color field maps to be used for field navigation. Meander surveys were completed throughout each area identified during the desktop analysis to locate RTE plant species and characterize the existing habitat conditions. If RTE plants were identified, data on population size, condition, and associated habitat were collected along with representative and diagnostic photos of the population. RTE plant populations were located using the GPS unit. General habitat data (e.g., dominant species, hydrology, and past disturbances) and representative photographs were taken throughout each targeted survey area.

3.0 RESULTS

3.1 DESKTOP ANALYSIS

The desktop analysis completed subsequent to the 2014 field surveys and as a result of the Project area reconfigurations identified 1 location in the Turbine Area, 17 locations along the North Line, and 1 area along the Bridal Path for additional field survey.

Based on the results of the desktop analysis, the following habitat types were identified as having higher potential for supporting RTE plant populations and were targeted for field surveys:

- Circumneutral wetlands dominated by northern white cedar (*Thuja occidentalis*);
- Graminoid-dominated riparian marshes;

- Shorelines and terrace floodplains of 2nd and 3rd order streams;
- Rich-mesic forests;
- Mature hardwood forests on moderate to steep slopes;
- Beaver (*Castor canadensis*) impoundments; and
- Mature red spruce (*Picea rubens*) – dominated forests.

3.2 FIELD SURVEY

Field surveys were completed from June 1 through June 17, 2015, by Stantec Botanists Matt Arsenault and Eric Doucette. As a result of the RTE plant surveys, the following RTE plant species were documented in the following Survey Areas (includes both 2014 and 2015 results):

Survey Area 43 (North Line)

- Lesser yellow water crowfoot (*Ranunculus gmelinii*): State-Threatened[1,2] (2014)

Survey Area 46 (Bridal Path)

- Showy lady's-slipper (*Cypripedium reginae*): State-Threatened[3] (2014 and 2015);
- Swamp honeysuckle (*Lonicera oblongifolia*): State-Special Concern (2014; this population area not resurveyed in 2015); and
- Lesser yellow water crowfoot (2014 and 2015)

Survey Area 56 (Bridal Path)

- Northern bog sedge (*Carex gynocrates*): State-Special Concern (2015);
- Swamp honeysuckle (2015);
- Showy lady's-slipper (2015); and
- Marsh valerian (*Valeriana uliginosa*): State Special Concern (2015)

[1] State rarity status is based on the Maine Natural Areas Program Rare, Threatened, and Endangered Plant Taxa list, as updated November 2012.
[2] This listing of this species is presently proposed by the Maine Natural Areas Program to change from Threatened to Special Concern.
[3] This listing of this species is presently proposed by the Maine Natural Areas Program to change from Threatened to Special Concern.

Survey Area 59 (Bridal Path)

- Swamp honeysuckle (2015) and
- Northern bog sedge (2015)

Survey Area 64 (North Line)

- Goldie's fern (*Dryopteris goldiana*): State-Special Concern (2015) and
- Male fern (*Dryopteris filix-mas*): State-Endangered (2015)

Survey Area 73 (North Line)

- Showy lady's-slipper (2015) and
- Marsh valerian (2015)

Survey Area 74 (North Line)

- Lesser yellow water crowfoot (2015)

These RTE plant occurrences as well as the general habitat characteristics of each survey area are further described below. Special Plant Data Forms as available from the Maine Natural Areas Program are included in Appendix A. Representative photographs are included in Appendix B.

3.2.1 Turbine Area

Based on the 2014 field surveys of the Turbine Area, recommendations to conduct seasonally-appropriate RTE plant surveys were made for 9 survey areas: 13, 15, 16, 17, 22, 23, 28, 29, and 30. However, subsequent to the 2014 field surveys, reconfiguration of the Turbine Area eliminated 4 of these survey areas from the Project area (i.e., Survey Areas 17, 23, 29, and 30). The desktop analysis completed after the Project area reconfiguration identified one additional area for field survey in 2015 (i.e., Survey Area 60). The following summarizes the results of the 2015 field surveys in areas 13, 15, 16, 22, 28, and 60.

The Turbine Area includes a series of low elevation ridges as well as a network of access road and collector line corridors (Figure 2). The Turbine Area consists of managed timberland is dominated by northern hardwoods matrix forest communities. Evidence of past timber management is present throughout much of the forested area. Primary, secondary, and tertiary unpaved logging roads traverse the Turbine Area. The northern hardwood forest matrix is dominated by beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and yellow birch (*Betula alleghaniensis*). Coniferous species including red spruce, balsam fir (*Abies balsamea*), and hemlock (*Tsuga canadensis*) are present throughout the Turbine Area. The forested

communities are not exemplary as a result of past and on-going timber management practices including forest thinning, selective harvesting, and regenerating stands. Forest substrates and hydrology have also been altered in many areas as a result of rutting, timber skidding, and grading from logging equipment.

Small wetland habitats and riparian habitats are also located through the Turbine Area in low-lying areas. Wetlands include a mosaic of emergent, scrub-shrub, and forested wetlands throughout the landscape. The wetland communities are typically small in size and similarly have been affected from past forest management activities. Larger wetland systems are located in low elevation areas and are crossed by several existing logging roads.

Survey Area 13

No RTE plant species were located in Survey Area 13 during a follow-up field survey on June 15, 2015. Survey Area 13 is a second-growth forest on a moderate slope dominated by saplings and small-diameter trees of beech and sugar maple that leads up to a summit area (Figure 3). The understory is diverse with several rich-mesic indicator species including bland sweet-cicely (*Osmorhiza claytonii*), silvery false spleenwort (*Deparia acrostichoides*), American trout-lily (*Erythronium americanum*), rattlesnake fern (*Botrychium virginianum*), Braun's holly fern (*Polystichum braunii*), zig-zag goldenrod *(Solidago flexicaulis*), and red baneberry (*Actaea rubra*). Recent logging operations have impacted portions of this survey area.

Survey Area 15

No RTE plant species were located in Survey Area 15 during a follow-up field survey on June 15, 2015 (Figure 5). Survey Area 15 is a second-growth forest on a moderate slope dominated by saplings and small-diameter trees of beech, sugar maple, hop hornbeam (*Ostrya virginiana*), yellow birch, red oak (*Quercus rubra*), and quaking aspen (*Populus tremuloides*). Understory species include marginal woodfern (*Dryopteris marginalis*), blue wood-aster (*Symphyotrichum cordifolium*), red raspberry (*Rubus idaeus*), zig-zag goldenrod, bland sweet cicely (*Osmorhiza claytonia*), bush-honeysuckle (*Diervilla lonicera*), and bracken fern (*Pteridium aquilinum*). Additional understory species observed include kidney-leaved violet (*Viola renifolia*), red baneberry, white baneberry (*Actaea pachypoda*), long-stalked sedge (*Carex pedunculata*), and Canada-mayflower (*Maianthemum canadense*).

Survey Area 16

No RTE plant species were located in Survey Area 16 during a follow-up field survey on June 15, 2015. Survey Area 16 includes the riparian area of Number Nine Stream (Figure 6). The survey area also includes areas of mixed second-growth forest as well as forested, emergent, and scrub-shrub wetlands. The survey area includes common vegetation communities with dominate species including red spruce, balsam fir, quaking aspen, yellow birch, hemlock, northern white cedar, sugar maple, and red maple (*Acer rubrum*) trees. The understory is dominated by regenerating canopy species, speckled alder (*Alnus incana*), beaked hazelnut

(*Corylus cornuta*), northeastern manna grass (*Glyceria melicaria*), tall meadow-rue (*Thalictrum pubescens*), eastern rough sedge (*Carex scabrata*), slender wood-reed (*Cinna latifolia*), evergreen wood fern (*Dryopteris intermedia*), and northern lady fern (*Athyrium angustum*). Rich medic indicator species including ostrich fern (*Matteuccia struthiopteris*) and zig-zag goldenrod are sparse within the riparian area. Additional understory species observed include Jack-in-the-pulpit (*Arisaema triphyllum*), turtlehead (*Chelone glabra*), and two-leaved toothwort (*Cardamine diphylla*).

Survey Area 22

No RTE plant species were located in Survey Area 22 during a follow-up field survey on June 16, 2015. Survey Area 22 is a maturing second-growth mixed forest along a small ridgeline (Figure 7). Tree species include sugar maple, yellow birch, beech, balsam fir, red spruce, hemlock, and white ash (*Fraxinus americana*). The understory includes dense patches hobblebush (*Viburnum lantanoides*) along with striped maple (*Acer pensylvanicum*) saplings. Herbaceous plants are sparse within the community and include evergreen wood fern, Canada-mayflower, feathery false Solomon's-seal (*Maianthemum racemosum*), sharp-toothed nodding-aster (*Oclemena acuminata*), wild sarsaparilla (*Aralia nudicaulis*), shining firmoss (*Huperzia lucidula*), and Indian cucumber root (*Medeola virginiana*). Rich-mesic indicator species within the community were limited to a few individuals of white baneberry.

Survey Area 28

No RTE plant species were located in Survey Area 28 during follow-up field surveys on June 16, 2015. Survey Area 28 is an approximately 4-acre northern white cedar swamp (Figure 8). The community is maturing with northern white cedar trees between 20 and 40 inches in diameter with balsam fir and northern white cedar shrubs and saplings in the understory. The herbaceous stratum is dominated by bunchberry, evergreen wood fern, bristly-stalk sedge *(Carex leptalea*), naked bishop's-cap (*Mitella nuda*), northern wood sorrel (*Oxalis montana*), northern lady fern, and dwarf raspberry (*Rubus pubescens*). No evidence of circumneutral wetland conditions were observed.

Survey Area 60

No RTE plant species were located in Survey Area 60 on June 16, 2015. Survey Area 60 is a maturing second-growth mixed forest along a small ridgeline (Figure 4). Tree species include sugar maple, yellow birch, beech, balsam fir, red spruce, hemlock, and hop hornbeam. The understory includes sparse to dense patches of hobblebush, striped maple, and red elderberry (*Sambucus racemosa*). Herbaceous plants are sparse within the community and include evergreen wood fern, Canada-mayflower, prickly tree club-moss (*Dendrolycopodium dendroideum*), wild sarsaparilla and shining firmoss. Rich-mesic indicator species within the community were limited to a few individuals of Dutchman's breeches (*Dicentra cucullaria*).

3.2.2 North Generator Lead Line

The North Generator Lead Line (North Line) alignment extends approximately 26.2 miles from a proposed substation in the Turbine Area south to an existing substation on Ludlow Road in Houlton (Figure 9). Field surveys were completed in 17 areas identified during the desktop analysis as well as an additional area (Survey Area 75) identified by Stantec as potential RTE plant habitat during wetland delineation surveys in spring 2015.

Survey Area 42

No RTE plant species were located in Survey Area 42 on June 17, 2015. Survey Area 42 is a northern white cedar swamp (Figure 21). The community is regenerating with northern white cedar trees between 4 and 7 inches in diameter with occasional eastern larch (*Larix laricina*) and balsam fir as canopy associates. The shrub layer is moderately dense with saplings of canopy species, pussy willow (*Salix discolor*), long-beaked willow (*Salix bebbiana*), and common winterberry (*Ilex verticillata*). The herbaceous stratum is dense and is dominated by sensitive fern (*Onoclea sensibilis*), evergreen wood fern, cinnamon fern (*Osmundastrum cinnamomeum*), star sedge *(Carex echinata*), naked bishop's-cap, northern wood sorrel, northern lady fern, and dwarf raspberry. No evidence of circumneutral wetland conditions was observed.

Survey Area 44

No RTE plant species were located in Survey Area 44 on June 16, 2015. Survey Area 44 formerly consisted of a northern hardwoods forest on a moderate slope (Figure 24) but was intensively harvested for timber several days prior to the RTE survey. The survey area supported no vegetation at the time of the field survey.

Survey Area 45

No RTE plant species were located in Survey Area 45 on June 16, 2015. Survey Area 45 is a small riparian habitat adjacent to an existing utility line corridor (Figure 25) and surrounded by second-growth hardwood forest dominated by sugar maple, yellow birch, and beech. Bluejoint (*Calamagrostis canadensis*) dominates the herbaceous riparian community. Associated plants include sensitive fern, zig-zag goldenrod, Jack-in-the-pulpit, interrupted fern (*Osmunda claytoniana*), and spotted Joe-pye weed (*Eutrochium maculatum*). Evidence of rich-mesic habitat conditions was limited and included ostrich fern and bulbet fragile fern (*Cystopteris bulbifera*).

Survey Area 61

No RTE plant species were located in Survey Area 61 on June 16, 2015. Survey Area 61 is a second-growth hardwood forest dominated by sugar maple, yellow birch, beech, and white ash trees (Figure 10). The understory includes regeneration of canopy species along with striped maple and hobblebush. Dominant herbaceous plants include evergreen wood fern, northern

lady fern, jewelweed (*Impatiens capensis*), feathery false Solomon's-seal, lance-leaved twistedstalk (*Streptopus lanceolatus*), and red trillium (*Trillium erectum*). Evidence of rich-mesic habitat conditions were limited and included a few specimens of ostrich fern, bland sweet-cicely, white baneberry, and yellow forest violet (*Viola pubescens*). Recent selective forest harvesting has occurred within the survey area.

Survey Area 62

No RTE plant species were located in Survey Area 62 on June 16, 2015. Survey Area 62 includes second-growth hardwood upland and wetland forests dominated by sugar maple, yellow birch, beech, and white ash trees (Figure 11). The understory includes regeneration of canopy species along with striped maple and beaked hazelnut. Dominant herbaceous plants include evergreen wood fern, nodding sedge (*Carex gynandra*), jewelweed, fowl manna grass (*Glyceria striata*), awl-fruited sedge (*Carex stipata*), coltsfoot (*Tussilago farfara*), northern lady fern, eastern rough sedge, Canada-mayflower, and Indian cucumber root. Recent timber harvests have occurred throughout the survey area and have created a network of skid trails and woody debris throughout the site.

Survey Area 63

No RTE plant species were located in Survey Area 63 on June 16, 2015. Survey Area 63 includes upland mixed forested communities dominated by sugar maple, yellow birch, beech, hemlock, and red spruce (Figure 12). The understory is dominated by regenerating canopy species, striped maple, and hobblebush in the shrub and sapling strata and evergreen wood fern and Canada-mayflower in the herbaceous stratum. The southern portion of the survey area contains dense regeneration of canopy species due to recent forest harvesting activities. The survey area did not contain any evidence of rich-mesic habitat conditions.

Survey Area 64

Two rare plants were located in the vicinity of Survey Area 64 on June 16, 2015 (Figure 13). These include a large population of Goldie's fern within the eastern half of the survey area and a small population of male fern adjacent to the survey area and proposed North Line alignment. The survey area is a rich-mesic hardwood forest. Recent timber harvests have occurred throughout the survey area. The canopy is largely open with scattered residual sugar maple trees. The understory is densely vegetated with red raspberry colonizing much of the understory as a result of soil disturbance and canopy clearing from the forest harvesting activities. Approximately 300 Goldie's fern specimens were located throughout the eastern half of the survey area. The associated community includes sugar maple regeneration, red raspberry, northern maidenhair fern (*Adiantum pedatum*), silvery false spleenwort, wild sarsaparilla, northern lady fern, Braun's holly fern, bland sweet cicely, white baneberry, and ostrich fern. The Goldie's fern specimens were robust and growing vigorously in portions of the survey area. The population continues to the east of the survey area and ends near the TC R2 WELS township line.

Male fern was found growing approximately 100 feet to the east of the survey area and proposed North Line along the TC R2 WELS township line. Twelve individuals were located in an approximately 40 square foot area. The plants were growing with ostrich fern, northern lady fern, American elm, and yellow birch. Several downed trees were present around the population as a result of recent timber harvests. The North Line corridor was searched thoroughly in this vicinity for male fern but none were located directly within the project alignment.

Survey Area 65

No RTE plant species were located in Survey Area 65 on June 16, 2015. Survey Area 65 is located along South Branch (Figure 14). A mixed upland forest occupies a moderate south facing slope north of South Branch. This area is dominated by red spruce, sugar maple, yellow birch, and balsam fir trees. The understory has low species diversity and lacks evidence of rich-mesic habitat conditions. The riparian area along the stream is shrub-dominated with speckled alder and white meadowsweet (*Spiraea alba*) dominating the shrub stratum. Herbaceous plants in the riparian area includes tall meadow-rue, twisted sedge (*Carex torta*), bluejoint, royal fern (*Osumunda regalis*), silvery false spleenwort, long beech fern (*Phegopteris connectilis*), and interrupted fern. Recent forest harvests have occurred in the southern portion of the survey area. No rich-mesic or circumneutral habitat conditions were observed within this survey area.

Survey Area 66

No RTE plant species were located in Survey Area 66 on June 16, 2015. Survey Area 66 is a maturing second growth upland hardwood forest located along a small perennial stream (Figure 15). Dominant trees within the survey area include sugar maple, yellow birch, and red spruce. Dominant understory species include regenerating canopy species, beech saplings, hobblebush, beaked hazelnut, evergreen wood fern, northern oak fern (*Gynocarpium dryopteris*), ostrich fern, lance-leaved twisted stalk, wild sarsaparilla, Jack-in-the-pulpit, shining firmoss, and northern lady fern. No rich-mesic or circumneutral habitat conditions were observed within this survey area.

Survey Area 67

No RTE plant species were located in Survey Area 67 on June 16, 2015. Survey Area 67 is a mixed upland forest located along a small perennial stream (Figure 16). Dominant trees include hemlock, yellow birch, sugar maple, balsam fir, and red spruce. The understory includes regenerating canopy species, beaked hazelnut, beech, evergreen wood fern, Canada-mayflower, interrupted fern, starflower (*Lysimachia borealis*), lance-leaved twistedstalk, three-leaved rattlesnake-root (*Nabalus trifoliatus*), yellow blue-bead lily (*Clintonia borealis*), shining firmoss, long beech fern, and northern lady fern. No rich-mesic or circumneutral habitat conditions were observed within this survey area.

Survey Area 68

No RTE plant species were located in Survey Area 68 on June 16, 2015. Survey Area 68 includes a maturing northern hardwoods upland forest dominated by sugar maple and yellow birch trees (Figure 17). Red spruce and balsam fir trees are scattered throughout the survey area. The understory includes a diverse fern-dominated herbaceous stratum. Dominant ferns include evergreen wood fern, long beech fern, oak fern, interrupted fern, ostrich fern, sensitive fern, silvery false spleenwort, and hay-scented fern (*Dennstaedtia punctilobula*). Additional herbaceous plants include wild sarsaparilla and red baneberry. Evidence of rich-mesic habitat conditions was limited but included a small proportion of rich-mesic indicator species including red baneberry, rattlesnake fern, bland sweet cicely, and silvery false spleenwort.

Survey Area 69

No RTE plant species were located in Survey Area 69 on June 17, 2015. Survey Area 69 consists of herb-dominated riparian habitat (Figure 18) and surrounding second-growth mixed forest dominated by beech, red spruce, balsam fir, and yellow birch. Streamside wetlands occur on deep alluvial soils and/or slate bedrock with bluejoint dominating the herb stratum. Associated plants include sensitive fern, hedge false bindweed (*Calystegia sepium*), twisted sedge, lesser bladder sedge (*Carex vesicaria*), and spotted Joe-pye weed. Woody species were infrequent in the streamside wetland habitat and included long-beaked willow and heart-leaved willow (*Salix eriocephala*). No rich-mesic or circumneutral habitat conditions were observed within this survey area.

Survey Area 70

No RTE plant species were located in Survey Area 70 on June 17, 2015. Survey Area 70 consists of herb-dominated riparian habitat adjacent to B Stream (Figure 19) and surrounding second-growth mixed forest dominated by beech, red spruce, balsam fir, and yellow birch. Streamside wetlands occur on deep alluvial soils with bluejoint dominating the herb stratum. Associated plants include sensitive fern, tussock sedge (*Carex stricta*), twisted sedge, lesser bladder sedge, interrupted fern, and spotted Joe-pye weed. Woody species were infrequent in the streamside wetland habitat and included speckled alder, long-beaked willow, and heart-leaved willow. Evidence of rich-mesic habitat conditions included ostrich fern, golden groundsel (*Packera aurea*), and silvery false spleenwort.

Survey Area 71

No RTE plant species were located in Survey Area 71 on June 3, 2015 (Figure 20). Portions of Survey Area 71 have been recently harvested for timber and include a network of skidder trails with red raspberry and abundant woody debris. Residual trees including yellow birch, sugar maple, red spruce, and balsam fir are scattered in narrow strips between skidder trails. No evidence of rich-mesic conditions was observed within the survey area.

Survey Area 72

No RTE plant species were located in Survey Area 72 on June 16, 2015. Survey Area 72 is a small northern white cedar swamp (Figure 21). A culvert diverts water into this community from a beaver impoundment on the north side of a dirt logging road. The community is dominated by northern white cedar with black ash (*Fraxinus nigra*) as a canopy associate. The shrub layer is moderately dense with canopy species saplings, pussy willow, speckled alder, and common winterberry (*Ilex verticillata*). The herbaceous stratum is dense and is dominated by sensitive fern, spotted Joe-pye weed, purple-stemmed American-aster (*Symphyotrichum puniceum*), wrinkle-leaved goldenrod *(Solidago rugosa*), tall white aster (*Doellingeria umbellata*), star sedge, northern lady fern, and crested wood fern (*Dryopteris cristata*). Evidence of rich-mesic habitat conditions included alder-leaf buckthorn (*Rhamnus alnifolia*) in the shrub stratum.

Survey Area 73

Two rare plants were located in Survey Area 73 on June 16, 2015. These include showy lady's-slipper and marsh valerian (Figure 22).

Approximately 15 showy lady's-slipper plants were located in the southern portion of the survey area within a calcareous northern white cedar swamp. The plants were in early flower and occurred under an approximately 50% canopy closure of northern white cedar and eastern larch.

Approximately 20 marsh valerian individuals were located in the northern portion of the survey area within a calcareous northern white cedar swamp. Five of these individuals were flowering and the remaining individuals were vegetative and non-reproductive. Additional young, non-reproductive individuals of marsh valerian are likely included under the dense herb layer.

Associated species include northern white cedar, eastern larch, Labrador-tea (*Rhododendron groenlandicum*), buck-bean (*Menyanthes triloliata*), cinnamon fern, star sedge, three-seeded sedge (*Carex trisperma*), north wind bog orchid (*Platanthera aquilonis*), and three-leaved false Solomon's-seal (*Maianthemum trifolium*). Recent small scale timber harvests have occurred on the north end of this wetland and have deposited in woody debris material atop some of the marsh valerian specimens.

Survey Area 74

One rare plant species, lesser yellow water crowfoot, was located in Survey Area 74 on June 16, 2015. Survey area 74 is a calcareous northern white cedar swamp with substantial open, marshy inclusions (Figure 22). Lesser yellow water crowfoot occurred in an open pool in one of these marshy openings in the extreme southeastern portion of the survey area adjacent to the open existing transmission line corridor. Several hundred ramets were in full flower in a two square yard area growing with river horsetail (*Equisetum fluviatile*), crested wood fern, alder-leaved

buckthorn, black ash, hoary sedge (*Carex canescens*), and three seeded sedge. Water depth at the time of the field survey was approximately four inches.

Much of the habitat appeared suitable for other RTE plants such as showy lady's slipper but none were found within the survey area.

Survey Area 75

No RTE plant species were located in Survey Area 75 on June 16, 2015 (Figure 23). Survey Area 75 is a northern white cedar swamp, although the section within the survey area supports a somewhat drier and firmer substrate with a sparse herb layer. Northern white cedar trees between 4 and 10 inches in diameter dominate the community. The shrub layer is sparse and contains northern white cedar and a few black ash specimens. The herbaceous stratum is very sparse and contains approximately 40 individuals of an uncommon orchid, broad-leaved twayblade (*Neottia convallarioides*), sensitive fern, long-stalked sedge, star sedge, Canada-mayflower, northern wood sorrel, and dewdrop (*Rubus dalibarda*). Bryophytes dominate the ground layer.

3.2.3 Bridal Path Generator Lead Line

The Bridal Path Generator Lead Line (Bridal Path Line) is approximately 25.4 miles long and extends from an existing substation on Ludlow Road in Houlton south to an existing 345-kv transmission line in Haynesville (Figure 26). Much of the Bridal Path Line was historically cleared of vegetation in the 1960s for a previously proposed utility line corridor. The project was abandoned and the vegetation within the Bridal Path Line corridor continues to regenerate and mature.

The Bridal Path Line traverses a mixed landscape dominated by second- and third-growth mixed forests dominated by balsam fir, red spruce, red maple, sugar maple, and yellow birch. Recent and on-going timber management practices are prevalent along the Bridal Path Line corridor.

Wetland communities are also prevalent along the Bridal Path Line and include several large wetland complexes with a mosaic of emergent, forested, and scrub-shrub communities. The proposed Bridal Path Line alignment also crosses several first, second, and third order streams.

In 2015, additional RTE plant surveys were completed within Survey Areas 46, 47, 49, 50, 51, 55, 56, 57, 58, and 59. RTE plants were located in Survey Areas 46, 56, and 59.

Survey Area 46

Three rare plants were located in Survey Area 46 on October 9, 2014. These include showy lady's-slipper, swamp honeysuckle, and lesser yellow water crowfoot (Figure 27). A follow-up field survey was completed on June 16, 2015 to confirm the extent of the RTE plant occurrences. An additional clump of showy lady's slipper (approximately 9 individuals) was located

approximately 100 feet south of the lesser yellow water crowfoot population in the center of the Bridal Path corridor.

In 2014, approximately 20 showy lady's slipper plants were located on the eastern edge of the Bridal Path Line corridor within a calcareous northern white cedar swamp. The plants were senesced but were identifiable based on remnant leaf, stem, and seed capsule characteristics. It is possible that additional individuals exist in this vicinity but were not identifiable during the fall field surveys. Associated species include northern white cedar, bluejoint, sensitive fern, soft-leaved sedge (*Carex disperma*), and bristly-stalk sedge. This population area was confirmed during the 2015 field survey.

In 2014, approximately 20 swamp honeysuckle individuals were located on the western edge of the Bridal Path Line corridor on the edge of the calcareous northern white cedar swamp. Associated species include northern white cedar, skunk currant (*Ribes glandulosum*), fowl manna grass, dwarf raspberry, naked miterwort, and large-leaved avens (*Geum macrophyllum*). Recent timber harvests have occurred on the west side of the Bridal Path Line corridor adjacent to the swamp honeysuckle plants. Invasive species including common buckthorn (*Rhamnus cathartica*) and glossy buckthorn (*Frangula alnus*) occur near the population.

In 2014, lesser yellow water crowfoot was located in the northern portion of the survey area within an apparent historically excavated ditch within a scrub-shrub wetland. The population consisted of several hundred ramets. The associated species included broad-leaved cattail (*Typha latifolia*), bluejoint, and red-osier dogwood (*Swida sericea*).

The RTE surveys in 2008 also documented marsh valerian (*Valeriana uliginosa*) and white adder's-mouth (*Malaxis monophyllos*) near the showy lady's slipper and swamp honeysuckle occurrences. These species were not relocated during the 2014 or 2015 field surveys.

The interior portion of the Bridal Path corridor contains a dense broad-leaved cattail colony and deep mucky soils that are periodically inundated. Most of the interior portion of the Bridal Path does not contain suitable habitat for additional showy lady's-slipper, swamp honeysuckle, marsh valerian, or white adder's-mouth.

Survey Area 47

No RTE plants were located in Survey Area 47 during field surveys on June 15, 2015. The survey area is located along the banks and adjacent riparian forests of the Meduxnekeag River (Figure 28). Field surveys in 2014 indicated a small area of rich-mesic riparian forest on the south side of the river. This area was targeted for field surveys in 2015. The canopy is dominated by sugar maple, pin cherry (*Prunus pensylvanica*), quaking aspen, and black cherry (*Prunus serotina*). Dominant shrubs include beaked hazelnut, speckled alder, silky dogwood (*Swida ammomum*), hawthorns (*Crataegus* spp.), choke cherry (*Prunus virginiana*), and highbush-cranberry (*Viburnum trilobum*). Dominant herbaceous plants include sensitive fern, evergreen wood fern, northern lady fern, bracken fern (*Pteridium aquilinum*), zig-zag goldenrod, red raspberry,

Canada goldenrod (*Solidago canadensis*), common strawberry (*Fragaria virginiana*), wrinkle-leaved goldenrod, fringed yellow-loosestrife (*Lysimachia ciliata*), and skunk currant (*Ribes glandulosum*).

Survey Area 49

No RTE plants were located in Survey Area 49 on June 4, 2015 (Figure 29). Wild hound's-tongue (*Cynoglossum virginianum* ssp. *boreale*) was located within an upland area within this survey area during RTE surveys by others in 2008. Utilizing maps, sketches, and field forms from the 2008 surveys, this upland area was searched thoroughly for wild hound's-tongue but did not relocate the population. Wild hound's-tongue populations can be short-lived and are susceptible to forest succession including increasing canopy. It is presumed that the population of wild hound's-tongue is extirpated from this location.

Survey Area 50

No RTE plants were located in Survey Area 50 during a follow-up survey on June 16, 2015 (Figure 30). In 2014, the interior portion of the survey area contained a maturing northern white cedar swamp with limited evidence of circumneutral conditions. Field surveys in 2015 were targeted in this maturing northern white cedar swamp. Northern white cedar trees between 10 and 13 inches in diameter dominate the community. The shrub layer is sparse and contains northern white cedar and a few black ash. The herbaceous stratum is sparse and contains sensitive fern, dwarf raspberry, star sedge, Canada-mayflower, cinnamon fern, and bristly-stalk sedge. Bryophytes dominate the ground layer.

Survey Area 51

No RTE plants were located in Survey Area 51 during follow-up surveys on June 1, 2015 (Figure 31). Field surveys in 2014 of Survey Area 51 indicated that the northern portion of the survey area may contain circumneutral habitat conditions that could potentially support RTE plant species along the western edge of the Bridal Path corridor. Recent timber harvests occurred subsequent to the 2014 field surveys.

Survey Area 55

No RTE plants were located in Survey Area 55 during follow-up surveys on June 15, 2015. Field surveys in 2014 indicated that the southern portion of the survey area contained rich-mesic habitat conditions that could potentially support RTE plants (Figure 32). Field surveys in 2015 confirmed the rich-mesic conditions but no RTE plants were located after a thorough search in this area. Rich-mesic species within this upland hardwood forest include blue cohosh (*Caulophyllum thalictroides*), silvery false spleenwort, ostrich fern, northern maidenhair fern, and two-leaved toothwort.

Survey Area 56

Four species of RTE plants were located in Survey Area 56 during follow-up surveys on June 15, 2015. The RTE species included swamp honeysuckle, marsh valerian, northern bog sedge, and show lady's-slipper in a circumneutral northern white cedar woodland fen (Figure 33). The occurrences of the RTE species were limited to the edge of the previously cleared bridal path corridor. Hydrology within the interior portion of the previously cleared Bridal Path corridor appeared too high to support additional populations of these species.

Over 100 individuals of marsh valerian are located along the eastern perimeter of the Bridal Path corridor. The population is associated with eastern larch, northern white cedar, and black spruce (*Picea mariana*) trees and shrubs. Additional associated shrub species include balsam fir, red-osier dogwood, Labrador-tea, and velvet-leaved blueberry (*Vaccinium myrtilloides*). Associated herbaceous plants include inland sedge (*Carex interior*), three-leaved false Solomon's-seal, twinflower (*Linnaea borealis*), boreal bog sedge (*Carex magellanica*), water avens (*Geum rivale*), and wood horsetail (*Equisetum sylvaticum*).

A small population of northern bog sedge was located with the marsh valerian population. Approximately 100 flowering stems were observed on hummocks of peat moss (*Sphagnum* spp).

Showy lady's-slipper was located in two locations within the survey area. Twelve individuals were located growing with northern bog sedge and marsh valerian on the east side of the Bridal Path corridor. An additional 4 plants were located on the western portion of the Bridal Path corridor near the edge of the wetland.

A small population (i.e., 3 plants) of swamp honeysuckle was located on the western edge of the Bridal Path corridor. These plants were growing under a canopy of black ash, red spruce, balsam fir, and northern white cedar. Associated herbaceous plants included dwarf raspberry, bristly-stalk sedge, three-seeded sedge, boreal bog sedge, and spotted Joe-pye weed.

Survey Area 57

No RTE plants were located in Survey Area 57 on June 15, 2015 (Figure 34). Field surveys in 2014 indicated the presence of circumneutral habitat conditions along the eastern edge of the Bridal Path corridor that could potentially support RTE plant species. The existing Bridal Path corridor intersects a northern white cedar swamp at this survey location. The wetland is dominated by northern white cedar trees, speckled alder shrubs, and several herbaceous species including river horsetail (*Equisetum fluviatile*), sensitive fern, soft-leaved sedge, three-seeded sedge, boreal bog sedge, broad-leaved cattail, and dwarf raspberry. Evidence of circumneutral habitat conditions was limited to the presence of yellow lady's-slipper (*Cypripedium parviflorum* var. *pubescens*) along the eastern edge of the corridor.

Survey Area 58

No RTE plants were located in Survey Area 58 on June 15, 2015. Field surveys in 2014 indicated the potential presence of circumneutral wetland habitat conditions in a forested wetland area located north of the West Branch Mattawamkeag River (Figure 35). The wetland area is dominated by northern white cedar, yellow birch, and gray birch (*Betula populifolia*). Dominant shrubs and saplings include regenerating canopy species, long-beaked willow, white meadowsweet, and red maple. Common herbaceous plants include bluejoint, sensistive fern, cinnamon fern, nodding sedge, dwarf raspberry, crested wood fern, and purple-stemmed American-aster. No evidence of circumneutral habitat conditions was observed.

Survey Area 59

Two species of RTE plants were located in Survey Area 59 on June 15, 2015. These species include swamp honeysuckle and northern bog sedge (Figure 36). The plants were located in the southern portion of the survey area within and along the edge of the existing open transmission line corridor.

Approximately 50 individuals of swamp honeysuckle were located in and along the edge of the existing open transmission line corridor. Associated species included speckled alder, long-beaked willow, white meadowsweet, eastern larch, and red-osier dogwood shrubs with herbs of Labrador-tea, inland sedge, New England groundsel (*Packera schweinitziana*), blue iris (*Iris versicolor*), yellow-green sedge (*Carex flava*), swollen-beaked sedge (*Carex utriculata*), and water avens. Six additional swamp honeysuckle plants were located to the west of the open transmission line corridor along the transition between the forested northern white cedar wetland and shrub-dominated wetland along a slow-flowing perennial stream.

A small population of northern bog sedge was located along the western edge of the existing transmission line corridor. Approximately 50 flowering stems were growing on hummocks of peatmoss with Labrador-tea, eastern larch, three-leaved false Solomon's-seal, marsh fern (*Thelypteris palustris*), water avens, alder-leaved buckthorn, and yellow-green sedge.

4.0 SUMMARY

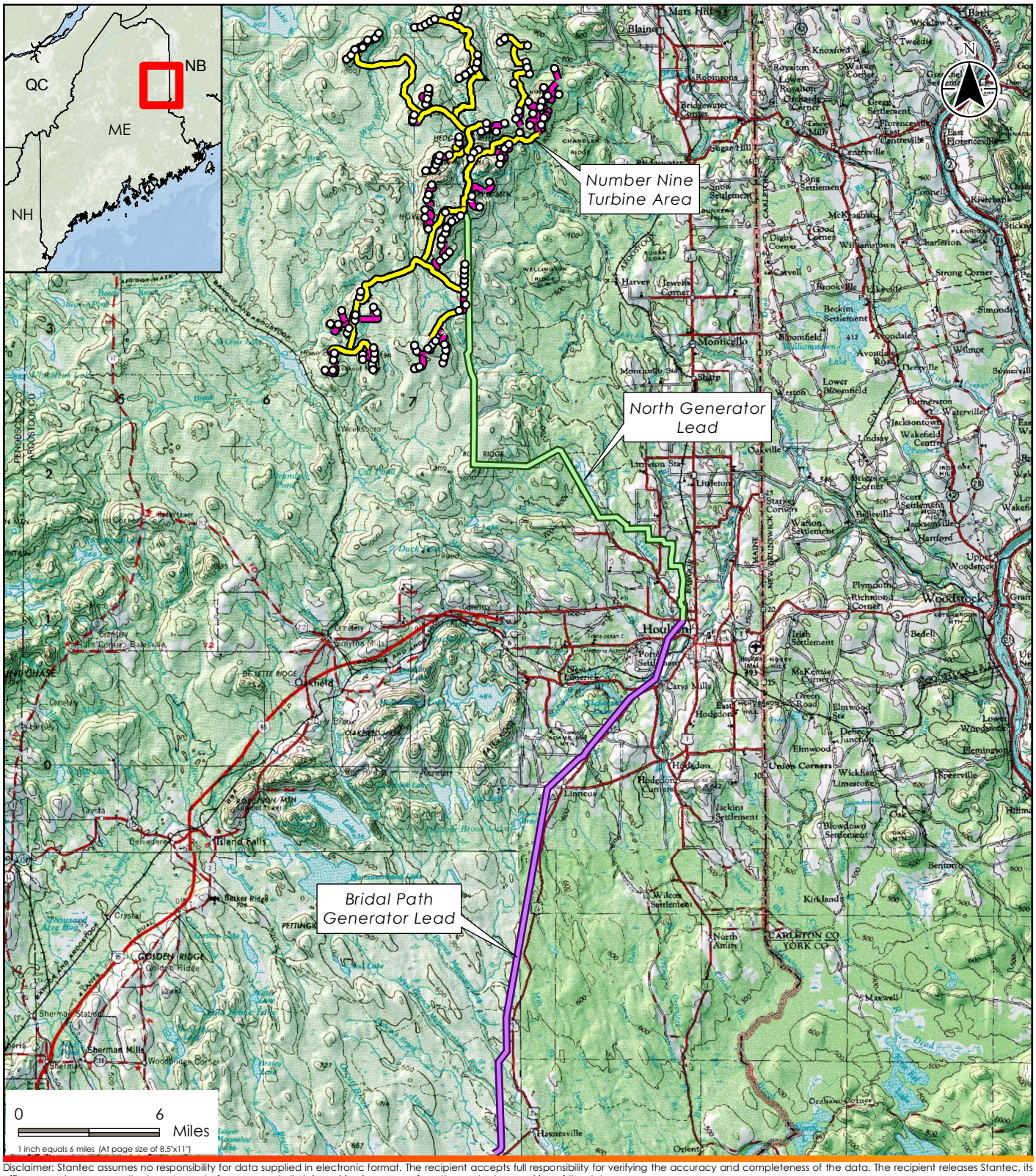
In summary, field surveys of the Number Nine Wind Farm in October 2014 and June 2015 were targeted in areas determined to have a potentially higher likelihood of supporting RTE plant species based on a desktop analysis of existing field data, past RTE surveys, landforms, regional geology and hydrology, and past disturbances. In 2015, field surveys were completed within 32 areas within the Project area. These include 6 areas within the Turbine area; 17 areas along the North Generator Lead, and 9 areas along the Bridal Path. Within the survey sites, 7 species of RTE plants were found within 7 locations. These include the following species:

- Northern water crowfoot (3 locations);
- Showy lady's-slipper (3 locations);
- Swamp honeysuckle (3 locations);
- Northern bog sedge (2 locations);
- Marsh valerian (2 locations);
- Goldie's fern (1 location); and
- Male fern (1 location).

The remaining portions of the Project area provide little to no potential habitat for RTE plant species based on present natural community conditions, including past impacts from forest management activities and other land uses.

Project engineering designs should implement measures to avoid and minimize potential impacts to these RTE populations. Examples of such measures may include buffering the populations by a sufficient distance from project activities, maintaining present hydrology of the population, maintaining present forest canopy conditions, and/or maintaining present microtopography of the habitat. Each RTE plant species has specific habitat requirements and appropriate avoidance and minimization measures should be developed through further consultation with Stantec as well as MNAP.

Figures



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Reviewed by MPA on 2014-12-18

00919_01_Locus.mxd

Legend

- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Bridal Path Generator Lead (3/16/15)

Client/Project

EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

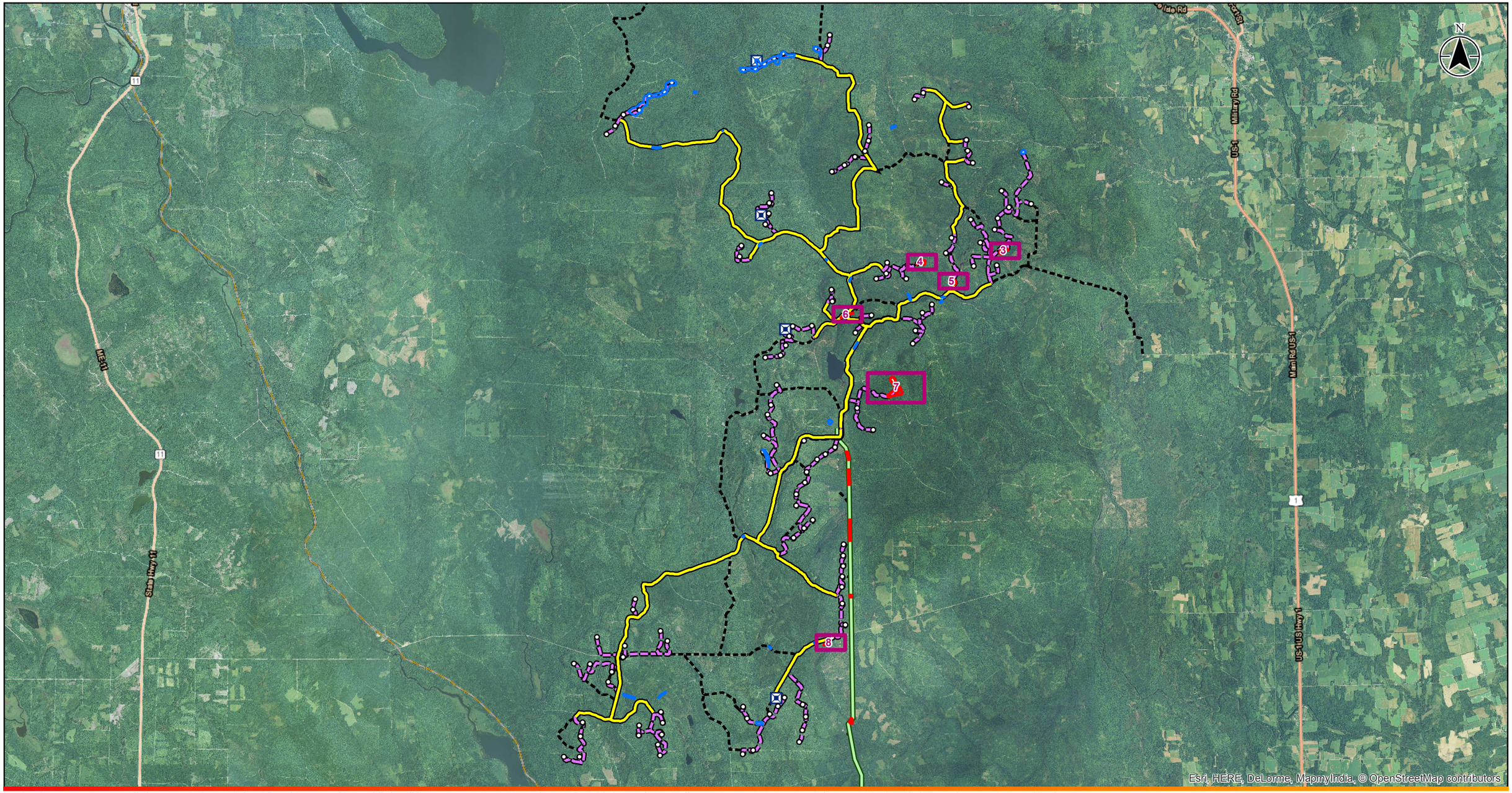
Figure No.

1

Title

Site Locus Map

6/25/2015



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00919_02_Summit_RTE_Plant_Survey_Areas.mxd

Legend

- Turbine Layout (4/3/15)
- MET Tower (4/3/15)
- 2014 RTE Survey Area
- 2015 RTE Survey Area
- Map Extent
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Access Road (4/3/15)

0 2 Miles
1 inch = 2 miles (At page size of 11"x17")

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Figure No.
2

Title
2015 RTE Plant Survey Areas Overview - Turbine Area

7/9/2015

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00919_03_Summit_RTE_Plant_MapBk.mxd

Legend

- RTE Survey Area
- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

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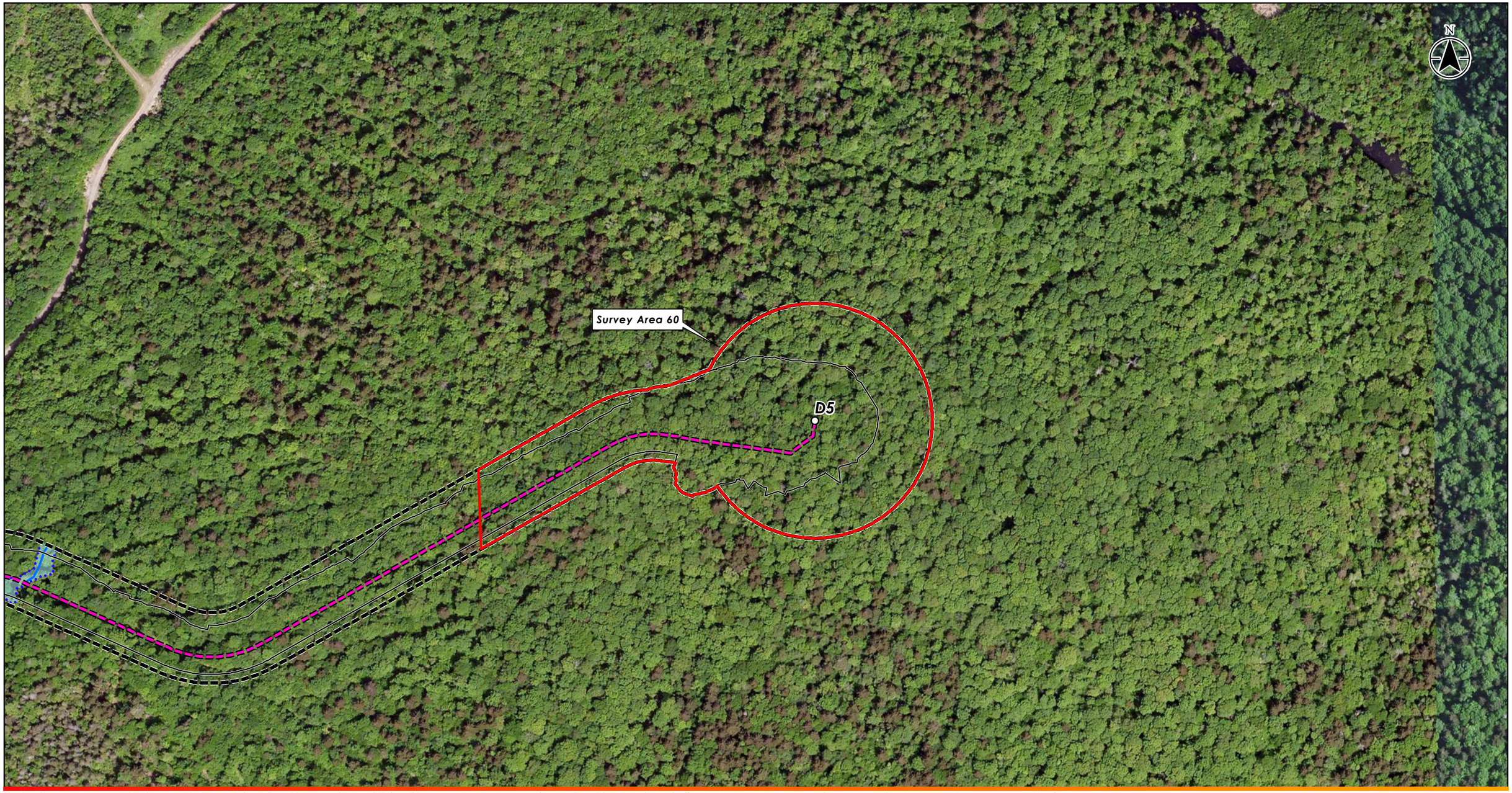
Figure No.
3

Title
Turbine Area
2015 RTE Plant Survey Areas
7/9/2015



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Legend

- RTE Survey Area
- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet
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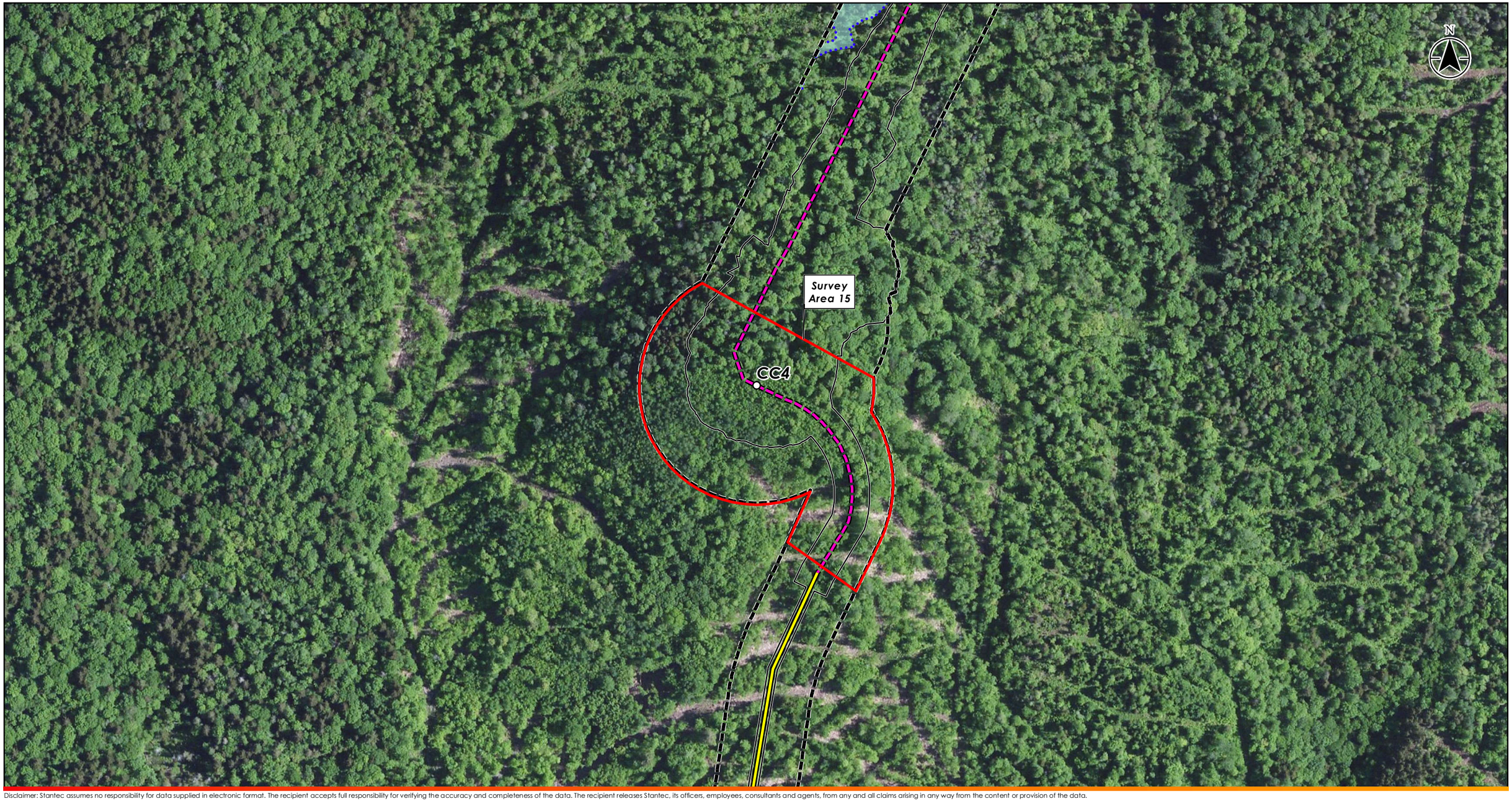
Figure No.
4

Title
Turbine Area
2015 RTE Plant Survey Areas
7/9/2015



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Legend

- RTE Survey Area
- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Wetland
- Reporting Limits

0 200 Feet
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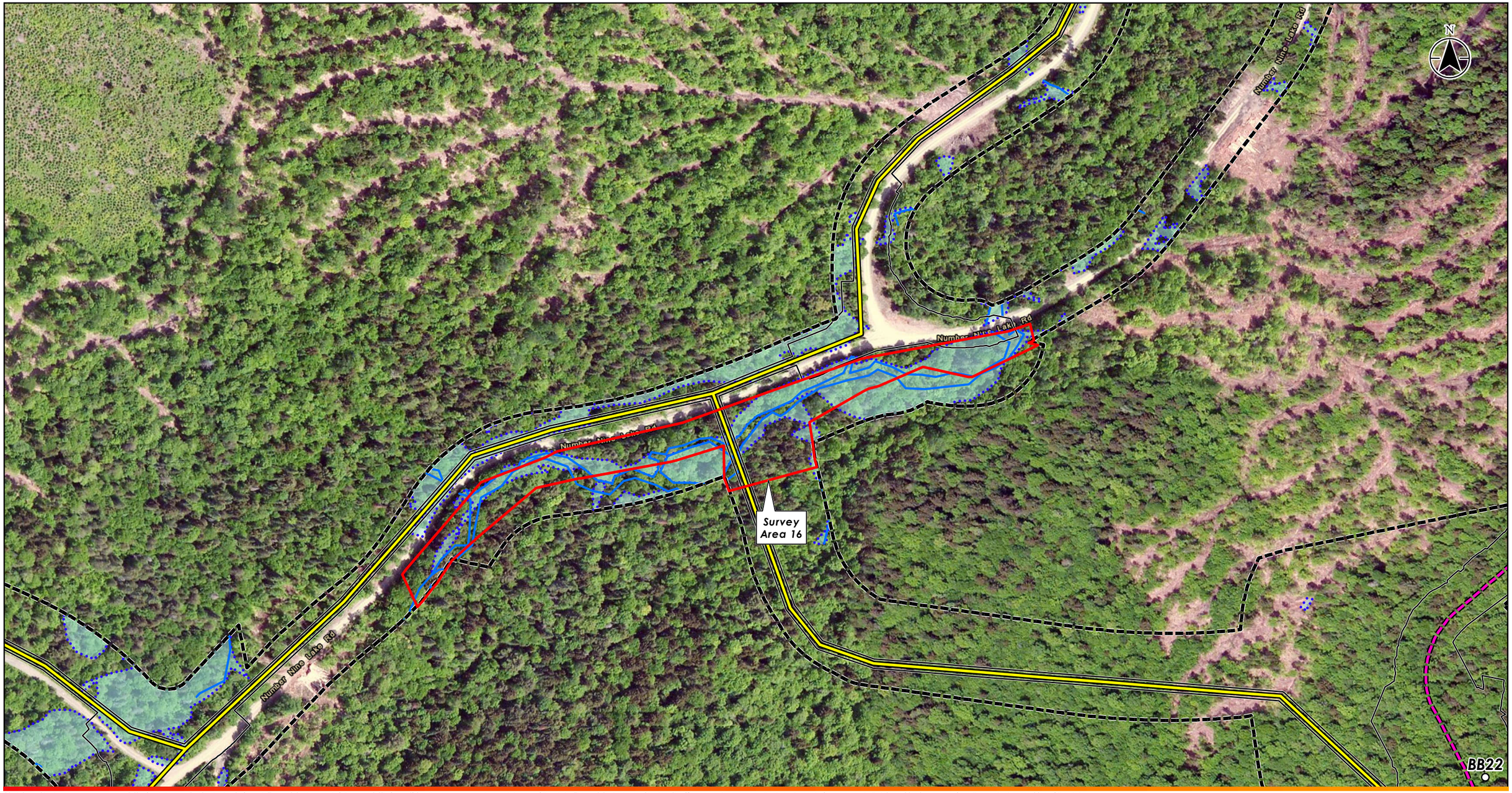
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
5

Title
Turbine Area
2015 RTE Plant Survey Areas
7/9/2015



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00919_03_Summit_RTE_Plant_MapBk.mxd

Legend

- RTE Survey Area
- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet
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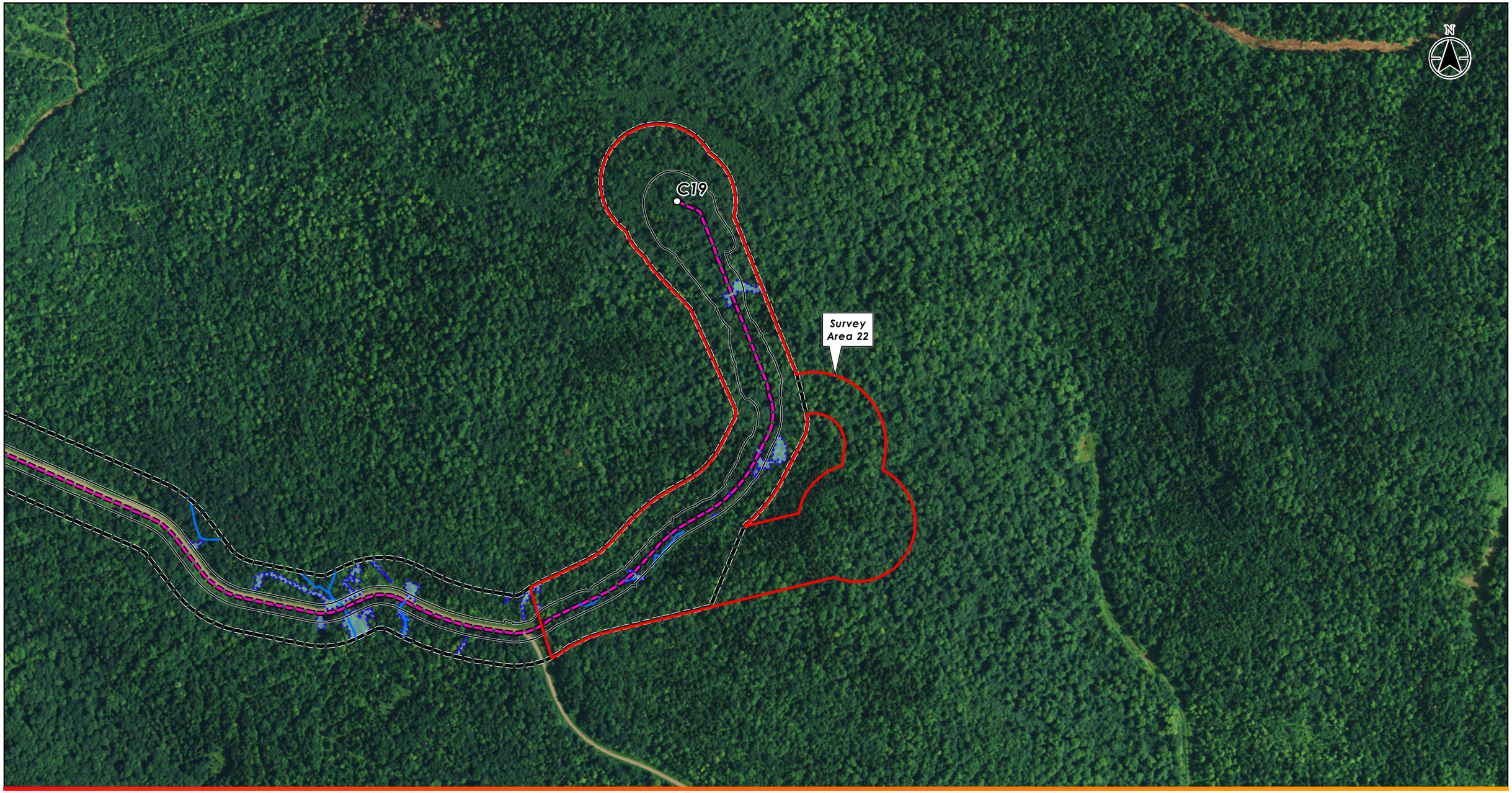
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
6

Title
Turbine Area
2015 RTE Plant Survey Areas
7/9/2015



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00919_03_Summit_RTE_Plant_MapBk.mxd

Legend

- RTE Survey Area
- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 400 Feet
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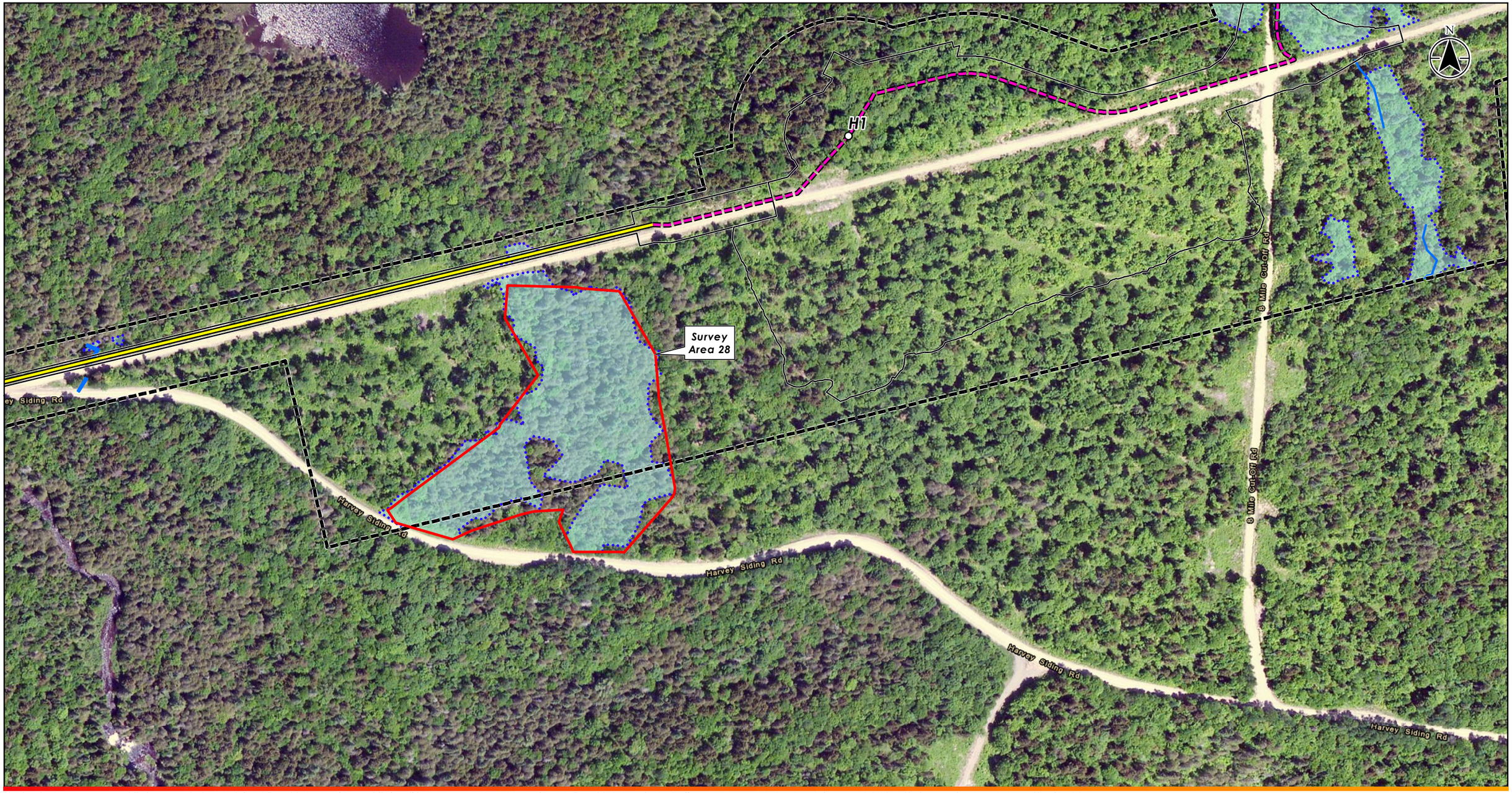
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
7

Title
Turbine Area
2015 RTE Plant Survey Areas
7/9/2015



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00919_03_Summit_RTE_Plant_MapBk.mxd

Legend

- RTE Survey Area
- Turbine Layout (4/3/15)
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- Limit of Disturbance
- Delineated Stream
- Delineated Wetland
- Reporting Limits

0 200 Feet
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Client/Project
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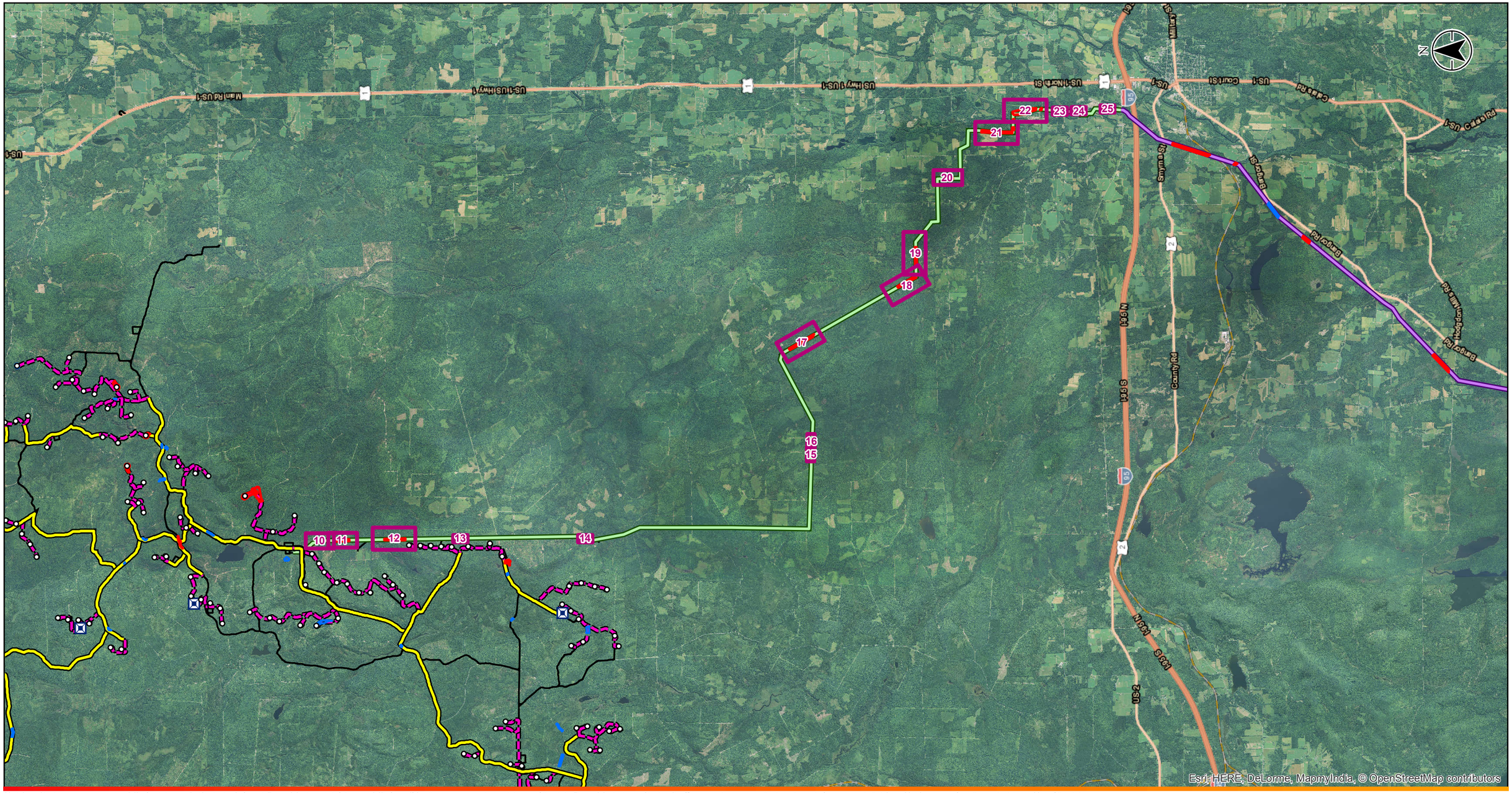
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
8

Title
Turbine Area
2015 RTE Plant Survey Areas

7/9/2015



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Prepared by DLJ on 2015-06-25
Reviewed by MPA on 2015-07-01

00919_09_NorthGenLead_Survey_Areas.mxd

Legend

- Turbine Layout (4/3/15)
- MET Tower (4/3/15)
- 2014 RTE Survey Area
- 2015 RTE Survey Area
- Map Extent
- Overhead Collector (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)
- Bridal Path Generator Lead (3/16/15)
- Project Design (4/3/15)

0 2 Miles
1 inch = 2 miles (At page size of 11"x17")

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Figure No.
9

Title
2015 RTE Plant Survey Areas Overview - North Generator Lead

7/10/2015

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Prepared by DLJ on 2015-06-25
Reviewed by MPA on 2015-07-01

00919_10_NorthGenLead_RTE_Plant_MapBk.mxd

Legend

- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 200 Feet

1 inch = 200 feet (At page size of 11"x17")

Client/Project

EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

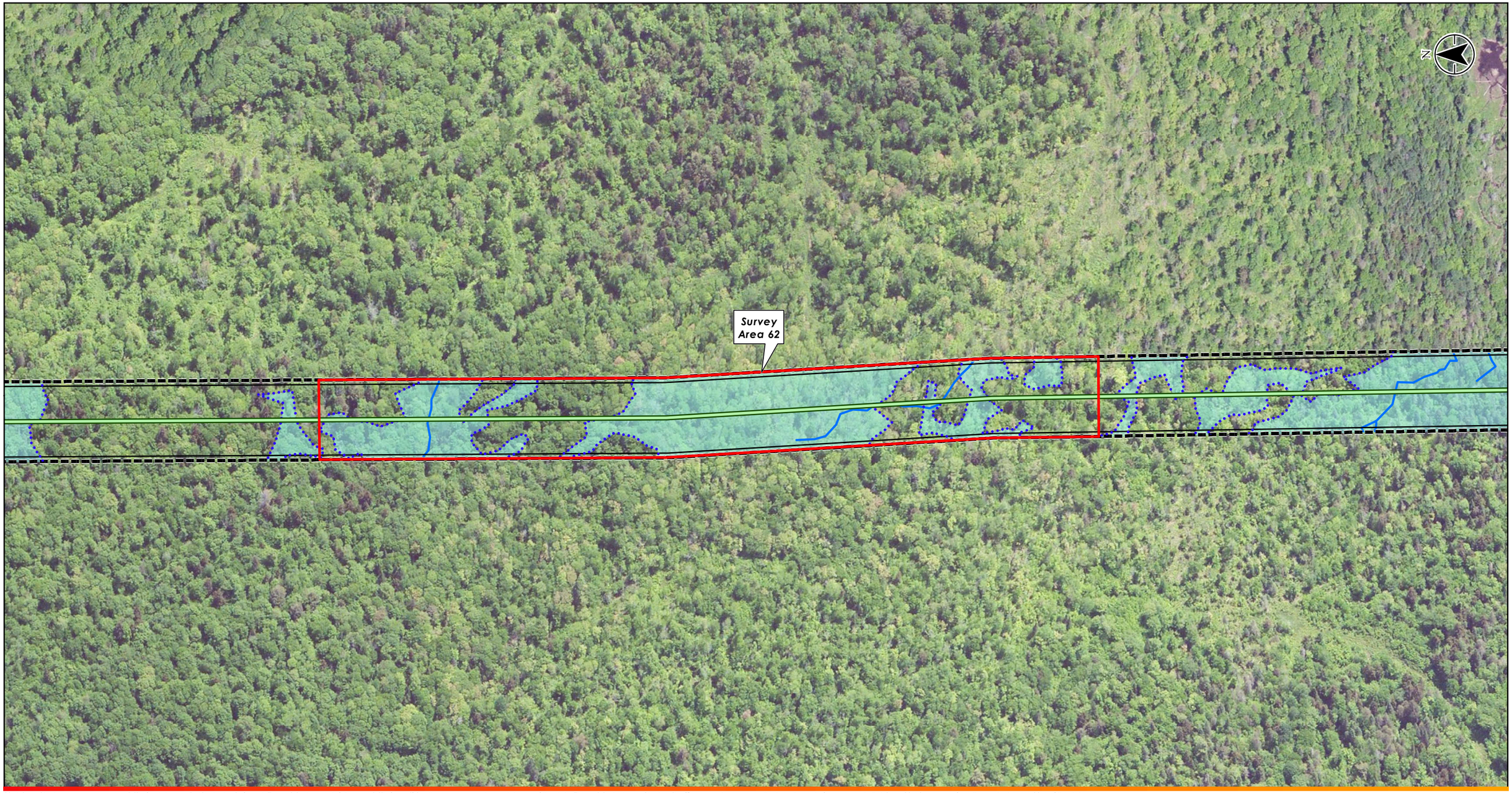
Figure No.

10

Title

North Generator Lead 2015 RTE Plant Survey Areas

7/10/2015



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Legend

- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
11

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015

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Legend

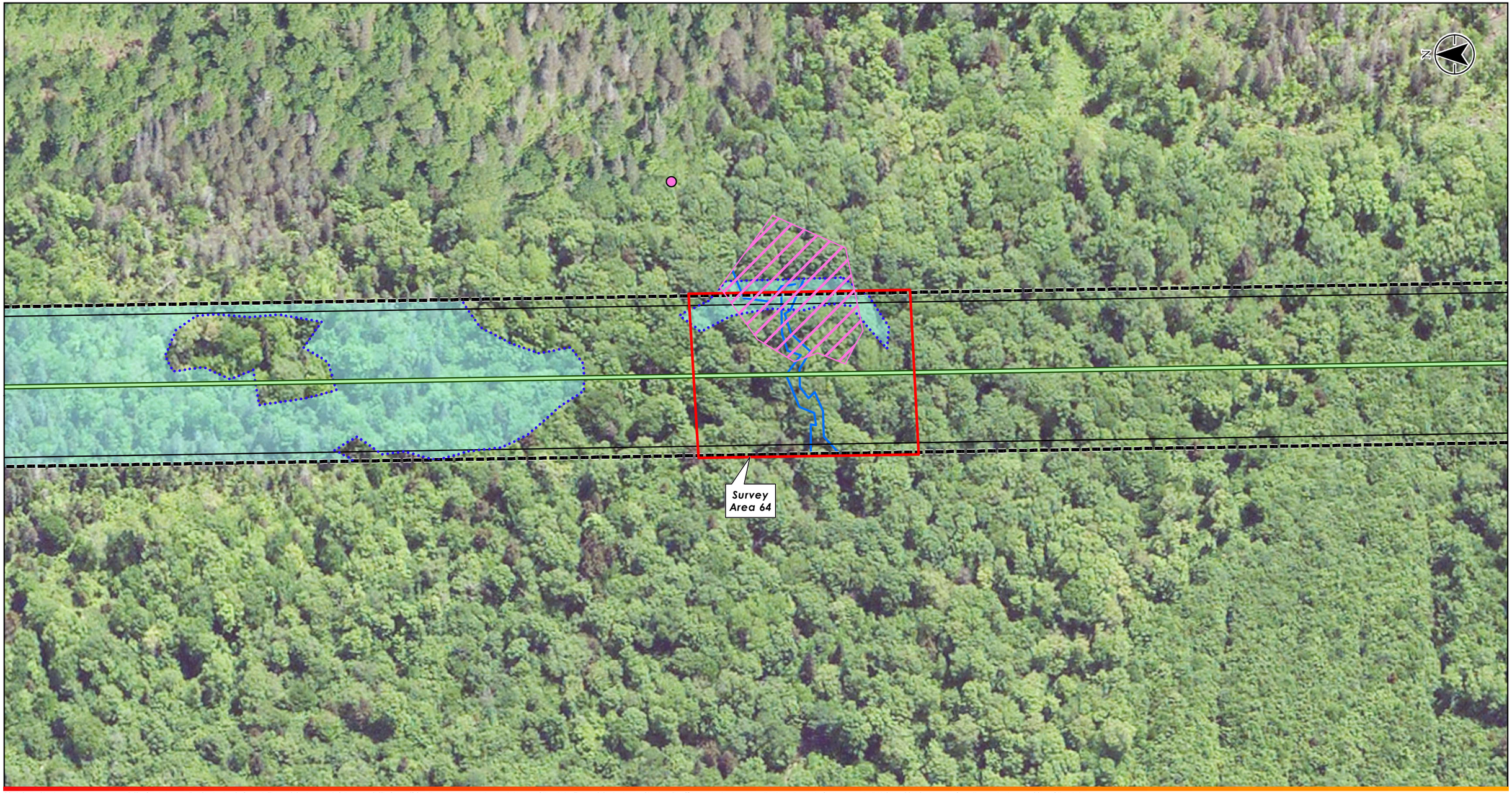
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Turbine Layout (4/3/15)
- Underground Collector (4/3/15)
- North Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
12

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

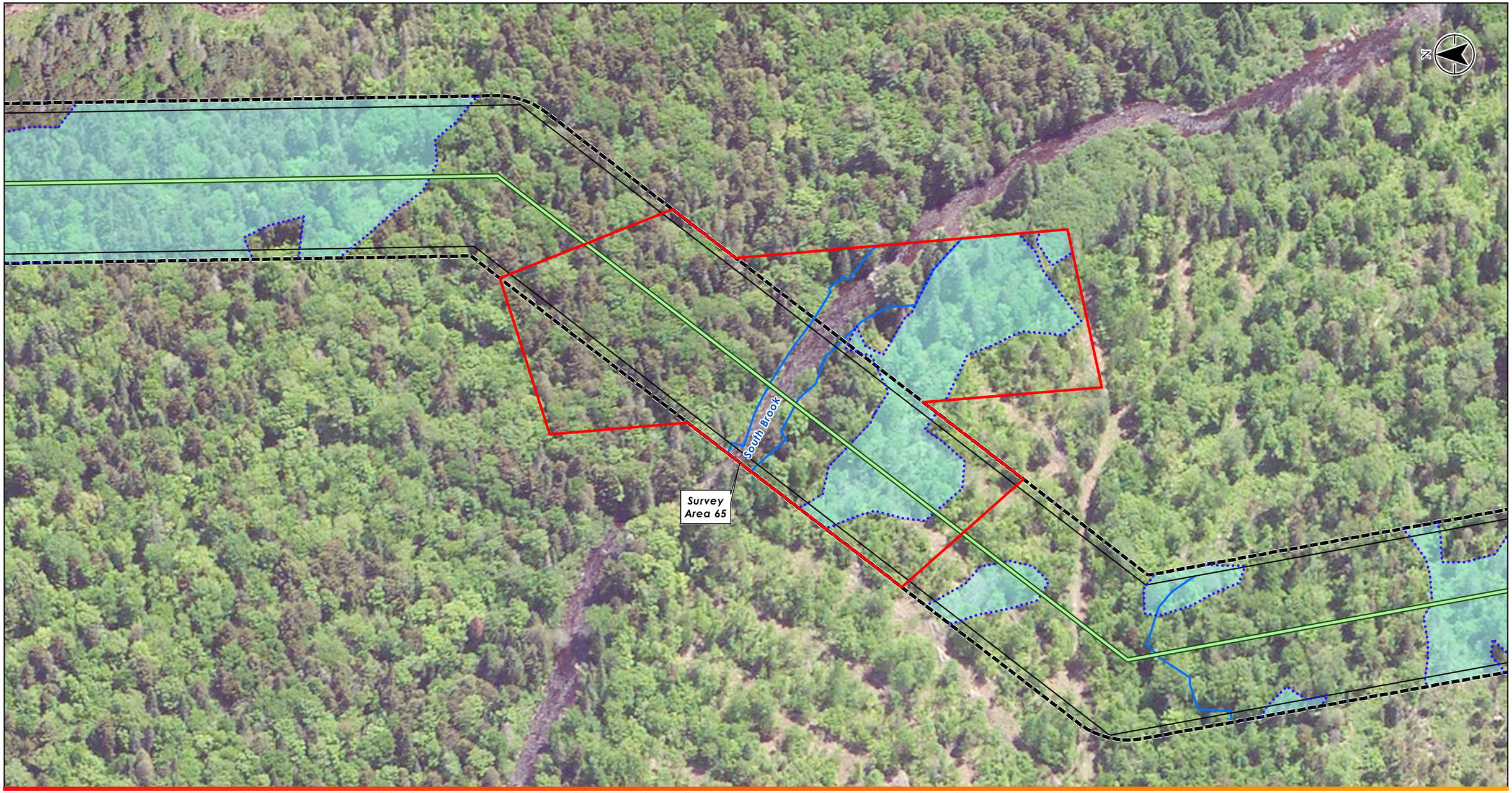
- *Dryopteris filix-mas*
- *Dryopteris goldiana*
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
13

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

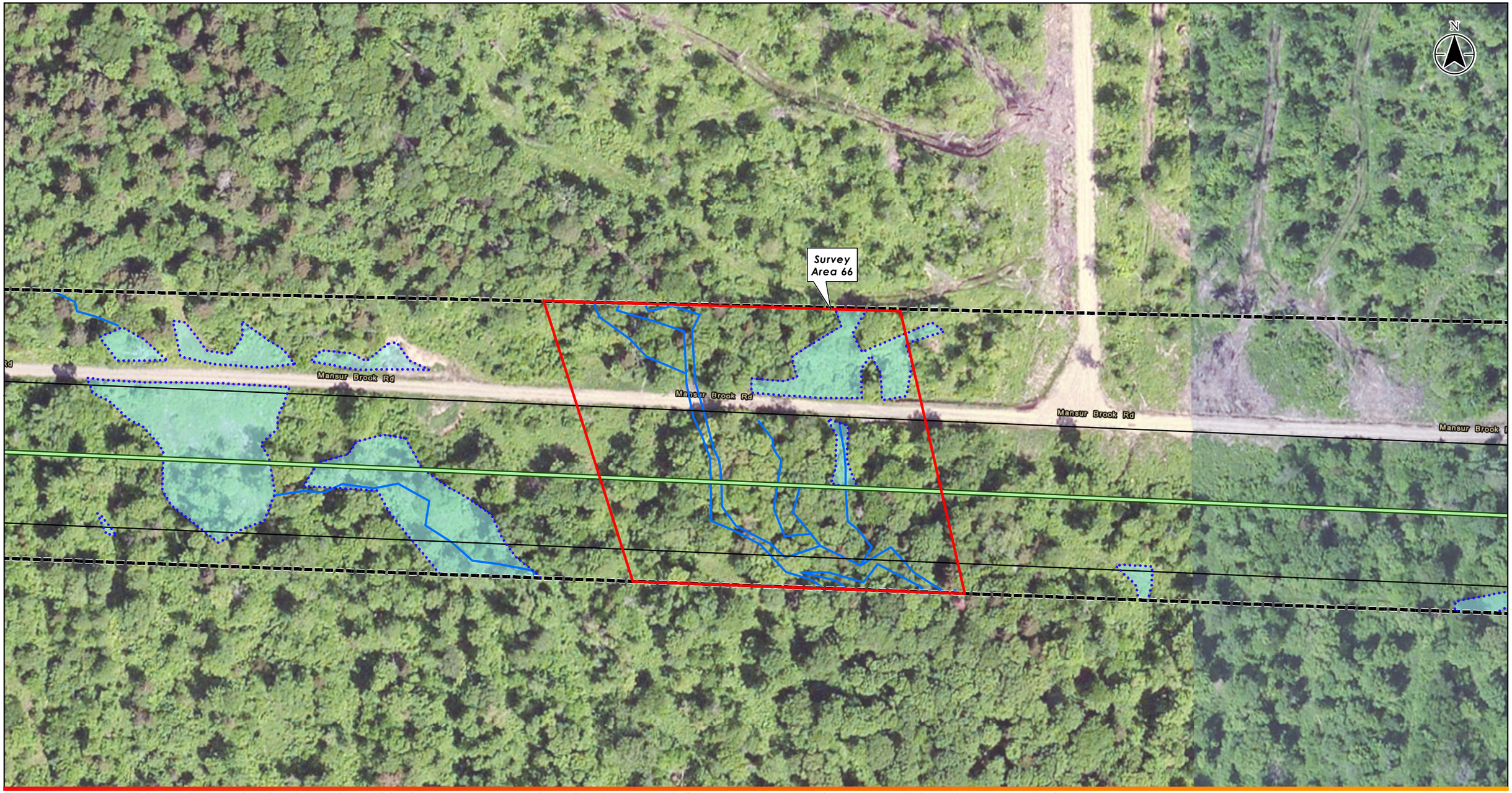
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
14

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

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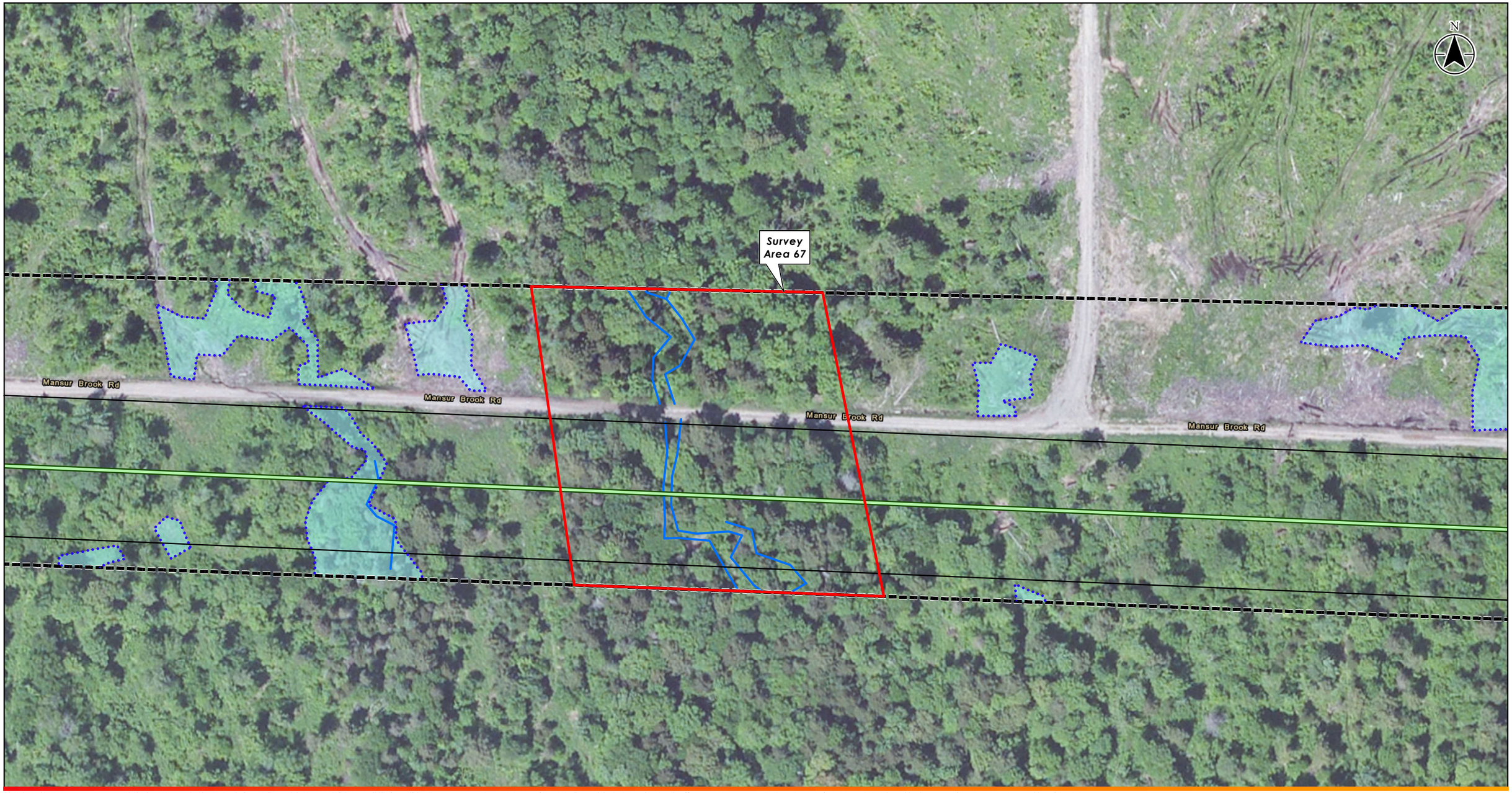
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
15

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 100 Feet

1 inch = 100 feet (At page size of 11"x17")

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EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.

16

Title

North Generator Lead
2015 RTE Plant Survey Areas

7/10/2015

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Legend

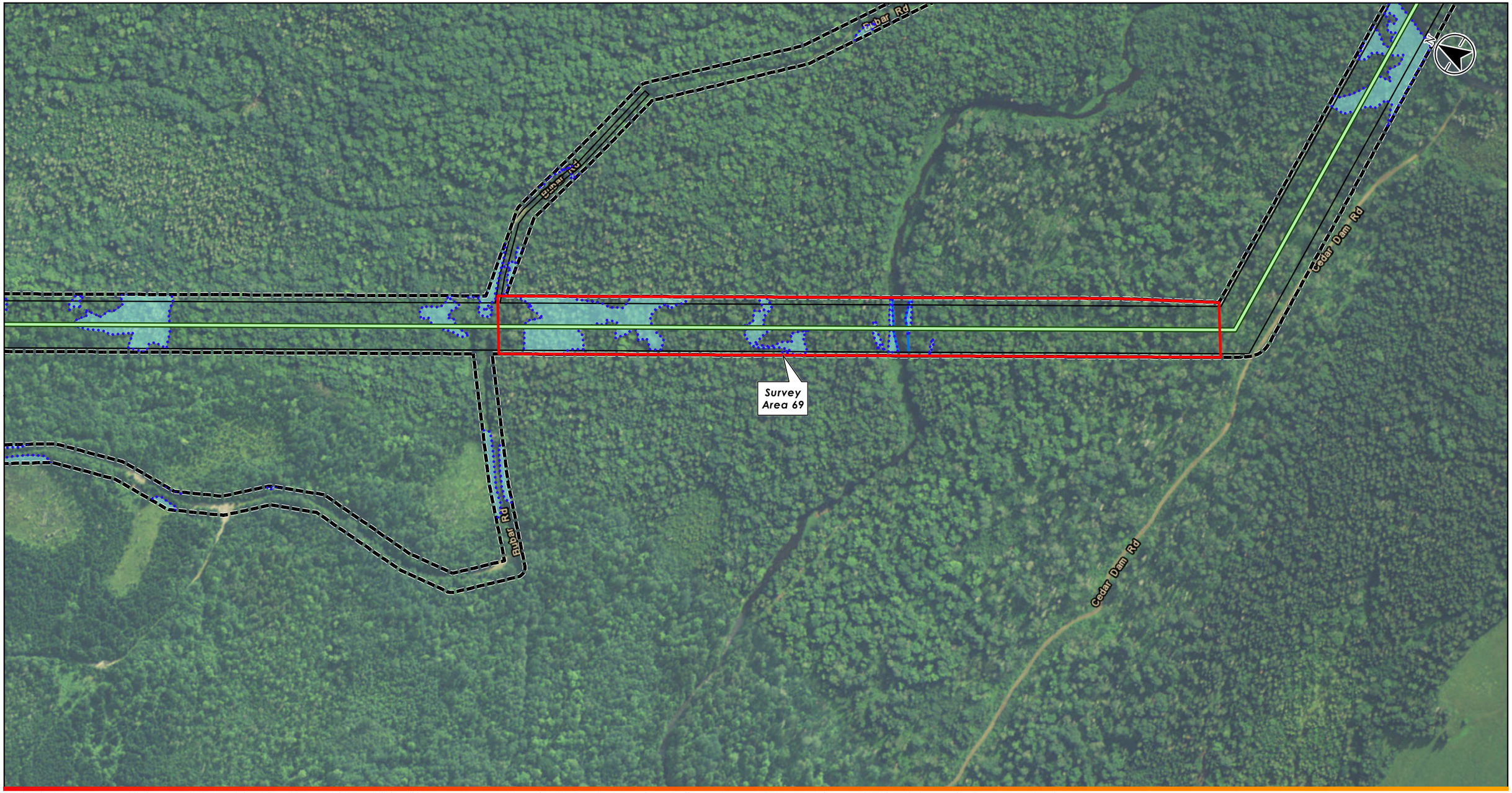
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
17

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

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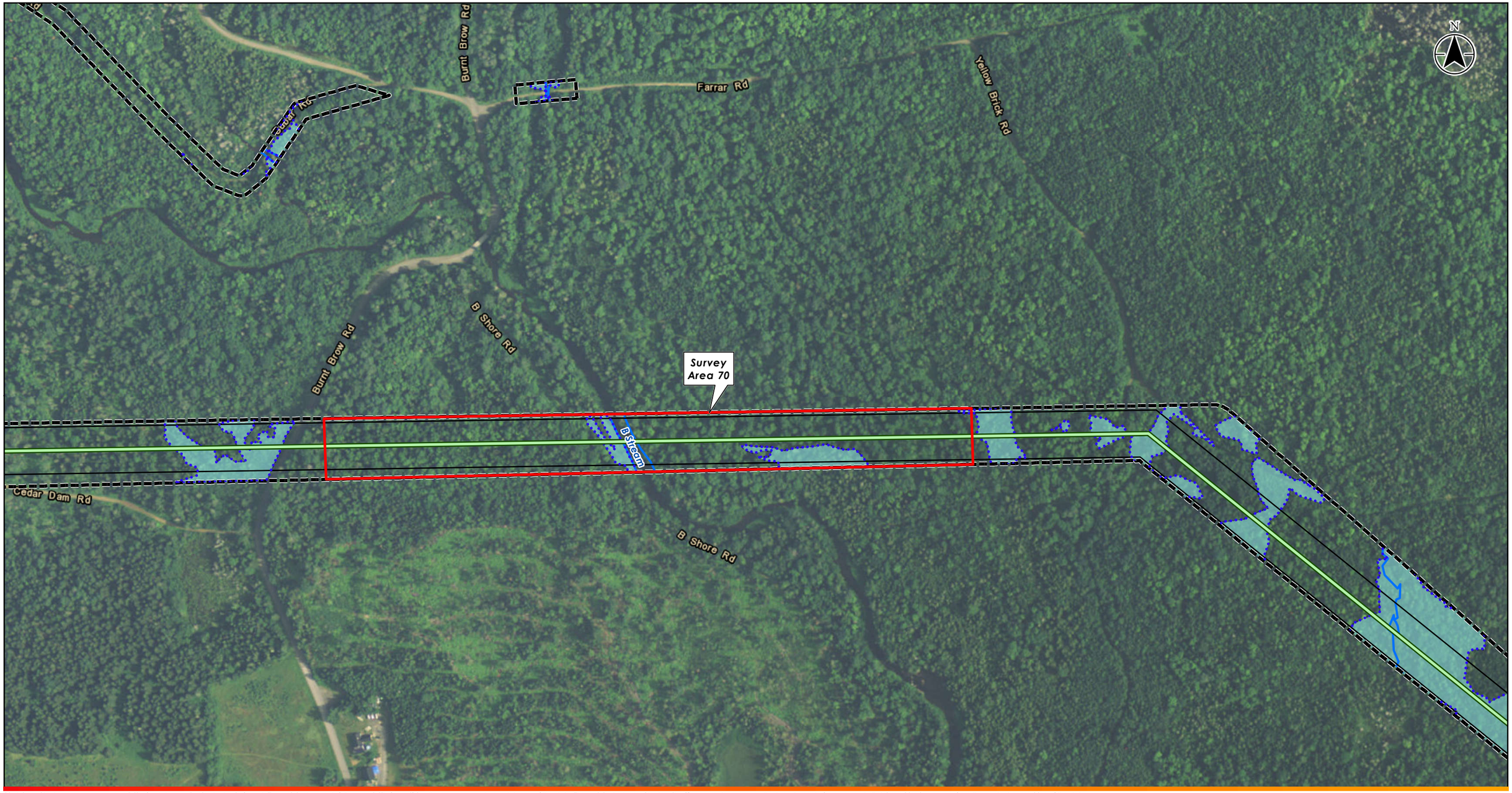
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
18

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

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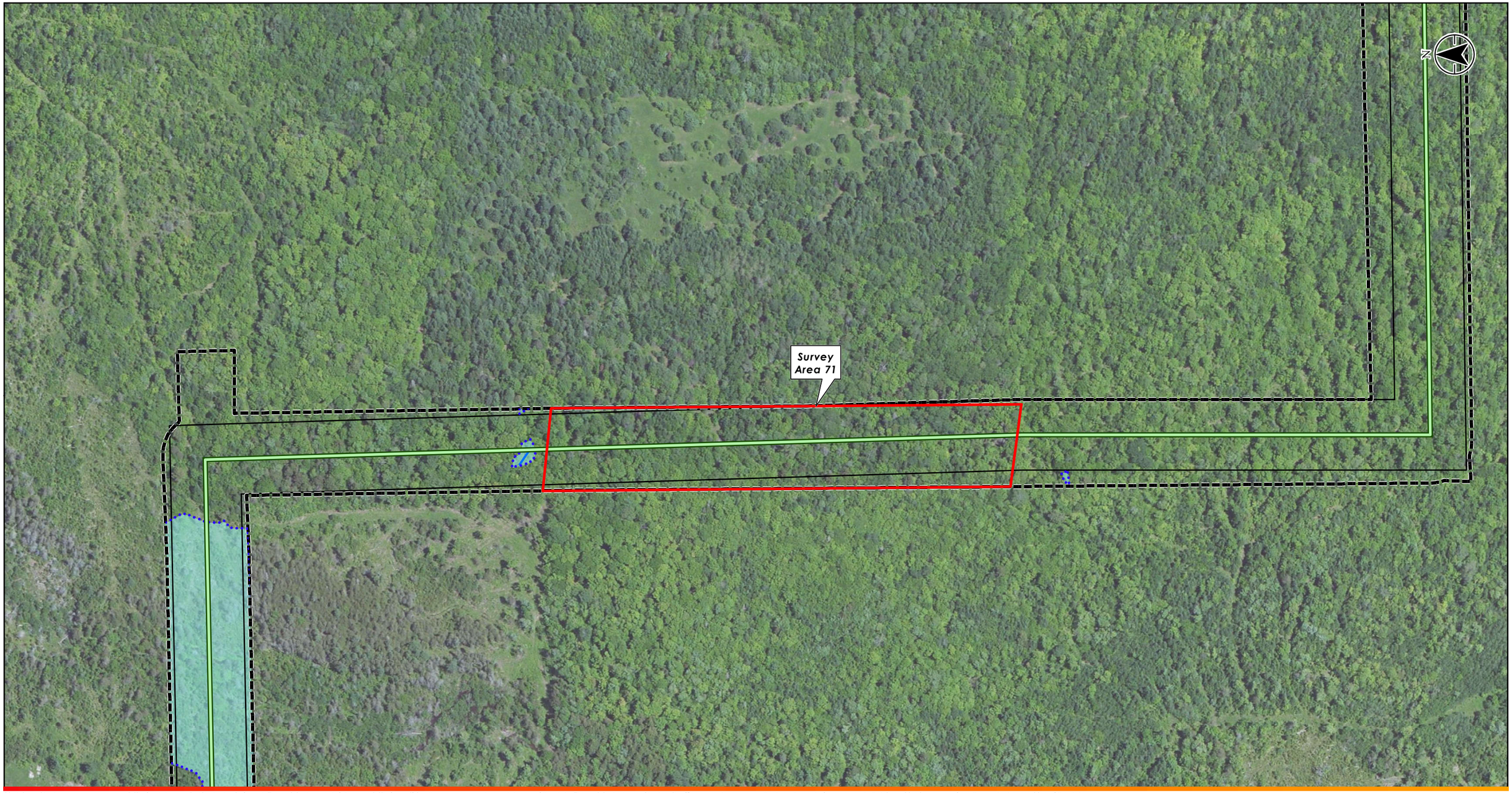
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
19

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

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- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
20

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015

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Legend

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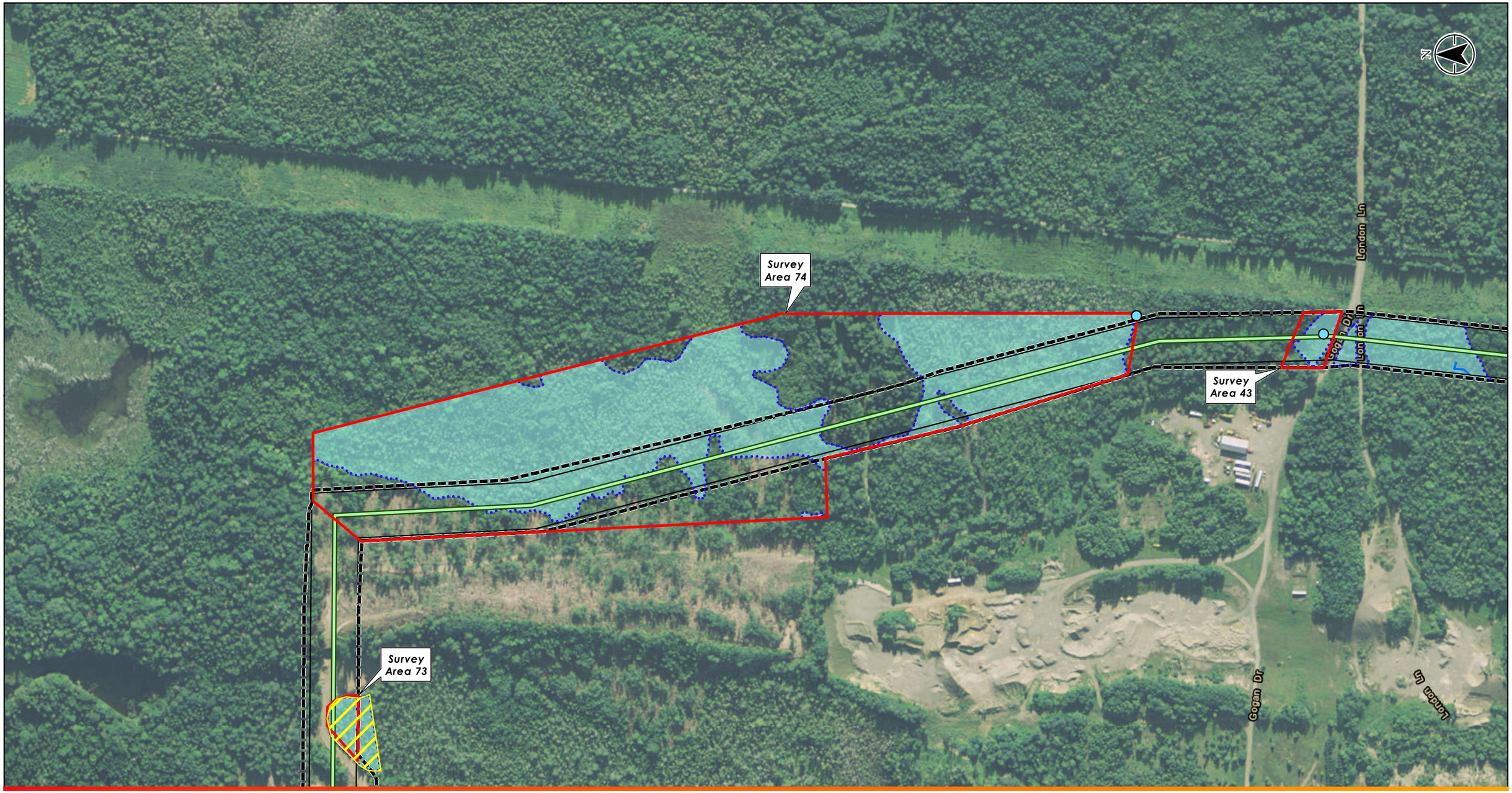
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
21

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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00919_10_NorthGenLead_RTE_Plant_MapBk.mxd

Legend

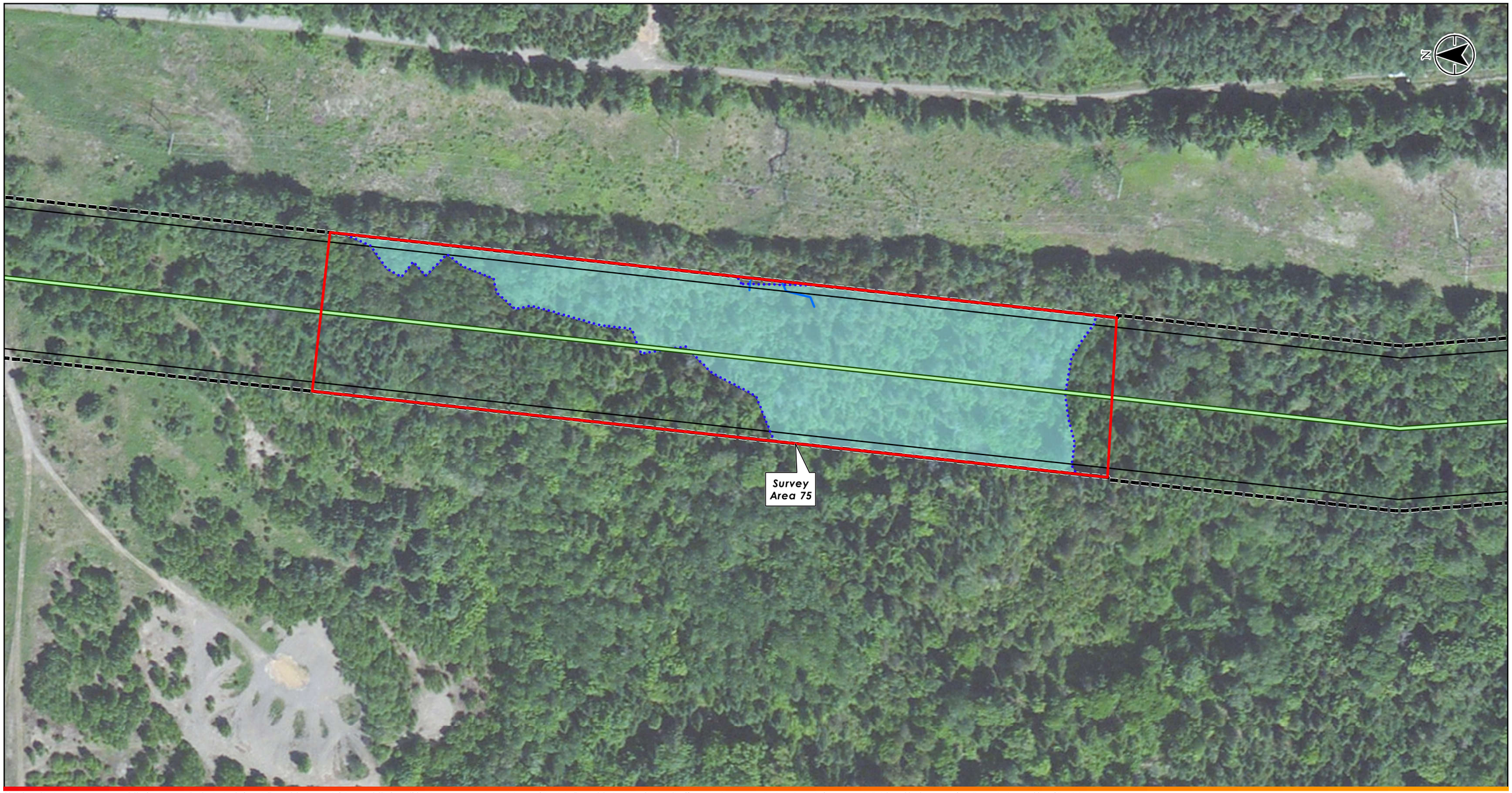
- *Ranunculus gmelinii*
- *Valeriana uliginosa/Cypripedium reginae*
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
22

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

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- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

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EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
23

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015

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Legend

- RTE Survey Area
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 100 Feet

1 inch = 100 feet (At page size of 11"x17")

Client/Project

EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

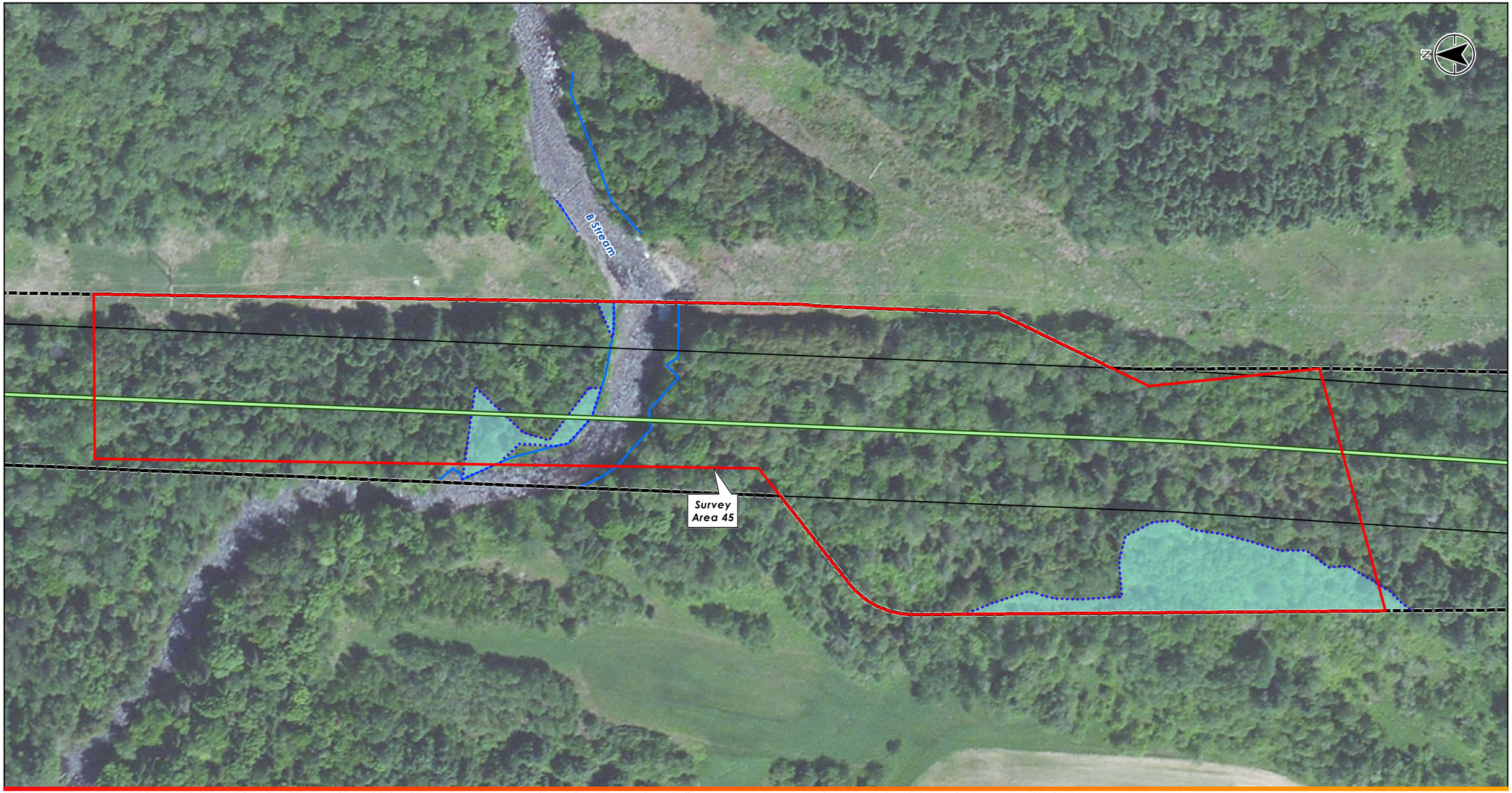
Figure No.

24

Title

North Generator Lead
2015 RTE Plant Survey Areas

7/10/2015



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Legend

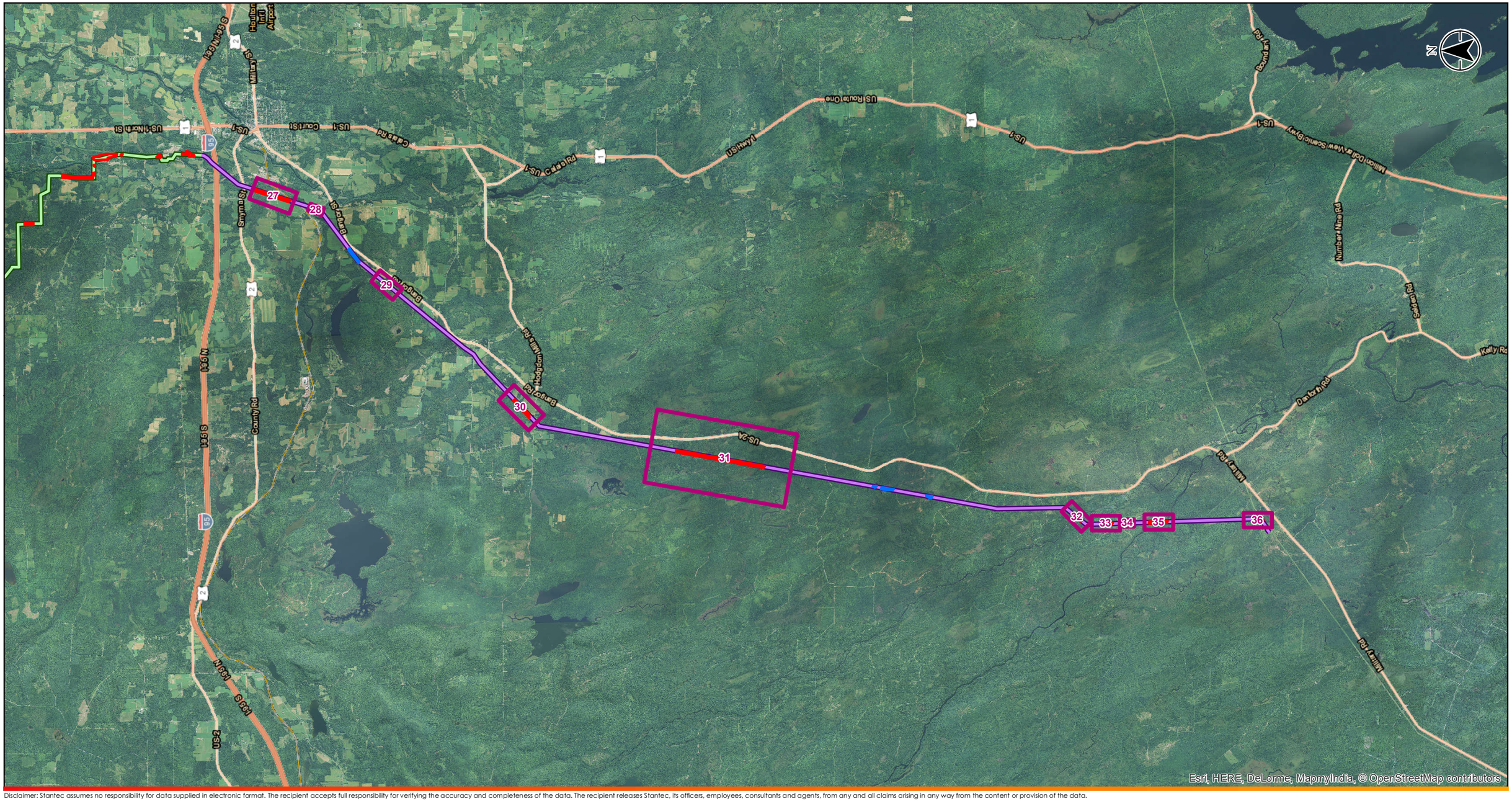
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- North Generator Lead (3/16/15)

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
25

Title
North Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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00919_26_BridalPathSurveyAreas.mxd

Legend

- 2014 RTE Survey Area
- 2015 RTE Survey Area
- Map Extent
- Bridal Path Generator Lead (3/16/15)
- North Generator Lead (3/16/15)

0 2 Miles

1 inch = 2 miles (At page size of 11"x17")

Client/Project

EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

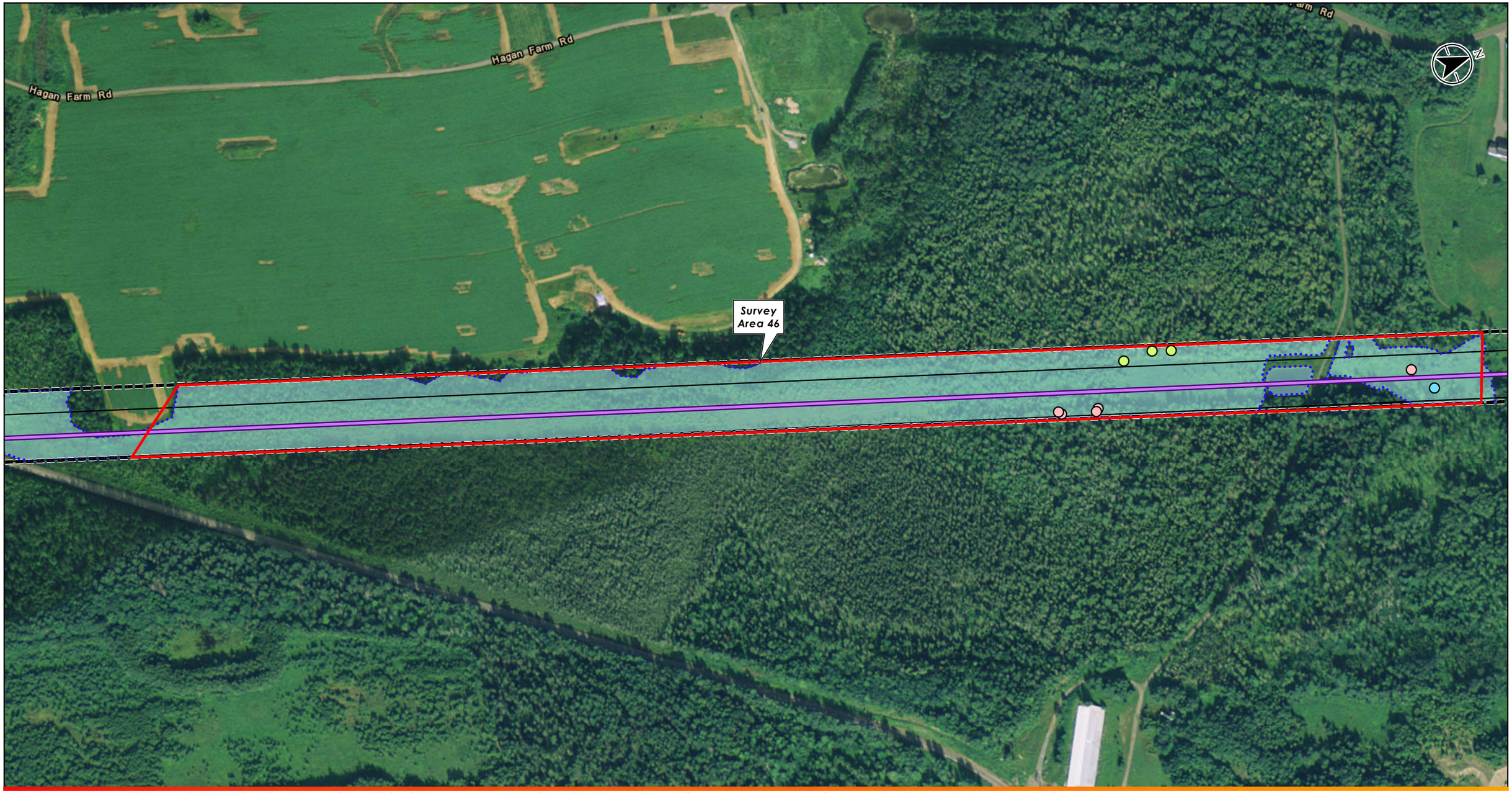
Figure No.

26

Title

2015 RTE Plant Survey Areas
Overview - Bridal Path Generator Lead

7/10/2015



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00919_27_BridalPath_RTE_Plant_MapBk.mxd

Legend

- *Cypripedium reginae*
- *Lonicera oblongifolia*
- *Ranunculus gmelinii*
- RTE Survey Area
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11'x17')

Client/Project
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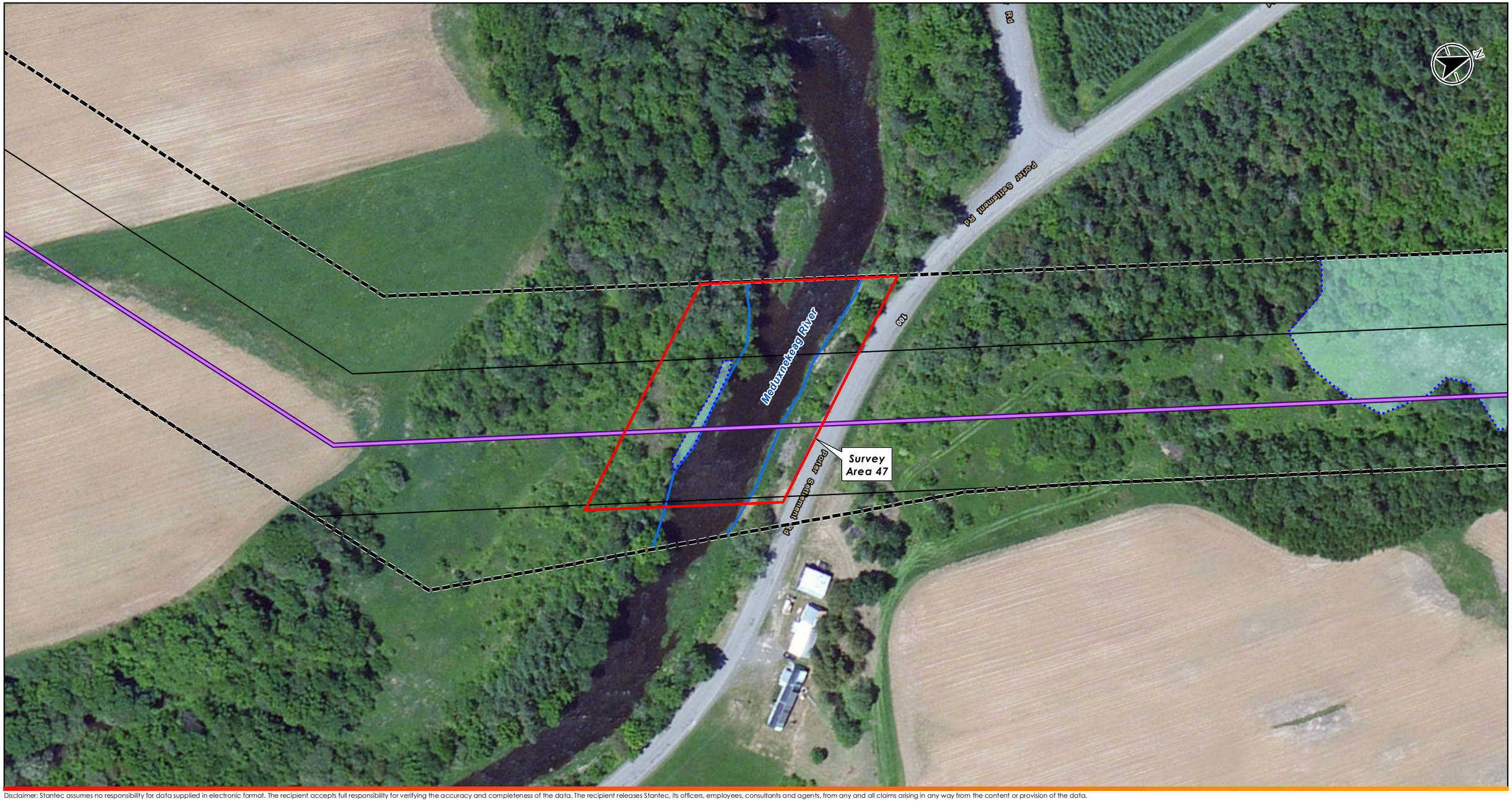
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
27

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
28

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015

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Legend

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- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 200 Feet

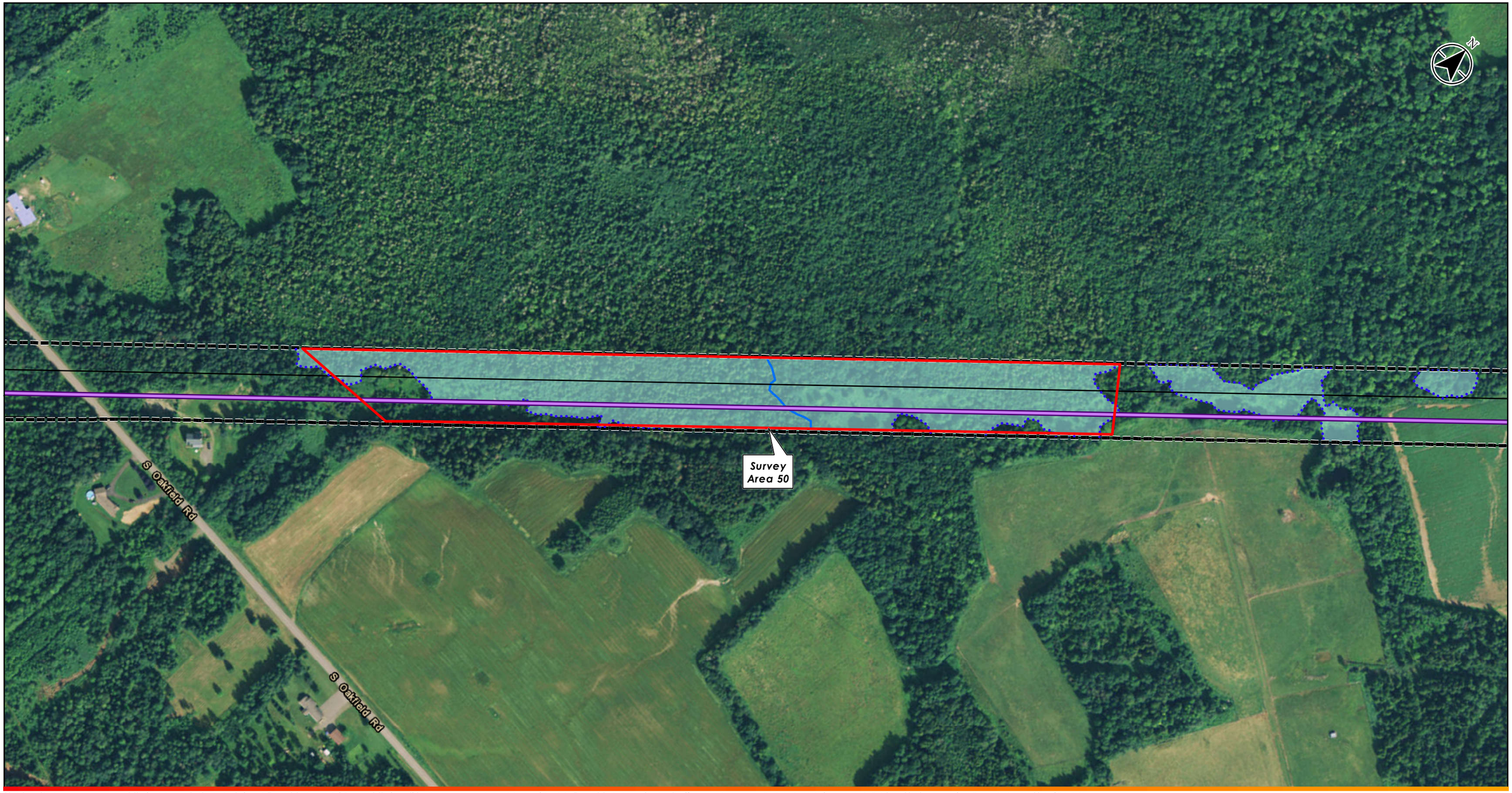
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
29

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas

7/10/2015



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Legend

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- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 300 Feet
1 inch = 300 feet (At page size of 11"x17")

Client/Project
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Number Nine Wind Farm
Aroostook County, Maine

Figure No.
30

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015

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195600919

Stantec
30 Park Drive
Topsham, ME USA 04086
Phone (207) 729-1199

Prepared by DLJ on 2015-06-25
Reviewed by MPA on 2015-07-01

00919_27_BridalPath_RTE_Plant_MapBk.mxd

Legend

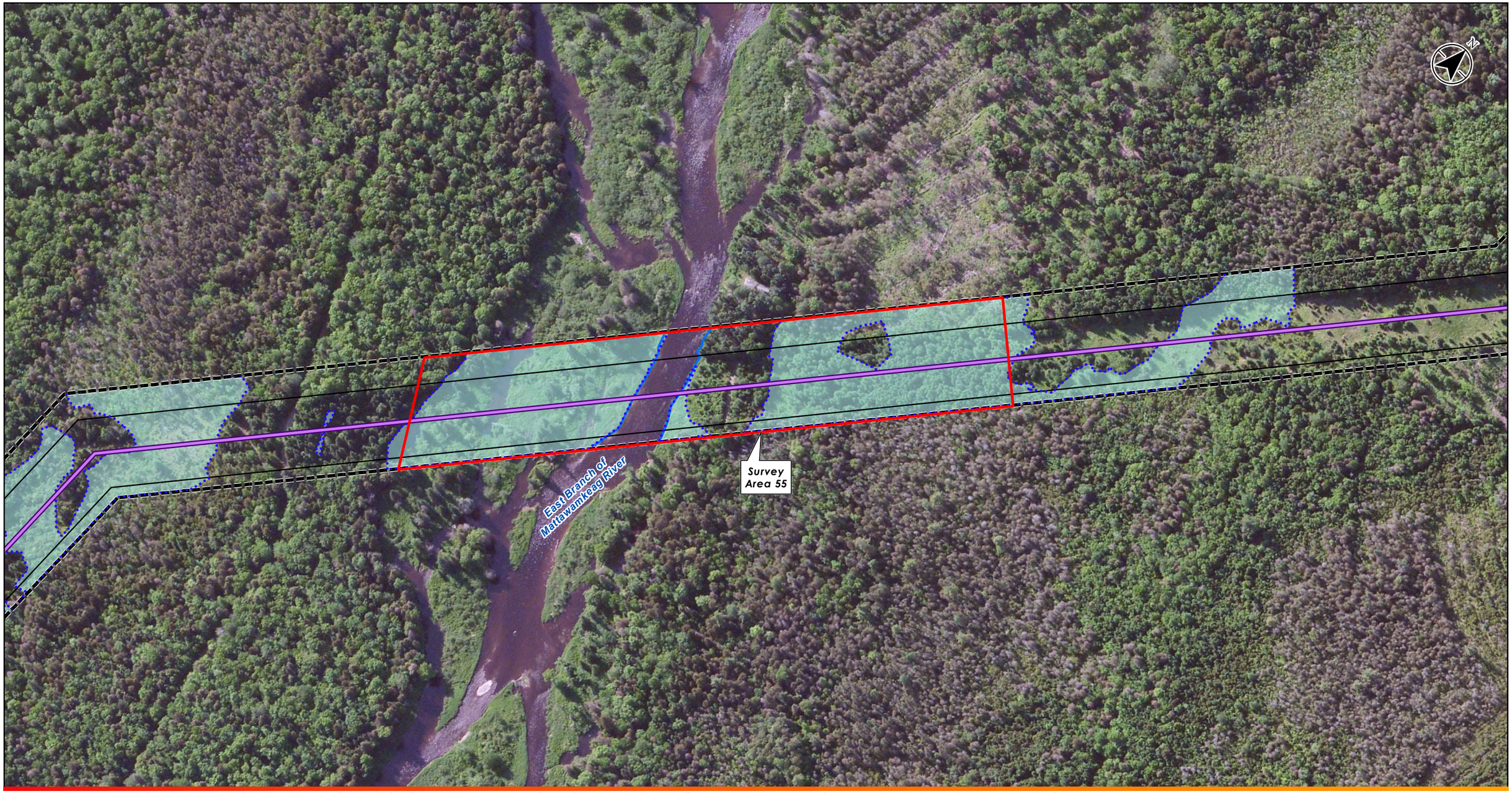
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- MNAP Streamshore Ecosystem
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 1,020 Feet
1 inch = 1,000 feet(At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
31

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Legend

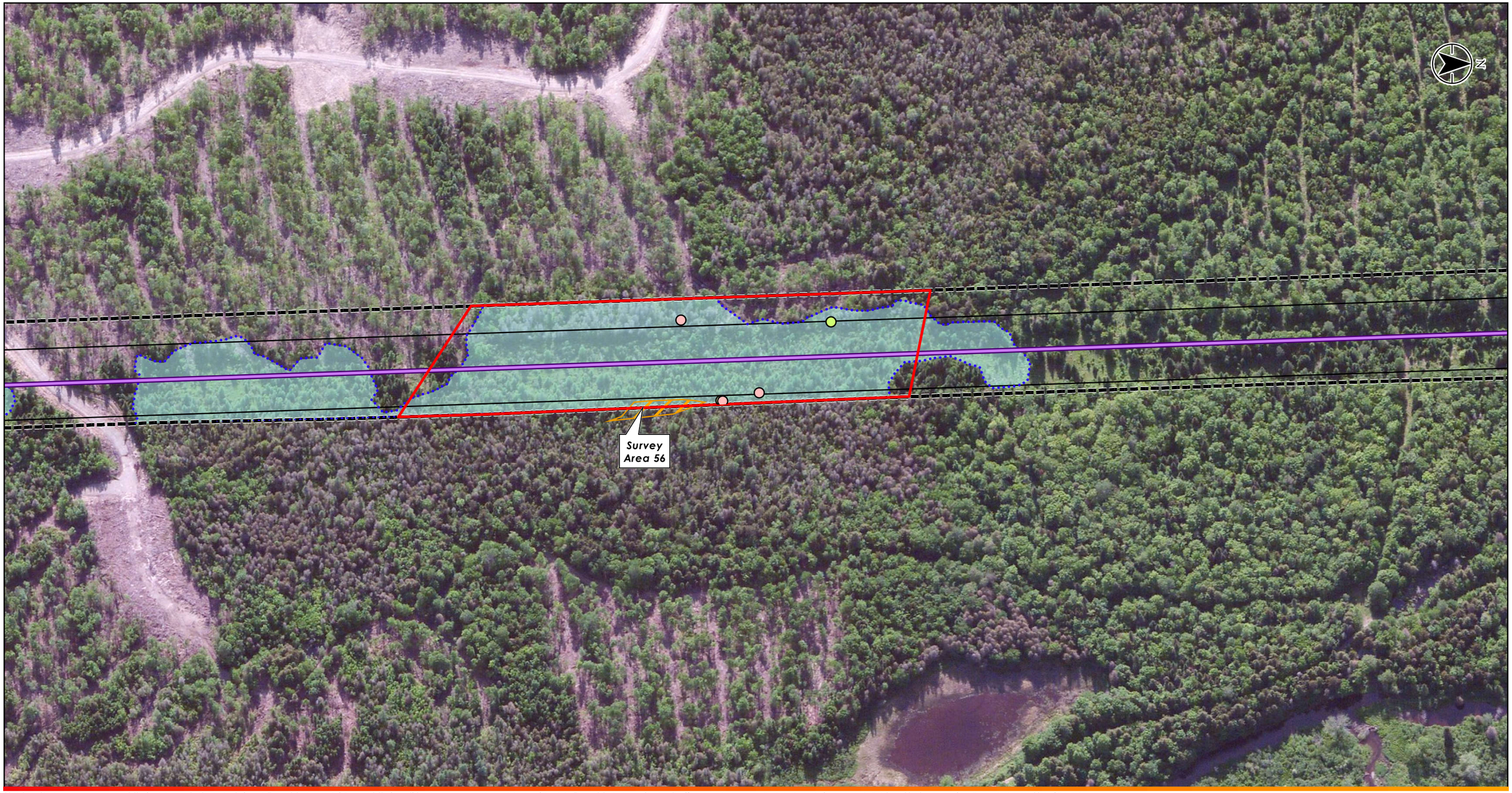
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
32

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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Phone (207) 729-1199

Prepared by DLJ on 2015-06-25
Reviewed by MPA on 2015-07-01

00919_27_BridalPath_RTE_Plant_MapBk.mxd

Legend

- *Carex gynocrates*
- *Cypripedium reginae*
- *Lonicera oblongifolia*
- *Valeriana uliginosa*
- RTE Survey Area
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
33

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015

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Topsham, ME USA 04086
Phone (207) 729-1199

Prepared by DLJ on 2015-06-25
Reviewed by MPA on 2015-07-01

00919_27_BridalPath_RTE_Plant_MapBk.mxd

Legend

- RTE Survey Area
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 100 Feet
1 inch = 100 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
34

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015

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195600919

Stantec
30 Park Drive
Topsham, ME USA 04086
Phone (207) 729-1199

Prepared by DLJ on 2015-06-25
Reviewed by MPA on 2015-07-01

00919_27_BridalPath_RTE_Plant_MapBk.mxd

Legend

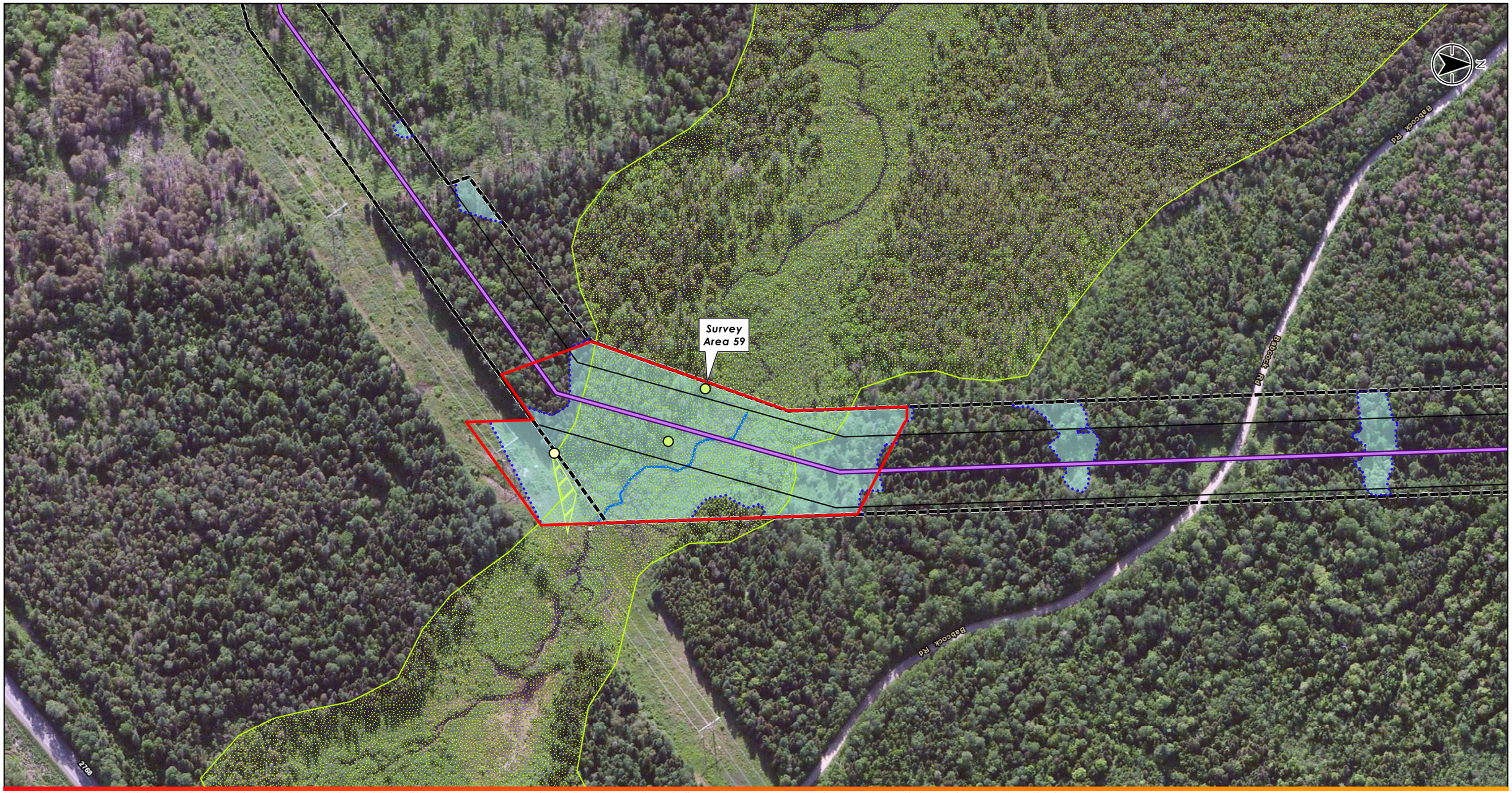
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 200 Feet
1 inch = 200 feet (At page size of 11"x17")

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
35

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas
7/10/2015



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195600919

Stantec

30 Park Drive
Topsham, ME USA 04086
Phone (207) 729-1199

Prepared by DLJ on 2015-06-25
Reviewed by MPA on 2015-07-01

00919_27_BridalPath_RTE_Plant_MapBk.mxd

Legend

- *Carex gynocrates*
- *Lonicera oblongifolia*
- *Lonicera oblongifolia*
- RTE Survey Area
- Delineated Stream
- Delineated Wetland
- MNAP Streamshore Ecosystem
- Limit of Disturbance
- Reporting Limits
- Bridal Path Generator Lead (3/16/15)

0 200 Feet

1 inch = 200 feet (At page size of 11'x17')

Client/Project
EDP Renewables North America LLC
Number Nine Wind Farm
Aroostook County, Maine

Figure No.
36

Title
Bridal Path Generator Lead
2015 RTE Plant Survey Areas

7/10/2015

APPENDIX A
Special Plant Data Forms

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Gould Brook Tributary site
Quad name:	North Brook Ridge	Quad code:	
County:	Aroostook	Town:	TC R2WELS

Plant Name: Dryopteris goldiana ☒ New ☐ Update Occurrence #:

Date: 6/16/15	Surveyor(s): Matt Arsenault	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
46.345721 North -68.040703 West Additional Coordinates

Directions to Occurrence: Use aerial photos - take Harvey Siding Road west to TC R2 WELS / T8 R3 WELS township line. Take unnamed logging road north approximately 0.8 miles. Look for an somewhat evident pulloff on right. Park here and walk west following unnamed stream. Plants occur along stream just west of township line (look for blue-blazed trees)
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☒ Confident full extent of feature **IS** known; ☐ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☐ Normal ☒ Other than normal Explain: Plants are growing rather vigorous
# of Plants 300+ ☐ Individuals ☐ Ramets Population Structure % Vegetative % Reproductive	☒ In leaf ☐ In bud ☐ In flower ☒ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☐ 20 – 100 square yards ☒ 100 sq yds to 1 acre ☐ 1 acre + 0.4 acre~area **actual** habitat 0.5 acre~ area **potential** habita	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Dryopteris filix-mas occurs approximately 100 feet east of D. goldiana population

GENERAL DESCRIPTION

Associated natural community: Beech-Birch-Maple Forest

Associated plant species: Rubus idaeus, Acer saccharum, Adiantum pedatum, Deparia acrostichoides, Aralia nudicaulis, Athyrium angustum, Polystichum braunii, Osmorhiza clatoniana, Actaea alba, Matteuccia struthiopteris

Substrate/soil type: moist mineral soil

Threats to Population: Logging

Conservation/Management/Research needs: Recent logging activity in population area; dense Rubus idaeus regeneration near plants

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 1000 ft / m Max 1000 ft / m	☐ N ☐ NE ☒ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☐ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☒ Open ☐ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☒ Lower Slope ☐ Bottom ☐ Level Plain	☐ Inundated ☐ Saturated (wet mesic) ☒ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Project (MNAP assigns) _____

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Dryopteris filix-mas, D. intermedia If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 3 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe:

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species? More vigorous/larger
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☒ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor

Comments: Many plants, growing vigorously and densely

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments:

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☐ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☒ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain: Recent logging activity throughout population area; forest to east is intact but lacks rich-mesic conditions

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☒ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Large population size is somewhat off-set by low quality habitat and dense regeneration of Rubus idaeus due to canopy opening from recent logging.

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Gould Brook Tributary site
Quad name:	North Brook Ridge	Quad code:	
County:	Aroostook	Town:	TC R2WELS

Plant Name: Dryopteris filix-mas ☒ New ☐ Update Occurrence #:

Date: 6/16/15	Surveyor(s): Matt Arsenault	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
46.346097 North -68.040207 West Additional Coordinates

Directions to Occurrence: Use aerial photos - take Harvey Siding Road west to TC R2 WELS / T8 R3 WELS township line. Take unnamed logging road north approximately 0.8 miles. Look for an somewhat evident pulloff on right. Park here and walk west following unnamed stream. Plants occur in a small patch along township line (look for blue-blazed trees) slightly north of stream and at edge of wetland. Plants occur adjacent to fallen Betula alleghaniensis and Acer saccharum trees along towship line (blue blazes on fallen tree); need to climb over fallen tree to find plants
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☒ Confident full extent of feature **IS** known; ☐ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 12 ☐ Individuals ☐ Ramets Population Structure % Vegetative % Reproductive	☒ In leaf ☐ In bud ☐ In flower ☒ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☒ 5 – 20 square yards ☐ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + 0.01~area **actual** habitat 0.5~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Dryopteris goldiana occurs approximately 100 feet west of D. filix-mas population

GENERAL DESCRIPTION

Associated natural community: Beech-Birch-Maple Forest

Associated plant species: Athyrium angustum, Matteuccia struthiopteris, Ulmus americana, Betula alleghaniensis, Acer saccharum

Substrate/soil type: moist mineral soil

Threats to Population: Logging

Conservation/Management/Research needs: Recent logging activity in population area; dense Rubus idaeus regeneration near plants

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 1000 ft / m Max 1000 ft / m	☐ N ☐ NE ☒ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☐ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☒ Open ☐ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☒ Lower Slope ☐ Bottom ☐ Level Plain	☐ Inundated ☐ Saturated (wet mesic) ☒ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☐ No ☒ Yes Collection # Repository	☐ No ☒Yes Dryopteris goldiana, D. intermedia If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 3 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe:

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor

Comments: Few plants in small population area with recent logging disturbance adjacent to plants

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments:

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☐ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☒ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain: Recent logging activity throughout population area; forest to east is intact

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Habitat is generally poor due to logging; dense regeneration of Rubus alleghaniensis and dense growth of Matteuccia struthiopteris due to open canopy may impact long-term viability of population.

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	McSheffrey Road Cedar Swamp
Quad name:	Houlton North	Quad code:	
County:	Aroostook	Town:	Houlton

Plant Name: Valeriana uliginosa ☒ New ☐ Update Occurrence #:

Date: June 16, 2015	Surveyor(s): Eric Doucette	Sourcecode (MNAP assigns):
Primary Surveyor Address: Eric Doucette, Stantec Consulting, 30 Park Dr., Topsham, ME, 04086	Phone: 207-485-2594	Email: eric.doucette@stantec.com

GPS Datum ☒WGS 84 ☐NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☐ Other
46.174484 North -67.856988 West Additional Coordinates

Directions to Occurrence: Follow McSheffery Road in Houlton. 0.56 miles north of the McSheffery/Gogan Dr. intersection the road takes a 90 degree turn to the right (east). You may have to park here as road is often flooded by beaver activity. Approximately 0.27 miles east along this road is a wetland just prior (west of) a gravel pit that has been dug right across the maine road, making eastward driving impossible. EO occurs right at wetland/road edge as well as up to 75 feet into wetland (cedar fen).
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☐ Confident full extent is **NOT** known; ☒ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 15 ☒ Individuals ☐ Ramets Population Structure 75 % Vegetative 25 % Reproductive	☒ In leaf ☐ In bud ☒ In flower ☐ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☒ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + 20-100 sq. yards~area **actual** h ~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☒ Asexual ☐ Not Observed

Other Comments: Population likely extends outside of project survey area although no individuals were observed directly adjacent to project area boundary and more young individuals may occur under dense herb layer.

GENERAL DESCRIPTION

Associated natural community: Northern white-cedar fen

Associated plant species: Thuja occidentalis, Fraxinus nigra, Menyanthes trifoliata, Maianthemum trifolium, Rhododendron groenlandicum, Carex magellanica ssp. irrigua, Carex echinata, Carex disperma, Carex trisperma, Carex leptalea, Osmundastrum cinnamomeum, Mitella nuda, Platanthera aquilonis, Packera schweinitziana, Cypripedium reginae

Substrate/soil type: histosol

Threats to Population: adjacent dirt road use/logging. Some logging slash has been deposited in wetland

Conservation/Management/Research needs:

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 436 ft / m Max 436 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☒ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☒ No ☐ Yes If yes, are there hybridization issues? ☐ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☒ Other
☐ No Evidence of disturbance

Describe: slash deposited in wetland and road usage occurs right at edge of habitat

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☒ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☐ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species? small (but maybe larger off site)
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor
Comments: based upon survey area- maybe larger outside of project boundaries

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments:

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☐ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☒ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☒ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant
Comments: may lean towards fair if species is found not to to occur outside project area and/or core habitat is logged

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant
Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	McSheffrey Road Cedar Swamp
Quad name:	Houlton North	Quad code:	
County:	Aroostook	Town:	Houlton

Plant Name: Cypripedium reginae ☒ New ☐ Update Occurrence #:

Date: June 16, 2015	Surveyor(s): Eric Doucette	Sourcecode (MNAP assigns):
Primary Surveyor Address: Eric Doucette, Stantec Consulting, 30 Park Dr., Topsham, ME, 04086	Phone: 207-485-2594	Email: eric.doucette@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☐ Other
46.174484 North -67.856988 West Additional Coordinates

Directions to Occurrence: Follow McSheffery Road in Houlton. 0.56 miles north of the McSheffery/Gogan Dr. intersection the road takes a 90 degree turn to the right (east). You may have to park here as road is often flooded by beaver activity. Approximately 0.27 miles east along this road is a wetland just prior (west of) a gravel pit that has been dug right across the maine road, making eastward driving impossible. EO occurs approximately 100 feet due south of wetland corner where west side of gravel pit opening begins
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☐ Confident full extent is **NOT** known; ☒ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 40 ☐ Individuals ☒ Ramets Population Structure % Vegetative 100 % Reproductive	☐ In leaf ☐ In bud ☒ In flower ☐ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☒ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + 20-100 sq. yards~area **actual** h ~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Population likely extends outside of project survey area although no individuals were observed directly adjacent to project area boundary

GENERAL DESCRIPTION

Associated natural community: Northern white-cedar fen

Associated plant species: Thuja occidentalis, Fraxinus nigra, Menyanthes trifoliata, Maianthemum trifolium, Rhododendron groenlandicum, Carex magellanica ssp. irrigua, Carex echinata, Carex disperma, Carex trisperma, Carex leptalea, Osmundastrum cinnamomeum, Mitella nuda, Platanthera aquilonis, Packera schweinitziana, Valeriana uliginosa

Substrate/soil type: histosol

Threats to Population: adjacent dirt road use/logging. Some logging slash has been deposited in wetland

Conservation/Management/Research needs:

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 436 ft / m Max 436 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☒ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☐ Yes	☒ No ☐ Yes Collection # Repository	☒ No ☐ Yes If yes, are there hybridization issues? ☐ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☒ Other
☐ No Evidence of disturbance

Describe: slash deposited in wetland and road usage occurs right at edge of habitat

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☒ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☐ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species? small (but maybe larger off site)
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor
Comments: based upon survey area- maybe larger outside of project boundaries

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments:

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☐ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☒ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☒ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant
Comments: may lean towards fair if species is found not to to occur outside project area and/or core habitat is logged

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant
Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Gogan Drive Cedar Swamp
Quad name:	Houlton North	Quad code:	
County:	Aroostook	Town:	Houlton

Plant Name: Ranunculus gmelinii ☒ New ☐ Update Occurrence #:

Date: June 16, 2015	Surveyor(s): Eric Doucette	Sourcecode (MNAP assigns):
Primary Surveyor Address: Eric Doucette, Stantec Consulting, 30 Park Dr., Topsham, ME, 04086	Phone: 207-485-2594	Email: eric.doucette@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☐ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☐ Other
46.167470 North -67.851884 West Additional Coordinates

Directions to Occurrence: Follow McSheffery Road in Houlton. Turn right (east) onto Gogan Dr. which merges with London Lane. Drive to spot where powerline crosses London Ln. (approx. 0.51 mile east of Gogan Dr./McSheffery Rd. intersection. Follow powerline north to southern edge of large wetland. EO is approximately 15-20 feet inside (west) from the western powerline edge at coordinates listed.
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☐ Confident full extent is **NOT** known; ☒ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 200+ ☐ Individuals ☒ Ramets Population Structure % Vegetative 100 % Reproductive	☐ In leaf ☐ In bud ☒ In flower ☐ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☒ 1 – 5 square yards ☐ 5 – 20 square yards ☐ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + 20-100 sq. yards~area **actual** h ~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☒ Asexual ☐ Not Observed

Other Comments: Population likely extends outside of project survey area although no individuals were observed directly adjacent to project area boundary

GENERAL DESCRIPTION

Associated natural community: Northern white-cedar fen with areas of marsh inclusion

Associated plant species: Thuja occidentalis, Fraxinus nigra, Alnus incana ssp. rugosa, Maianthemum trifolium, Rhododendron groenlandicum, Rhamnus alnifolia, Salix discolor, Salix bebbiana,Carex magellanica ssp. irrigua, Carex echinata, Carex disperma, Carex trisperma, Carex leptalea, Osmundastrum cinnamomeum, Mitella nuda, Swida sericea, Dryopteris cristata

Substrate/soil type: histosol

Threats to Population: herbicide spraying on adjacent powerline was taking place at the time of survey

Conservation/Management/Research needs:

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 790 ft / m Max 790 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☒ Inundated ☐ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Project (MNAP assigns) _____

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Ranunculus acris, Ranunculus arbortivus If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☐ Logging-most recently ~ yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☒ ORV / Vehicle disturbance
☒ Trails / Roads
☒ Other
☐ No Evidence of disturbance

Describe: herbicide spraying

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species? small (but maybe larger off site)
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor

Comments: available habitat is much larger than currently occupied by EO but it is immediately adjacent to powerline that has ATV use, herbicide spraying.

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments:

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☐ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☒ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments:

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Hagan Farm Road Cedar Swamp
Quad name:	Houlton South	Quad code:	
County:	Aroostook	Town:	Houlton

Plant Name: Cypripedium reginae ☐ New ☐ Update Occurrence #:

Date: 10/9/2014	Surveyor(s): Matt Arsenault	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
46.122162 North -67.869299 West Additional Coordinates 46.124881/-67.868414

Directions to Occurrence: From interescetion of Route 1 and Route 2 in Houlton, drive 1.3 miles on Route 2. Park along Route 2 in Bridal Path corridor. Walk south-southwest approximately 0.4 miles in Bridal Path corridor to interesection of Bridal Path and northern white cedar swamp. Plants are located along the east edge of the Bridal Path corridor through the cedar swamps. Plants are located at transition between Typha latifolia and Thuja occidentalis swamp
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☒ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 20 ☒ Individuals ☐ Ramets Population Structure % Vegetative % Reproductive	☐ In leaf ☐ In bud ☐ In flower ☐ Immature fruit ☐ Mature fruit ☒ Seed dispersing ☒ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☐ 20 – 100 square yards ☒ 100 sq yds to 1 acre ☐ 1 acre + ~area **actual** habitat ~8 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed
Other Comments:			

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen

Associated plant species: Thuja occidentalis, Calamagrostis canadensis, Onoclea sensibilis, Linnaea borealis, Geum rivale, Fragaria virginica, Carex disperma, Carex leptalea

Substrate/soil type: organic

Threats to Population: Hydrological disturbances from utility line clearing

Conservation/Management/Research needs: Past clearing of Bridal Path corridor (~1960s??) resulted in altered hydrology; plants occur on edge of previously cleared area as hydology is wetter within regenerating utility line corridor. Additional land-use activites need to maintain present hydrology of population area

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 400 ft / m Max 400 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Cypripedium parviflorum If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 50 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe: Previosuly cleared utility line corridor transects northern white cedar swamp habtiat and has altered hydrology

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor

Comments: Moderate population size; additional plants likely to east of Bridal Path

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Previous clearing of Bridal Path corridor altered hydrology of wetland habtiat; plants are restricted to edge of cleared corridor and do not occur in interior of corridor through wetland. Habitat within interior of Bridal Path corridor appears too wet to support population (dense Typha latifolia in interior of corridor)

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Moderate population size, population has been previously fragmented by utility line clearing in ~1950s(?)

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Hagan Farm Road Cedar Swamp
Quad name:	Houlton South	Quad code:	
County:	Aroostook	Town:	Houlton

Plant Name: Lonicera oblongifolia ☐ New ☐ Update Occurrence #:

Date: 10/9/2014	Surveyor(s): Matt Arsenault	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
46.122794 North -67.869770 West Additional Coordinates

Directions to Occurrence: From interescetion of Route 1 and Route 2 in Houlton, drive 1.3 miles on Route 2. Park along Route 2 in Bridal Path corridor. Walk south-southwest approximately 0.4 miles in Bridal Path corridor to interesection of Bridal Path and northern white cedar swamp. Plants are located along the west edge of the Bridal Path corridor through the cedar swamps. Plants are located at transition between Typha latifolia and Thuja occidentalis swamp
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☒ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 20 ☒ Individuals ☐ Ramets Population Structure % Vegetative % Reproductive	☐ In leaf ☐ In bud ☐ In flower ☐ Immature fruit ☐ Mature fruit ☒ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☐ 20 – 100 square yards ☒ 100 sq yds to 1 acre ☐ 1 acre + ~area **actual** habitat ~8 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments:

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen

Associated plant species: Thuja occidentalis, Ribes glandulosum, Glyceria striata, Rubus pubescens, Rhamnus cathartica, Mitella nuda, Geum rivale

Substrate/soil type: organic

Threats to Population: Hydrological disturbances from utility line clearing; Frangula alnus and Rhamnus cathartica present near population

Conservation/Management/Research needs: Past clearing of Bridal Path corridor (~1960s??) resulted in altered hydrology; plants occur on edge of previously cleared area as hydology is wetter within regenerating utility line corridor. Additional land-use activites need to maintain present hydrology of population area

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 400 ft / m Max 400 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☒ No ☐ Yes If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 50 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe: Previosuly cleared utility line corridor transects northern white cedar swamp habtiat and has altered hydrology

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor
Comments: Moderate-small population size

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Previous clearing of Bridal Path corridor altered hydrology of wetland habtiat; plants are restricted to edge of cleared corridor and do not occur in interior of corridor through wetland. Habitat within interior of Bridal Path corridor appears too wet to support population (dense Typha latifolia in interior of corridor)

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Moderate-small population size, population has been previously fragmented by utility line clearing in ~1950s(?)

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Hagan Farm Road Cedar Swamp
Quad name:	Houlton South	Quad code:	
County:	Aroostook	Town:	Houlton

Plant Name: Ranunculus gmelinii ☐ New ☐ Update Occurrence #:

Date: 10/9/2014	Surveyor(s): Matt Arsenault	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
46.124997 North -67.868093 West Additional Coordinates

Directions to Occurrence: From interescetion of Route 1 and Route 2 in Houlton, drive 1.3 miles on Route 2. Park along Route 2 in Bridal Path corridor. Walk south-southwest approximately 0.2 miles in Bridal Path corridor. Plants are located in evidently excavated ditch in scrub-wetland in central portion of Bridal Path corridor

☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☒ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 300+ ☐ Individuals ☒ Ramets Population Structure % Vegetative % Reproductive	☐ In leaf ☐ In bud ☐ In flower ☐ Immature fruit ☐ Mature fruit ☒ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☒ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + ~area **actual** habitat 100 sq yds~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: flowering and colonial ☒ Sexual ☒ Asexual ☐ Not Observed
Other Comments:			

GENERAL DESCRIPTION

Associated natural community: Excavated ditch
Associated plant species: Typha latifolia, Calamagrostis canadensis, Swida sericea
Substrate/soil type: mineral
Threats to Population: Hydrological disturbances from land uses
Conservation/Management/Research needs:

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 400 ft / m Max 400 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☒ Open ☐ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Project (MNAP assigns) _____

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☒ No ☐ Yes If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 50 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe: Previosuly cleared utility line corridor transects northern white cedar swamp habtiat and has altered hydrology

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☐ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☒ **Other** / Habitat disturbed, consistent with needs of species / **Explain**: Habitat created by ditching in wetland to create inundated conditions

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor

Comments: Large number of plants in small localized area

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Plants are restricted to excavated portion of wetland habtiat where there is sufficient inundation to maintain population

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☐ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☒ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☒ **D** – Poor ☐ **E** – Extant

Comments: Many plants but habitat area is man-made, very small, and susceptible to land use activities

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Bell Field Road Cedar Swamp
Quad name:	Alder Brook	Quad code:	
County:	Aroostook	Town:	Haynesville

Plant Name: Carex gynocrates ☐ New ☐ Update Occurrence #:

Date: 6/15/15	Surveyor(s): Matt Arsenault / Eben Baker	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
45.863111 North -68.018189 West Additional Coordinates

Directions to Occurrence: Take Bell Field Road west from Route 2A; turn south onto logging road after crossing East Branch of Mattawamkeag; drive approximately 0.8 miles then, bear right. Drive 1 mile from here and park at old log landing. Follow skidder trail east for approximately 500 feet to edge of northern white cedar wetland. Walk east across Bridal Path corridor (regerating) to east edge; plants are located along east edge and in intact cedar swamp east of previously cleared corridor.
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☒ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 100+ ☒ Individuals ☐ Ramets Population Structure 50 % Vegetative 50 % Reproductive	☒ In leaf ☐ In bud ☐ In flower ☒ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☒ 1 – 5 square yards ☐ 5 – 20 square yards ☐ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + ~area **actual** habitat ~4 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Cypripedium reginae, Valeriana uliginosa, and Lonicera oblongifolia occur in this wetland habitat; survey area limited to Bridal Path corridor

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen

Associated plant species: Thuja occidentalis, Larix laricina, Picea mariana, Acer rubrum, Rhododendron groenlandicum, Geum rivale, Maianthemum trifolium, Carex interior, Equisetum sylvaticum, Linnaea borealis

Substrate/soil type: organic

Threats to Population: Logging, hydrological disturbances from utility line clearing

Conservation/Management/Research needs: Past clearing of Bridal Path corridor (~1960s??) resulted in altered hydrology; plants occur on edge of previously cleared area as hydology is wetter within regenerating utility line corridor. Additional land-use activites need to maintain present hydrology of population area

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 425 ft / m Max 430 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Cx. trisperma, Cx. interior, Cx. magellanica, Cx. leptalea If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 60 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe:

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor

Comments: Small population area; although perhaps more plans located to east

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Previous clearing of Bridal Path corridor altered hydrology of wetland habtiat; plants are restricted to edge of cleared corridor and do not occur in interior of corridor through wetland. Habitat within interior of Bridal Path corridor appears too wet to support population (dense Maianthemum trifolium in interior of corridor)

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Small population, past habitat alterations supports C rank. Additional plants may be present east of Bridal Path corridor

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Bell Field Road Cedar Swamp
Quad name:	Alder Brook	Quad code:	
County:	Aroostook	Town:	Haynesville

Plant Name: Cypripedium reginae ☐ New ☐ Update Occurrence #:

Date: 6/15/15	Surveyor(s): Matt Arsenault / Eben Baker	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
45.863335 North -68.018255 West Additional Coordinates 45.862880/-68.018866

Directions to Occurrence: Take Bell Field Road west from Route 2A; turn south onto logging road after crossing East Branch of Mattawamkeag; drive approximately 0.8 miles then, bear right. Drive 1 mile from here and park at old log landing. Follow skidder trail east for approximately 500 feet to edge of northern white cedar wetland. Few individiuals of Cypripedium reginae are located along west edge of wetland; additional plants located on east edge of previously cleared Bridal Path corridor
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☒ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 16 ☒ Individuals ☐ Ramets Population Structure 60 % Vegetative 40 % Reproductive	☒ In leaf ☒ In bud ☐ In flower ☐ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☒ 5 – 20 square yards ☐ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + ~area **actual** habitat ~4 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Valeriana uliginosa, Carex gynocrates, and Lonicera oblongifolia occur in this wetland habitat

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen

Associated plant species: Thuja occidentalis, Larix laricina, Picea mariana, Acer rubrum, Rhododendron groenlandicum, Geum rivale, Maianthemum trifolium, Carex interior, Carex gynocrates, Equisetum sylvaticum, Linnaea borealis, Rhamnus alnifolia, Rubus pubescens, Orthilia secunda

Substrate/soil type: organic

Threats to Population: Logging, hydrological disturbances from utility line clearing

Conservation/Management/Research needs: Past clearing of Bridal Path corridor (~1960s??) resulted in altered hydrology; plants occur on edge of previously cleared area as hydology is wetter within regenerating utility line corridor. Additional land-use activites need to maintain present hydrology of population area

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 425 ft / m Max 430 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Cypripedium parviflorum If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 60 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe:

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor

Comments: Relatively few plants compared to other locations; likely additional plants located east of Bridal Path corridor

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Previous clearing of Bridal Path corridor altered hydrology of wetland habtiat; plants are restricted to edge of cleared corridor and do not occur in interior of corridor through wetland. Habitat within interior of Bridal Path corridor appears too wet to support population (dense Maianthemum trifolium in interior of corridor)

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Few plants, population has been previously fragmented by utility line clearing in ~1950s(?)

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Bell Field Road Cedar Swamp
Quad name:	Alder Brook	Quad code:	
County:	Aroostook	Town:	Haynesville

Plant Name: Lonicera oblongifolia ☐ New ☐ Update Occurrence #:

Date: 6/15/15	Surveyor(s): Matt Arsenault / Eben Baker	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
45.863111 North -68.018189 West Additional Coordinates

Directions to Occurrence: Take Bell Field Road west from Route 2A; turn south onto logging road after crossing East Branch of Mattawamkeag; drive approximately 0.8 miles then, bear right. Drive 1 mile from here and park at old log landing. Follow skidder trail east for approximately 500 feet to edge of northern white cedar wetland. Plants are located approximatley 80 feet north along west edge of Bridal Path corridor
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☒ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 3 ☒ Individuals ☐ Ramets Population Structure 100 % Vegetative 0 % Reproductive	☒ In leaf ☐ In bud ☐ In flower ☐ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☒ 1 – 5 square yards ☐ 5 – 20 square yards ☐ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + ~area **actual** habitat ~4 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Cypripedium reginae, Valeriana uliginosa, and Carex gynocrates occur in this wetland habitat; survey area limited to Bridal Path corridor

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen

Associated plant species: Fraxinus nigra, Picea rubens, Abies balsamea, Thuja occidentalis, Rubus pubescens, Carex leptalea, Carex trisperma, Carex magellanica, Eutrochium maculatum

Substrate/soil type: organic

Threats to Population: Logging, hydrological disturbances from utility line clearing

Conservation/Management/Research needs: Past clearing of Bridal Path corridor (~1960s??) resulted in altered hydrology; plants occur on edge of previously cleared area as hydology is wetter within regenerating utility line corridor. Additional land-use activites need to maintain present hydrology of population area

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 425 ft / m Max 430 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Lonicera villosa If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 60 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe:

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☒ **D** – Poor

Comments: Only 3 plants, more may be present to east beyond Bridal Path corridor

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Previous clearing of Bridal Path corridor altered hydrology of wetland habtiat; plants are restricted to edge of cleared corridor and do not occur in interior of corridor through wetland. Habitat within interior of Bridal Path corridor appears too wet to support population (dense Maianthemum trifolium in interior of corridor)

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☒ **D** – Poor ☐ **E** – Extant

Comments: Very small population, past habitat alterations supports D rank. Additional plants may be present east of Bridal Path corridor

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Bell Field Road Cedar Swamp
Quad name:	Alder Brook	Quad code:	
County:	Aroostook	Town:	Haynesville

Plant Name: Valeriana uliginosa ☐ New ☐ Update Occurrence #:

Date: 6/15/15	Surveyor(s): Matt Arsenault / Eben Baker	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
45.863335 North -68.018255 West Additional Coordinates 45.862880/-68.018866

Directions to Occurrence: Take Bell Field Road west from Route 2A; turn south onto logging road after crossing East Branch of Mattawamkeag; drive approximately 0.8 miles then, bear right. Drive 1 mile from here and park at old log landing. Follow skidder trail east for approximately 500 feet to edge of northern white cedar wetland. Walk east across Bridal Path corridor (regerating) to east edge; plants are located along east edge and in intact cedar swamp east of previously cleared corridor.
☒ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☒ Confident full extent is **NOT** known; ☐ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 100+ ☒ Individuals ☐ Ramets Population Structure 70 % Vegetative 30 % Reproductive	☒ In leaf ☐ In bud ☒ In flower ☐ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☒ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + ~area **actual** habitat ~4 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Cypripedium reginae, Carex gynocrates, and Lonicera oblongifolia occur in this wetland habitat

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen

Associated plant species: Thuja occidentalis, Larix laricina, Picea mariana, Abies balsamea, Rhododendron groenlandicum, Swida sericea, Vaccinium myrtilloides, Maianthemum trifolium, Carex interior, Carex magellanica, Linnaea borealis

Substrate/soil type: organic

Threats to Population: Logging, hydrological disturbances from utility line clearing

Conservation/Management/Research needs: Past clearing of Bridal Path corridor (~1960s??) resulted in altered hydrology; plants occur on edge of previously cleared area as hydology is wetter within regenerating utility line corridor. Additional land-use activites need to maintain present hydrology of population area

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 425 ft / m Max 430 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☒ No ☐ Yes If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☒ Logging-most recently ~ 60 yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☐ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe:

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☒ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☐ **Other** / Habitat disturbed, consistent with needs of species / **Explain**:

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☒ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor

Comments: Large population, dense patches of plants

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Previous clearing of Bridal Path corridor altered hydrology of wetland habtiat; plants are restricted to edge of cleared corridor and do not occur in interior of corridor through wetland. Habitat within interior of Bridal Path corridor appears too wet to support population (dense Maianthemum trifolium in interior of corridor)

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☒ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Large population but past impacts from Bridal Path clearing appears to have reduced available habitat area.

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Alder Brook Cedar Swamp
Quad name:	Alder Brook	Quad code:	
County:	Aroostook	Town:	Haynesville

Plant Name: Carex gynocrates ☐ New ☐ Update Occurrence #:

Date: 6/15/15	Surveyor(s): Matt Arsenault / Eben Baker	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
45.815337 North -68.016819 West Additional Coordinates

Directions to Occurrence: From Route 2A, take Babcock Road west to crossing of existing transmission line corridor. Walk southwest along open transmission line corridor, cross stream using beaver dam on east side of corridor. Plants are located on south side of stream along wester of open transmission line corridor
☐ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☐ Confident full extent is **NOT** known; ☒ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants unknown ☐ Individuals ☐ Ramets Population Structure % Vegetative % Reproductive	☒ In leaf ☐ In bud ☐ In flower ☒ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☒ 1 – 5 square yards ☐ 5 – 20 square yards ☐ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + 0.1 acres~area **actual** habitat ~4 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Survey area limited to open transmission line and small portion of forested wetland to west

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen / emergent marsh in open transmission line corridor

Associated plant species: Rhododendron groenlandicum, Larix laricina, Maianthemum trifolium, Thelypteris palustris, Geum rivale, Rhamnus alnifolia, Carex flava.

Substrate/soil type: organic

Threats to Population: Transmission line maintenance such as herbicide spraying

Conservation/Management/Research needs:

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 410 ft / m Max 410 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☐ Open ☒ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Project (MNAP assigns) _____

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Carex trisperma, Carex flava, Carex leptalea If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☐ Logging-most recently ~ yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☒ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe: Existing utility line corridor

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☐ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☒ **Other** / Habitat disturbed, consistent with needs of species / **Explain**: Open transmission line corridor appears to favor growth of species

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☒ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor
Comments: Relatively small population area compated with other sites

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Open transmission line corridor intersects population but does not appear to be detrimental to population

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☐ **B** – Good ☒ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant
Comments: Small population and habtiat modifications from transmission line corridor supports C rank

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant
Date: Reviewer: Rationale:

Project (MNAP assigns) _____

SPECIAL PLANT SURVEY FORM

Site:	Number 9 Wind Project	Survey Site:	Alder Brook Cedar Swamp
Quad name:	Alder Brook	Quad code:	
County:	Aroostook	Town:	Haynesville

Plant Name: Lonicera oblongifolia ☐ New ☐ Update Occurrence #:

Date: 6/15/15	Surveyor(s): Matt Arsenault / Eben Baker	Sourcecode (MNAP assigns):
Primary Surveyor Address: Stantec, 30 Park Dr, Topsham ME, 04086	Phone: 207-798-2135	Email: matt.arsenault@stantec.com

GPS Datum ☐WGS 84 ☒NAD 83 ☐ NAD 27 ☐ Other
GPS Coordinates ☐ UTM Zone 19N ☒ Decimal Degrees (dd.dddd) ☐ Deg Min Sec (dd mm ss) ☐ GPS (dd mm.mm) ☒ Other
45.815383 North -68.016448 West Additional Coordinates 45.816002/-68.016913

Directions to Occurrence: From Route 2A, take Babcock Road west to crossing of existing transmission line corridor. Walk southwest along open transmission line corridor, cross stream using beaver dam on east side of corridor. Plants are located on south side of stream in center and western portion of wetland within transmission line corridor. Additional plants are scattered to west of open corridor at transistion between forested cedar swamp and alder shrub thicket along streeam
☐ Strongly recommend use of air photos and USGS topographic maps for relocation of the site on the ground.

MAP: Please attach a map, preferably 1:24,000 scale topo map, showing the location of the observation.

Locational Uncertainty (how closely can you map the feature to its actual location?)

☒ mapped to w/in 12.5 m of actual location; ☐ greater uncertainty (estimate = ☐m / ☐ft / ☐km / ☐miles); ☐ aerial delimited

Confidence in Observation of Population Extent

☐ Confident full extent of feature **IS** known; ☐ Confident full extent is **NOT** known; ☒ **Uncertain** whether full extent is known

EO DATA	Phenology	Population Area	Vigor? ☒ Normal ☐ Other than normal Explain:
# of Plants 50 ☒ Individuals ☐ Ramets Population Structure 60 % Vegetative 40 % Reproductive	☒ In leaf ☐ In bud ☒ In flower ☐ Immature fruit ☐ Mature fruit ☐ Seed dispersing ☐ Dormant	☐ 1 square yard ☐ 1 – 5 square yards ☐ 5 – 20 square yards ☒ 20 – 100 square yards ☐ 100 sq yds to 1 acre ☐ 1 acre + 0.1 acres~area **actual** habitat ~4 acre~ area **potential** habitat	Evidence disease, predation, etc? Explain: ☐ Yes ☒ No Type of reproduction? Explain: ☒ Sexual ☐ Asexual ☐ Not Observed

Other Comments: Survey area limited to open transmission line and small portion of forested wetland to west

GENERAL DESCRIPTION

Associated natural community: Northern White Cedar Woodland Fen / emergent marsh in open transmission line corridor

Associated plant species: Alnus incana, Salix bebbiana, Spiraea alba, Larix laricina, Swida sericea, Rhododendron groenlandicum, Carex interior, Packera schweinitziana, Iris versicolor, Calamagrostis canadensis, Carex flava, Carex utriculata, Geum rivale

Substrate/soil type: organic

Threats to Population: Transmission line maintenance such as herbicide spraying

Conservation/Management/Research needs:

Elevation	**Aspect**	**% Slope**	**Light**	**Topographic Position**	**Moisture**
Min 410 ft / m Max 410 ft / m	☐ N ☐ NE ☐ E ☐ NW ☐ S ☐ SE ☐ W ☐ SW ☒ Flat or NA	☒ Flat ☐ 0-10 ☐ 10-35 ☐ 35+ ☐ Vertical	☒ Open ☐ Partial ☐ Filtered ☐ Shade	☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☒ Bottom ☐ Level Plain	☐ Inundated ☒ Saturated (wet mesic) ☐ Moist (mesic) ☐ Dry-mesic ☐ Dry (xeric)

Photograph taken?	Specimen collected?	Do other members of this genus occur at this site?
☐ No ☒ Yes	☒ No ☐ Yes Collection # Repository	☐ No ☒Yes Lonicera villosa If yes, are there hybridization issues? ☒ No; ☐ Yes; Explain Are there identification issues? ☒ No; ☐ Yes; Explain

Landowner name/address for entire population (attach additional owner information on a separate sheet):	Phone	Is landowner aware of plant? ☐ Yes ☐ No
	Tax map # (if known)	Is landowner protecting plant? ☐ Yes ☐ No
	Lot # (if known)	Comments

EO RANKING

CURRENT CONDITION of the plant's immediate habitat. Is the habitat pristine or degraded? Note any disturbances within the plant habitat (check off, describe below to what degree these have altered natural ecological processes, or if they have any negative or positive effects on the population). Note how the disturbance(s) may influence success of the plant at the site.

☐ Logging-most recently ~ yrs ago
☐ Agriculture / Pasture
☐ Animal effects (insect outbreaks, browsing)
☐ Wind or ice damage
☐ Fire
☐ Impoundment
☐ Exotic plants
☐ Erosion
☐ Dumping or mining
☐ ORV / Vehicle disturbance
☒ Trails / Roads
☐ Other
☐ No Evidence of disturbance

Describe: Existing utility line corridor

Condition Rank
☐ **A** – No apparent signs of human disturbance (or long enough ago that effects are no longer visible or are extremely minor)
☐ **B** – Some signs of human disturbance or degradation, but habitat generally intact
☐ **C** – Signs of human disturbance or degradation, and habitat compromised in some significant way
☐ **D** – Highly disturbed (multiple impacts causing habitat to be drastically altered)
☒ **Other** / Habitat disturbed, consistent with needs of species / **Explain**: Open transmission line corridor appears to favor growth of species

SIZE / QUALITY: How large is this population relative to typical populations of this species?
Does it appear to be capable of maintaining itself if its habitat remains basically intact? ☒ Yes ☐ No

Size / Quality Rank ☒ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor

Comments: Fairly large population, growing well in open transmission line corridor

LANDSCAPE CONTEXT of the area surrounding the plant habitat. What land uses and/or natural communities surround the observed area? Is the habitat fragmented? To what degree can the population be protected from effects of adjacent land uses?

Comments: Open transmission line corridor intersects population but does not appear to be detrimental to population

Landscape Rank
☐ **A** – Population surrounded by > = 1000 acres of undisturbed landscape
☒ **B** – Population surrounded by fairly intact landscape, though there may be cuts nearby
☐ **C** – Population surrounded by fragmented forest or rural landscape
☐ **D** – Surrounding area developed
☐ **Other** / Explain:

OVERALL RANK for EO based on your experience ☐ **A** – Excellent ☒ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Comments: Large population but habitat alterations of natural habtiat support B rank

MNAP reviewed / verified rank ☐ **A** – Excellent ☐ **B** – Good ☐ **C** – Fair ☐ **D** – Poor ☐ **E** – Extant

Date: Reviewer: Rationale:

APPENDIX B
Representative Photographs

Photo 1. Survey Area 13, residual stand of hardwood forest. Stantec. June 15, 2015.

Photo 2. Survey Area 13, recent timber harvests. Stantec. June 15, 2015.

Photo 3. Survey Area 15, looking south at hardwood forest near west side of survey area. Stantec. June 15, 2015.

Photo 4. Survey Area 16, looking westerly. Stantec. June 15, 2015.

Photo 5. Survey Area 22, looking north. Stantec. June 16, 2015.

Photo 6. Survey Area 28, looking south. Stantec. June 16, 2015.

Photo 7. Survey Area 42 northern white cedar wetland. Stantec. June 17, 2015.

Photo 8. Survey Area 44, recent timber harvests. Stantec. June 16, 2015.

Photo 9. Survey Area 45, riparian habitat. Stantec. June 16, 2015.

Photo 10. Survey Area 61, looking north at hardwood forest. Stantec. June 16, 2015.

Photo 11. Survey Area 62, looking south at hardwood forest. Stantec. June 16, 2015.

Photo 12. Survey Area 63, looking south at hardwood forest. Stantec. June 16, 2015.

Photo 13. Survey Area 64 looking south at regenerating forest habitat. Stantec. June 16, 2015.

Photo 14. Goldie's fern in Survey Area 64. Stantec. June 16 ,2015.

Photo 15. Male fern near Survey Area 64. Stantec. June 16, 2015.

Photo 16. Survey Area 65, looking west at riparian habitat. June 16, 2015.

Photo 17. Survey Area 66, looking north at hardwood forest. Stantec. June 16, 2015.

Photo 18. Survey Area 67, looking west at hardwood forest. Stantec. June 16, 2015.

Photo 19. Survey Area 68, looking northwest at hardwood forest. Stantec. June 16, 2015.

Photo 20. Survey Area 69, looking at riparian habitat along B Stream. Stantec. June 17, 2015.

Photo 21. Survey Area 70, riparian forest along B Stream. Stantec. June 17, 2015.

Photo 22. Survey Area 71, looking south at recently harvested areas. June 3, 2015.

Photo 23. Survey Area 72, beaver impoundment. Stantec. June 16, 2015.

Photo 24. Survey Area 73, looking at northern white cedar swamp. Stantec. June 16, 2015.

Photo 25. Marsh valerian in Survey Area 73. Stantec. June 15, 2015.

Photo 26. Survey Area 74, forested wetland. Stantec. June 2, 2015.

Photo 27. Survey Area 75, northern white cedar swamp. June 2, 2015.

Photo 28. Showy lady's-slipper in Survey Area 46. Stantec. June 16, 2015.

Photo 29. Lesser yellow water crowfoot in Survey Area 46. Stantec. June 16, 2015.

Photo 30. Survey Area 47, looking north at riparian forest. Stantec . June 15, 2015.

Photo 31. Survey Area 50, maturing northern white cedar swamp. Stantec. June 16, 2015.

Photo 32. Survey Area 55, looking north at rich-mesic hardwood forest. Stantec. June 15, 2015.

Photo 33. Marsh valerian in Survey Area 56. Stantec. June 15, 2015.

Photo 34. Northern bog sedge in Survey Area 56. Stantec. June 15, 2015.

Photo 35. Marsh valerian and northern bog sedge habitat in Survey Area 56. Stantec. June 15, 2015.

Photo 36. Showy lady's-slipper in Survey Area 56. Stantec. June 15, 2015.

Photo 37. Swamp honeysuckle in Survey Area 56. Stantec. June 15, 2015.

Photo 38. Survey Area 57 looking north at edge of Bridal Path. Stantec. June 15, 2015.

Photo 39. Survey Area 58 looking north in Bridal Path. Stantec. June 15, 2015.

Photo 40. Swamp honeysuckle in Survey Area 59. Stantec. June 15, 2015.

Photo 41. Swamp honeysuckle in Survey Area 59. Stantec. June 15, 2015.

Photo 42. Northern bog sedge in Survey Area 59. Stantec. June 15, 2015.

Photo 43. Northern bog sedge habitat in Survey Area 59. Stantec. June 15, 2015.