

**A vascular plant inventory of the
proposed wind turbine array,
Glen Dhu, Nova Scotia
with notes on plant communities
and breeding birds**



View from ridge crest looking northeast from proposed turbine site 5.

August 2, 2008

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Methods

This report compiles information from 2007 and 2008 survey work. The proposed turbine locations had changed extensively between 2007 and 2008 with proposed turbine locations in 2007 covering a much more extensive area, including substantial land south of Highway 104. 2007 results from areas no longer proposed for turbine impacts (the area south of Highway 104 and in the vicinity of Beaver and Bear Brooks south and west of Avondale and Barney River Station) are not described in this report.

Screening pre-existing records for rare vascular plants

Lisa Fulton consulted the Atlantic Canada Conservation Data Centre (AC CDC) in February 2007 to determine what rare species were known from the area of the study site and what other rare species might be found there. As recommended by the Nova Scotia Department of Natural Resources, the AC CDC provided a list of all rare species records found within 100 km of the site, along with distance of each record from a central point in the proposed development area. I summarized the vascular plant results by species, listing the closest known record to the Dalhousie Mountain site. I then evaluated the habitat requirements of each species to produce a list of potential rare species for the site.

Vascular Plant Inventory

Fieldwork in 2007 was conducted by Sean Blaney and David Mazerolle over June 20, 21, 22 and July 1. Sean Blaney conducted 2008 fieldwork on his own on June 24 and 25, visiting all currently proposed turbine sites and covering the proposed development corridors mapped in Figure 1. In each year, we recorded our tracks in the field with GPS units set to record position approximately every 15 seconds while moving (the “more often” track recording setting on a Garmin GPS 76Cx unit).

We had pre-programmed the proposed turbine sites into our GPS units before fieldwork and we visited each turbine site, taking photographs, recording notes on species composition, stand age of forested sites and any obvious disturbance history of the plant community present. We concentrated search effort on the turbine sites and the noted development corridors but also covered different or interesting habitats when these were noted.

We compiled a full vascular plant list for the site as a whole, with estimates of species' relative abundance as follows: rare – seen in small numbers in 4 or fewer locations; uncommon – seen in small numbers in approximately 5 to 8 locations, potentially in larger numbers at one or two of the locations; fairly common – seen in small numbers in approximately 8 to 12 locations, potentially in larger numbers at several of the locations; common – seen at more than 12 (estimated) locations. These categories are not intended to represent precise descriptions of abundance but do provide some measure of relative abundance.

For plant species tracked by the Atlantic Canada Conservation Data Centre (those ranked S1, S2, S3 or S3S4 in Nova Scotia, for which all locations are databased), we recorded GPS locations along with habitat descriptions and more detailed estimates of local abundance.

Definitions for S-ranks and for Nova Scotia National General Status ranks (the primary ranks by which species' significance is determined by Nova Scotia Department of Natural Resources) are given below. Both sets of ranks for Nova Scotia were developed through the consensus of the NS Flora Ranking Committee, led through the cooperation of NS Department of Natural Resources (NS DNR) and Atlantic Canada Conservation Data Centre. The ranks reflect the best understanding of plant status at the time of ranking, but are subject to revision as new information becomes available.

Definitions of provincial (subnational) ranks (S-ranks):

- S1 Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
- S2 Rare throughout its range in the province (usually 6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
- S3 Uncommon throughout its range in the province (usually 21 to 100 occurrences), or found only in a restricted range, even if abundant in at some locations.
- S4 Usually widespread, fairly common throughout its range in the province (usually 100+ occurrences), and apparently secure, but the element is of long-term concern.
- S5 Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions (100+ occurrences).
- S#S# Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).
- SE Exotic: An exotic species established in the province (e.g., Purple Loosestrife or Coltsfoot); may be native in nearby regions.
- ? Is used as a qualifier indicating uncertainty: for numeric ranks, denotes inexactness, e.g., SE? denotes uncertainty of exotic status. (The ? qualifies the character immediately preceding it in the SRANK).

Definitions of National General Status Ranks (from *Wild Species: the General Status Program in Canada*, Lisa Twolan and Simon Nadeau, 2004, Canadian Wildlife Service, Ottawa)

- *Extirpated*: species that have disappeared from (or are no longer present in) a given geographic area but which occur in other areas
- *Extinct*: species that are extirpated worldwide (i.e., they no longer exist anywhere)
- *At Risk*: species for which a formal detailed risk assessment (COSEWIC assessment or provincial or territorial equivalent) has been completed, and which have been determined to be at risk of extirpation or extinction (i.e., Endangered) or are likely

- to become at risk of extirpation or extinction if limiting factors are not reversed (i.e., Threatened)
- *May Be At Risk*: species that may be at risk of extirpation or extinction and are, therefore, candidates for a detailed risk assessment by COSEWIC or the provincial or territorial equivalent
 - *Sensitive*: species that are believed to not be at risk of extirpation or extinction but which may require special attention or protection to prevent them from becoming at risk
 - *Secure*: species that are believed to not belong in the categories At Risk, May Be At Risk, Extirpated, Extinct, Accidental, or Exotic. This category includes some species that show a declining trend in numbers in Canada but which remain relatively widespread or abundant.
 - *Undetermined*: species for which insufficient data, information, or knowledge is available with which to reliably evaluate their general status
 - *Not Assessed*: species that are known or believed to be present in the geographic area in Canada to which the general status rank applies but which have not yet been assessed
 - *Exotic*: species that have been moved beyond their natural range as a result of human activity. In the *Wild Species 2005* report, exotic species have been purposefully excluded from all other categories.
 - *Accidental*: species occurring infrequently and unpredictably outside their usual range

Breeding Bird Inventory

Although not part of the work I was hired to complete, I made some effort to record bird species by listening for birds and occasionally attempting to attract birds into view using pishing. I recorded breeding evidence using the codes of the Maritimes Breeding Bird Atlas (<http://www.mba-aom.ca/english/mbbaguide.pdf>, and listed below). Bird breeding evidence from 2007 has been entered online into the Maritimes Breeding Bird Atlas, and 2008 evidence will be entered.

Results and Discussion

I. Site Coverage

In 2007, we covered 42.7 km on foot within the 2008 project area (including 6.3km along the access road between Vameys Lake and Marshy Hope). During 2008 fieldwork, I (see covered 42.0 km on foot. GPS tracks from each year relative to proposed development sites are mapped in Figure 2.

No site inventory is ever entirely complete, but fieldwork for this project was unusually extensive because of the multiple site visits in 2007 and 2008. We covered all habitat types present and are confident that the turbine sites are relatively thoroughly covered for vascular plants, especially for native species, and that there is a low probability of

significant numbers of additional rare vascular plant species occurring within the proposed turbine development footprints.

II. Plant Communities

Descriptions of the plant communities at the proposed turbine sites, along with notes on how turbine placement could be improved relative to impacts on the site's natural heritage values, are given in Table 1. Turbine site numbers correspond to those mapped in Figure 1, and geocoordinates and significant communities are given in Table 3 and mapped in Figure 2.

In cases where forest may be impacted by turbine construction, one has to consider the potential impacts of turbine construction in the context of a working landscape in which substantial clearcutting and other forest harvesting is already taking place, meaning that mature forest may not remain as such into the future, independent of the addition of wind turbines. That said, however, there are many forest areas on site that are high quality examples of their community types where avoiding impacts would be beneficial.

The development footprints for the following 18 turbine sites present very little concern relative to natural heritage values because they were entirely within old fields (including those regenerating to forest) or recent clearcuts (20 years ago or less): Turbines 2, 3, 5, 6, 8, 9, 10, 15, 19, 21, 22, 23, 24, 28, 29, 32, 33, 36.

The turbine sites having the highest priority for revised siting or careful restriction of impacts within the 75m radius development footprint are those where the development footprint is entirely within mature forest, especially cases where rows of turbines are within larger, contiguous blocks of mature forest. The development footprints of five turbine sites (turbines 7, 13, 14, 18, 20, 25, 27) are entirely within mature forest (estimated age 75+ years). Footprints for turbines 4 and 34 were also largely within mature forest, but included some disturbed area – a large road at turbine 4 and a 5m wide cut line at turbine 34. Three long development corridors run through larger contiguous blocks of fairly mature to mature deciduous forest: 1) the line between turbines 18, 25, 14 and 4 (~1140m), 2) the line between turbines 34, 20, 27 and 10 (~1070m) and 3) the line between turbines 36 and 32 (~1050m, also crossing a seasonal stream and seepage area as noted below). Shorter corridors through fairly mature to mature forest occur along the lines between turbines 16 and 30 (~475m), between turbines 11 and 5 (~400m) and between 32 and 26 (~400m).

In all the above cases these are deciduous, sugar maple-dominated stands of a type that is typical of the Cobequid Mountain region of northern mainland Nova Scotia. These areas do not represent a rare community, but do provide some high quality examples of the community type. If the turbines can be placed in less mature stands, project impacts on natural heritage values would be significantly reduced. In many cases tracks taken between turbine sites also went through extensive, high quality examples of sugar maple-dominated uplands. As with the turbine sites, limiting the extent of new powerline and access road construction in mature forest will help reduce overall impacts on the natural heritage value of the site.

The development footprints for turbines 4, 7, 11, 12, 14, 16, 17, 18, 26, 30, 31, 35 (12 turbines) are situated entirely or almost entirely within intermediate aged forest (estimated at 50-75 years old). Although reducing impacts in these sites would be a slightly lower priority than in the mature forest sites, shifting turbine footprints into sites entirely within less-mature communities would also be desirable from the perspective of maintaining natural heritage values.

I found several groundwater seepage communities. The most significant of these were outside proposed development impacts. These were along the stream between turbines 10, 27 and 20 and turbines 12, 24 and 30. I crossed this stream at three different places over 800m and rich deciduous forest seepage areas were found at each crossing, suggesting they occur through the whole distance of the stream. The area between turbine sites 24 and 27 was the richest site, having an extensive rich seepage area under sugar maple and yellow birch forest. This community type is uncommon but not rare provincially and the examples on this stream were good ones, being mature and containing the uncommon species Broad-Lipped Twayblade (*Listera convallarioides* – S3, Secure), Braun's Holly-Fern (*Polystichum braunii* – S3S4, Secure) and Red Trillium (*Trillium erectum* – S3, Secure). The full length of this stream should remain outside the development footprint as it is at present. Another similar rich deciduous forest seepage community was present within the potential footprint of the proposed road between turbines 36 and 32. The presence of this seepage community and stream within a relatively extensive area of fairly mature to mature forest that also supports the rare species Dwarf Ginseng (*Panax trifolius* – S3, Secure) and Tall Millet-Grass (*Milium effusum* var. *cisatlanticum* – S3, Secure) perhaps warrants a movement of the access road to the vicinity of turbines 31 and 26 if a route through less mature forest can be found. A final rich deciduous forest seepage community was between turbines 5 and 11. It also contained Red Trillium but was outside the footprint of the proposed road.

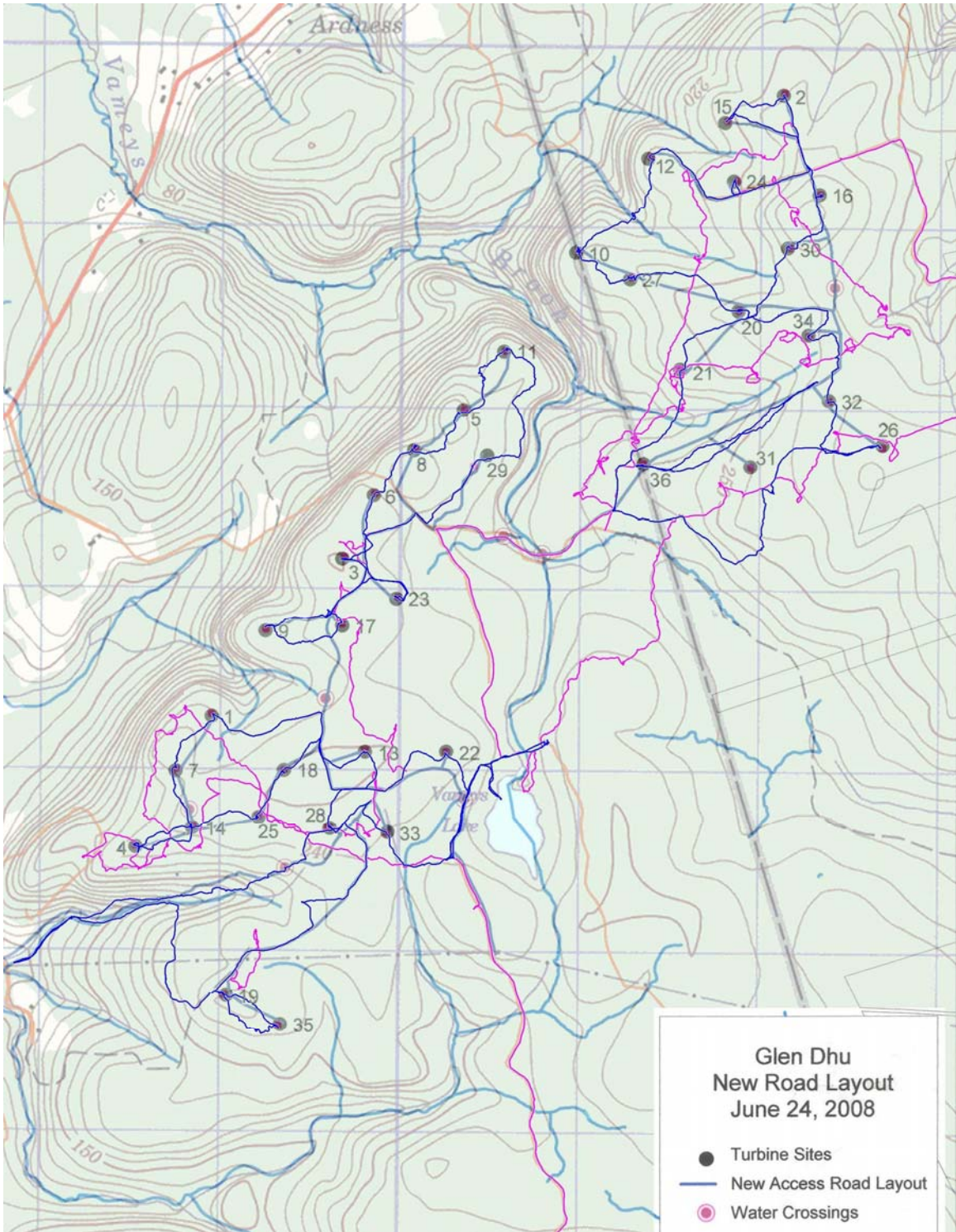


Figure 1. Map of on-foot site coverage as recorded by GPS. Magenta lines are 2007 tracks, dark blue lines are 2008 tracks. The site layout map is overlain upon a topographic map with different watercourse layer so that some streams appear twice in slightly different locations.

Table 1. Community descriptions of proposed turbine sites. Sites match those mapped in Figure 1. Cover value percentages in are absolute values, whereas tree species composition percentages are relative to the total tree cover (i.e. 85% of the 35% tree cover at turbine 1 was balsam fir). Composition and percentage cover values for the shrub and herbaceous layers were recorded but are not given here.

	Turbine#	Estimated Stand Age	Tree Composition	% Tree Cover	Community Description	Notes on Turbine Placement
34	1	60	Sugar maple, white spruce, red maple, balsam fir, yellow birch	60%	Intermediate-aged mixed forest, likely regenerated from old field	
20	2	20	Balsam fir, white birch, white spruce, red maple	60%	Old field regenerating to young, mixed forest	
6	3	30	White spruce, balsam fir, sugar maple, white birch, yellow birch, red maple	25%	Open old field with patchy tree cover	
32	4	100	Sugar maple – 100%	60%	Mature sugar maple forest with history of selective cutting and large road ~30m from turbine site	
3	5	~7, remnant mature trees 50-70	Sugar maple – 100%	15%	Young cut over sugar maple forest at margin of regenerating old field	Tall Millet-Grass (<i>Milium effusum</i> var. <i>cisatlanticum</i> , S3-Secure) common within turbine area
5	6	10-20	Sugar maple – 60%, beech – 30%, (balsam fir, white spruce, yellow birch) 10%	75% (tall saplings, low trees)	Regenerating deciduous forest cut over	
33	7	65	Sugar maple, white spruce, beech, (yellow birch, white ash, ironwood)	65%	Intermediate aged deciduous forest at boundary of 15 year old regenerating cut-over	
4	8	20-40	Sugar maple – 80%, beech – 20%; subcanopy – striped & mountain maple, alternate-leaved dogwood, sugar maple	80%	Young sugar maple-dominated deciduous forest	
8	9	30 (a few large, old trees of 80+)	Yellow birch, red maple, balsam fir, white birch, sugar maple	60-85%	Young mixed forest stand, perhaps with history as pasture	
16	10	90	Sugar maple – 95+%, beech - <5%	85%	Mature sugar maple forest	
2	11	65, a few trees 100+	Sugar maple – 100%	85	Intermediate-mature sugar maple forest	
17	12	50	White birch – 40%, red maple – 30%, sugar maple – 20%, (yellow birch, dead balsam fir)	80%	Young-intermediate aged mixed forest regenerated from old field	
28	13	75	Sugar maple, beech	80%	Intermediate-aged deciduous forest	
31	14	60	Sugar maple – 60%, white spruce – 30%, balsam fir – 10%, (yellow birch)	60	Intermediate-aged mixed forest	
19	15	20	Balsam fir, white birch, red maple, white spruce	45%	Old field regenerating to young, mixed forest	
21	16	65	Sugar maple – 70%, beech – 30%	85%	Intermediate-mature deciduous forest	
7	17	55 (partially clearcut this year)	Balsam fir, red spruce, yellow birch, red maple, white birch	60% (within uncut portion)	Margin of this year's cut in young stand regenerated from old field	

	Turbine#	Estimated Stand Age	Tree Composition	% Tree Cover	Community Description	Notes on Turbine Placement
29	18	75	Sugar maple – 60%, beech – 30%, white spruce – 10%, (yellow birch)	80%	Mature deciduous forest	Turbine would be better placed in larch plantation 80m east.
26	19	35	Trembling aspen, balsam fir, white spruce, red maple, largetooth aspen, yellow birch	65%	Young mixed forest regenerated from old field	
14	20	80	Sugar maple – 80%, yellow birch – 10%, beech – 10%	95%	Mature sugar maple forest	There is a cutover area to the south & east of this site that would be a better location for the access road and turbine.
23	21	1	None	0%	Large, recent deciduous forest clearcut	
35	22	12	Sugar maple, balsam fir, red maple, beech, (white ash, gray birch)	60%	Young deciduous forest regenerating from clearcut	
9	23	20	Balsam fir, white spruce, white birch	10%	Open old field with a sparse tree cover	
18	24	30	Balsam fir – 60%, white birch – 20%, red maple – 10%, white spruce – 10%, (yellow birch)	55%	Old field regenerating to young, mixed forest	
30	25	75	Sugar maple – 80%, beech – 20%	85%	Mature deciduous forest	
11	26	30-60	Sugar maple – 40%, beech – 40%, yellow birch – 10%, balsam fir – 10%	95%	Margin of young and intermediate-aged deciduous forest	
15	27	100	Sugar maple – 90%, (yellow birch, beech) – 10%; subcanopy - beech, striped maple	85% + 45% subcanopy	Very mature sugar maple forest	
25	28	25	Balsam fir, yellow birch, sugar maple, white spruce	60%	Old field regenerating to young, mixed forest	
1	29	~7, remnant mature trees – 70	Sugar maple – 95%, red maple + beech – 5%	10	Cut over sugar maple forest with 10% mature tree cover remaining	
22	30	65	Sugar maple – 90%, (beech, yellow birch) – 10%	50% to 85%	Intermediate-aged sugar maple forest, with small selectively-cut opening at centre of proposed turbine area	
10	31	50-60	Red spruce, yellow birch, sugar maple, white birch, balsam fir	50%	Open, intermediate-aged, conifer-dominated mixed forest stand with extensive dead balsam fir blowdown	
12	32	<5	Sugar maple – yellow birch	10%	Recently cut over deciduous forest, a few large trees left standing	
24	33	20	White spruce, balsam fir, yellow birch, sugar maple, white birch, red maple	40%	Old field regenerating to young, mixed forest	
13	34	75-90 (excluding 5m wide cut line)	Sugar maple – 90%, beech – 10%	95% (excl. area of cut line)	Mature sugar maple forest with 5m-wide cut line through proposed turbine location	
27	35	50	White spruce, balsam fir (largely dead), red maple	50%	Young mixed forest regenerated from old field	
36	36	1	None	0%	Recently clear-cut deciduous forest, with mature sugar maple forest 30m from turbine centre	

III. Vascular Plants

Table 2 lists the 395 vascular plant taxa (325 native or potentially native, 70 exotic) identified during fieldwork, with estimates of their abundance within the site and their provincial status under both the S-rank system used continent-wide by all conservation data centres and the National General Status ranks, which have been developed by each province and territory. Both sets of ranks for Nova Scotia were developed through the consensus of the NS Flora Ranking Committee, led through the cooperation of NS Department of Natural Resources (NS DNR) and Atlantic Canada Conservation Data Centre. The ranks reflect the best understanding of plant status at the time of ranking, but are subject to revision as new information becomes available.

III. Rare vascular plants

a) Screening pre-existing records for rare vascular plants

Appendix 1 lists the 104 rare species identified as having some potential for occurrence on the site. These species were considered species to watch for during field survey efforts. Appendix 2 lists the 178 species considered very unlikely to occur based on habitat. Seven of the eight rare species found on the site were identified as potentially occurring during the screening of pre-existing records. Pennsylvania Sedge (*Carex pennsylvanica*) was not identified because there were no previous records within 100 km of the site.

b) Rare plants observed in the field

Seven rare plant species tracked by the Atlantic Canada Conservation Data Centre (S-ranks of S1 to S3S4) were found on the site. Only a few rare plant records and none of major concern to NS DNR were found immediately within the proposed development footprint as given to me at the time of fieldwork. Details of each rare species location (with notes on distance to nearest portion of the proposed development footprint) are given in Table 3 and descriptions of rare species' provincial and site status are given below. None of these rare species have General Status ranks of *Maybe at Risk* or *Sensitive* but one (Hickey's Clubmoss, *Lycopodium hickeyi*) has a General Status rank of *Undetermined*, which makes it of concern to NS DNR. The remaining species are ranked *Secure* in Nova Scotia under the National General Status of Wildlife process and are thus of limited concern to NS DNR. Figure 2 maps rare species locations in relation to the proposed development footprint. Note that one species (Pennsylvania Sedge, *Carex pennsylvanica* – S1?, Undetermined) was reported during 2007 fieldwork well outside the area now under consideration for development and as such is excluded from listing in Table 3 and below.

i) Species of concern to Nova Scotia Department of Natural Resources, mapped in Figure 2.

Hickey's Clubmoss - *Lycopodium hickeyi* (S2?, Undetermined)

This species was only recently separated from similar clubmosses in the tree-like Clubmoss group and as such is still poorly known in the province. It is likely widespread

but uncommon and may prove to be too common to be tracked by the AC CDC when its status is more fully understood. A good population was found in young conifer forest regenerated from old field about 90m northeast of turbine 19.

ii) Marginally rare species, tracked by Atlantic Canada Conservation Data Centre but of limited concern to Nova Scotia Department of Natural Resources.

Dry-Spike Sedge - *Carex foenea* (S3?, Secure)

One clump of this species occurred on the recently disturbed margin of a gravelly roadway 120m from turbine 4. It is far more common to find Dry-Spike Sedge in human-disturbed habitats such as logging roads and clearcuts than in natural habitats, and as such the species is minimally threatened province-wide. The species is uncommon in Nova Scotia but occurs throughout the province. The number of records of the species is undoubtedly somewhat limited because of its similarity to other relatives in *Carex* section *Ovales*.

Broad-Leaved Twayblade - *Listera convallarioides* (S3, Secure)

This species was seen in a single spot, with large numbers of plants present in a rich, seepage depression within sugar maple forest where Silvery Glade-Fern (*Deparia acrostichoides*) was dominant and the only locations on site for the uncommon Rattlesnake Fern (*Botrychium virginianum*) and Daisy-Leaved Grape-Fern (*Botrychium matricariifolium*). Broad-lipped Twayblade is locally quite common in seepy, shaded sites along Cape Breton Highland rivers but is rare on the mainland of Nova Scotia where it is known primarily from rich, seepy sites in sugar maple forest. No turbines are proposed near this site but it should be avoided in placing powerline and access road corridors.

Tall Millet-Grass - *Milium effusum* var. *cisatlanticum* (S3, Secure)

Plants were seen in many locations, sometimes in large numbers, widely scattered around the site in richer, moist deciduous forest and in disturbed forest edges. This grass species is uncommon to locally common in richer, higher elevation sugar maple forests in the Cape Split area, the Cobequid Mountains and in Cape Breton but is very rare in lowland deciduous forests in Nova Scotia.

Dwarf Ginseng - *Panax trifolius* (S3, Secure)

Dwarf Ginseng was widely but uncommonly scattered around the site, with most sites having relatively small numbers of individuals. Recent 2007 fieldwork by Sean Blaney and the AC CDC in Cobequid Mountain sites between Portapique and Marshy Hope has found this species to be widespread and locally abundant in deciduous forests. If this level of abundance (which is not known in other regions of the Maritimes) is general across the eastern part of the Cobequid Mountains, this species' S-rank should be revised to S4. Dwarf Ginseng occurrences mapped in Figure 2 undoubtedly under-represent the total distribution of the species in the study area.

Braun's Holly-Fern - *Polystichum braunii* (S3S4, Secure)

A single, very large plant was found 290m west of turbine site 60 in a seepy opening in rich sugar maple – yellow birch – ironwood – spruce forest on a ridge top. This species

is locally common in Cape Breton and the Blomidon area and widespread but uncommon in cool ravines and steep slopes throughout the northern mainland of Nova Scotia, and may also warrant rank revision to S4.

Red Trillium - *Trillium erectum* (S3, Secure)

This species was found in four locations in 2008 around richer, seepy areas within deciduous forest. It has a relatively limited distribution in Nova Scotia, being restricted to the Annapolis Valley and Cobequid Mountains north to about Antigonish but it can be locally abundant in that area to the point where it is a candidate for ranking revision to S4, which would remove it from the AC CDC tracking list.

Table 2. Full list of vascular plants observed during 2007 and 2008 fieldwork. Some species observed in 2007 fieldwork were not observed within the area covered during 2008 fieldwork, but except for rare species where locations were noted, these cannot be easily separated. Thus all species are listed.

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S- rank
LYCOPODIACEAE		Clubmoss Family					
<i>Huperzia lucidula</i>	Shining Fir-Clubmoss	x	x	c		Secure	S5
<i>Lycopodiella inundata</i>	Bog Clubmoss	x		r		Secure	S5
<i>Lycopodium annotinum</i>	Stiff Clubmoss	x	x	u		Secure	S5
<i>Lycopodium clavatum</i>	Running Pine	x	x	f		Secure	S5
<i>Lycopodium dendroideum</i>	Treelike Clubmoss	x	x	c		Secure	S4?
<i>Lycopodium digitatum</i>	Fan Club-Moss	x		u		Secure	S5
<i>Lycopodium hickeyi</i>	Hickey's Clubmoss	x		r		Undetermined	S2?
<i>Lycopodium lagopus</i>	One-Cone Gound-Pine	x	x	r		Secure	S4
<i>Lycopodium obscurum</i>	Tree Clubmoss	x	x	r		Secure	S5
EQUISETACEAE		Horsetail Family					
<i>Equisetum arvense</i>	Field Horsetail	x	x	c		Secure	S5
<i>Equisetum sylvaticum</i>	Woodland Horsetail	x	x	c		Secure	S5
OPHIOGLOSSACEAE		Adder's-Tongue Family					
<i>Botrychium matricariifolium</i>	Chamomile Grape-Fern	x		r		Secure	S4
<i>Botrychium virginianum</i>	Rattlesnake Fern	x		r		Secure	S4
OSMUNDACEAE		Flowering Fern Family					
<i>Osmunda cinnamomea</i>	Cinnamon Fern	x	x	c		Secure	S5
<i>Osmunda claytoniana</i>	Interrupted Fern	x	x	c		Secure	S5
<i>Osmunda regalis</i> var. <i>spectabilis</i>	Royal Fern	x	x	r		Secure	S5
DENNSTAEDTIACEAE		Hay-Scented Fern Family					
<i>Dennstaedtia punctilobula</i>	Eastern Hay-Scented Fern	x	x	c		Secure	S5
<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	Bracken Fern	x	x	c		Secure	S5
THELYPTERIDACEAE		Marsh-Fern Family					
<i>Phegopteris connectilis</i>	Northern Beech Fern	x	x	c		Secure	S5
<i>Thelypteris noveboracensis</i>	New York Fern	x	x	c		Secure	S5
<i>Thelypteris palustris</i> var. <i>pubescens</i>	Marsh Fern	x		u		Secure	S5
DRYOPTERIDACEAE		Wood-Fern Family					

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S- rank
<i>Athyrium filix-femina</i> ssp. <i>angustum</i>	Lady-Fern	x	x	c		Secure	S5
<i>Deparia acrostichoides</i>	Silvery Spleenwort	x	x	f		Secure	S4
<i>Dryopteris campyloptera</i>	Mountain Wood-Fern	x	x	c		Secure	S5
<i>Dryopteris carthusiana</i>	Spinulose Shield Fern	x		u		Secure	S5
<i>Dryopteris cristata</i>	Crested Shield-Fern	x	x	u		Secure	S5
<i>Dryopteris intermedia</i>	Evergreen Woodfern	x	x	c		Secure	S5
<i>Dryopteris marginalis</i>	Marginal Wood-Fern	x		r		Secure	S5
<i>Gymnocarpium dryopteris</i>	Northern Oak Fern	x	x	c		Secure	S5
<i>Matteuccia struthiopteris</i>	Ostrich Fern	x	x	f		Secure	S5
<i>Onoclea sensibilis</i>	Sensitive Fern	x	x	c		Secure	S5
<i>Polystichum acrostichoides</i>	Christmas Fern	x	x	f		Secure	S5
<i>Polystichum braunii</i>	Braun's Holly-Fern	x	x	r		Secure	S3S4
TAXACEAE	Yew Family						
<i>Taxus canadensis</i>	Canadian Yew	x		r		Secure	S5
PINACEAE	Pine Family						
<i>Abies balsamea</i>	Balsam Fir	x	x	c		Secure	S5
<i>Larix laricina</i>	American Larch	x		f		Secure	S5
<i>Picea abies</i>	Norway Spruce	x		c	planted	Exotic	SE
<i>Picea glauca</i>	White Spruce	x	x	c		Secure	S5
<i>Picea mariana</i>	Black Spruce	x		u		Secure	S5
<i>Picea rubens</i>	Red Spruce	x	x	f		Secure	S5
<i>Pinus resinosa</i>	Red Pine	x		r	planted	Secure	S4S5
<i>Pinus strobus</i>	Eastern White Pine	x		r		Secure	S5
<i>Tsuga canadensis</i>	Eastern Hemlock	x	x	u		Secure	S5
RANUNCULACEAE	Buttercup Family						
<i>Actaea pachypoda</i>	White Baneberry	x	x	r		Secure	S4
<i>Actaea rubra</i>	Red Baneberry	x	x	u		Secure	S5
<i>Coptis trifolia</i>	Goldthread	x	x	c		Secure	S5
<i>Ranunculus abortivus</i>	Kidney-Leaved Buttercup	x	x	u		Secure	S4S5
<i>Ranunculus acris</i>	Tall Butter-Cup	x	x	f		Exotic	SE
<i>Ranunculus recurvatus</i>	Hooked Crowfoot	x	x	u		Secure	S4
<i>Ranunculus repens</i>	Creeping Butter-Cup	x	x	c		Exotic	SE
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	x	x	c		Secure	S5
FUMARIACEAE	Fumitory Family						
<i>Dicentra cucullaria</i>	Dutchman's Breeches	x		u		Secure	S4
CANNABACEAE	Cannabis Family						
<i>Cannabis sativa</i>	Marijuana	x		r	planted	[Not ranked]	SE
MYRICACEAE	Bayberry Family						
<i>Morella pensylvanica</i>	Northern Bayberry	x	x	r		Secure	S5
<i>Myrica gale</i>	Sweet Bayberry	x		r		Secure	S5
FAGACEAE	Beech Family						
<i>Fagus grandifolia</i>	American Beech	x	x	c		Secure	S5
<i>Quercus rubra</i>	Northern Red Oak	x		r		Secure	S5
BETULACEAE	Birch Family						
<i>Alnus incana</i> ssp. <i>rugosa</i>	Speckled Alder	x	x	f		Secure	S5
<i>Alnus viridis</i> ssp. <i>crispa</i>	Green Alder	x	x	f		Secure	S5
<i>Betula alleghaniensis</i>	Yellow Birch	x	x	c		Secure	S5
<i>Betula papyrifera</i> var. <i>cordifolia</i>	Heart-Leaved Paper Birch	x	x	f		Secure	S5

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<i>Betula papyrifera</i> var. <i>papyrifera</i>	Paper Birch	x	x	c		Secure	S5
<i>Betula populifolia</i>	Gray Birch	x	x	c		Secure	S5
<i>Betula x caerulea</i>	a hybrid Birch [<i>papyrifera</i> X <i>populifolia</i>]	x	x	r		[Not ranked]	HYB
<i>Corylus cornuta</i>	Beaked Hazelnut	x	x	c		Secure	S5
<i>Ostrya virginiana</i>	Eastern Hop-Hornbeam	x	x	r		Secure	S5
CHENOPODIACEAE	Goosefoot Family						
<i>Chenopodium album</i>	White Goosefoot	x		r		Exotic	SE
PORTULACACEAE	Purslane Family						
<i>Claytonia caroliniana</i>	Carolina Spring-Beauty	x	x	f		Secure	S4
CARYOPHYLLACEAE	Pink Family						
<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	Common Mouse-Ear Chickweed	x	x	f		Exotic	SE
<i>Moehringia lateriflora</i>	Grove Sandwort	x	x	r		Secure	S5
<i>Stellaria borealis</i>	Northern Stitchwort	x	x	r		Secure	S4
<i>Stellaria graminea</i>	Little Starwort	x	x	f		Exotic	SE
POLYGONACEAE	Smartweed Family						
<i>Polygonum cilinode</i>	Fringed Black Bindweed	x	x	c		Secure	S5
<i>Polygonum hydropiper</i>	Marshpepper Smartweed	x	x	r		Exotic	SE
<i>Polygonum sagittatum</i>	Arrow-Leaved Tearthumb	x	x	f		Secure	S5
<i>Rumex acetosa</i>	Garden Sorrel	x		r		Exotic	SE
<i>Rumex acetosella</i>	Sheep Sorrel	x	x	f		Exotic	SE
<i>Rumex crispus</i>	Curly Dock	x	x	r	ID probable only	Exotic	SE
<i>Rumex obtusifolius</i>	Bitter Dock	x		r		Exotic	SE
ELATINACEAE	Waterwort Family						
<i>Elatine minima</i>	Small Water-Wort	x		r		Secure	S4S5
CLUSIACEAE	St. John's-wort Family						
<i>Hypericum boreale</i>	Northern St. John's-Wort	x	x	u	ID probable only	Secure	S5
<i>Hypericum canadense</i>	Canadian St. John's-Wort	x		r		Secure	S5
<i>Hypericum ellipticum</i>	Pale St. John's-Wort	x		r		Secure	S5
<i>Hypericum perforatum</i>	A St. John's-Wort	x	x	c		Exotic	SE
<i>Triadenum fraseri</i>	Marsh St. John's-Wort	x		r		Secure	S5
DROSERACEAE	Sundew Family						
<i>Drosera rotundifolia</i>	Roundleaf Sundew	x	x	r		Secure	S5
CISTACEAE	Rockrose Family						
<i>Lechea intermedia</i>	Narrowleaf Pinweed	x		r		Secure	S4
VIOLACEAE	Violet Family						
<i>Viola blanda</i> var. <i>palustriformis</i>	Smooth White Violet	x	x	c		Secure	S5
<i>Viola cucullata</i>	Marsh Blue Violet	x	x	c		Secure	S5
<i>Viola lanceolata</i>	Lance-Leaf Violet	x		r		Secure	S5
<i>Viola macloskeyi</i> ssp. <i>pallens</i>	Smooth White Violet	x	x	c		Secure	S5
<i>Viola pubescens</i>	Downy Yellow Violet		x	r		Secure	S4
<i>Viola renifolia</i>	Kidney-Leaf White Violet	x		r		Secure	S4
<i>Viola sororia</i>	Woolly Blue Violet	x	x	u		Secure	S5
SALICACEAE	Willow Family						
<i>Populus grandidentata</i>	Large-Tooth Aspen	x	x	f		Secure	S5
<i>Populus tremuloides</i>	Quaking Aspen	x	x	c		Secure	S5
<i>Salix bebbiana</i>	Bebb's Willow	x	x	c		Secure	S5

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<i>Salix discolor</i>	Pussy Willow	x	x	c		Secure	S5
<i>Salix eriocephala</i>	Heart-Leaved Willow	x	x	f		Secure	S5
<i>Salix humilis</i>	Prairie Willow	x	x	f		Secure	S5
<i>Salix lucida</i>	Shining Willow	x		u		Secure	S5
<i>Salix pyrifolia</i>	Balsam Willow	x		u		Secure	S5
BRASSICACEAE Mustard Family							
<i>Barbarea vulgaris</i>	Yellow Rocket	x		r		Exotic	SE
<i>Cardamine diphylla</i>	Two-Leaf Toothwort	x		u		Secure	S4
<i>Cardamine pennsylvanica</i>	Pennsylvania Bitter-Cress	x	x	u		Secure	S5
ERICACEAE Heath Family							
<i>Chamaedaphne calyculata</i>	Leatherleaf	x		r		Secure	S5
<i>Gaultheria hispida</i>	Creeping Snowberry	x		u		Secure	S5
<i>Kalmia angustifolia</i>	Sheep-Laurel	x	x	f		Secure	S5
<i>Ledum groenlandicum</i>	Common Labrador Tea	x		u		Secure	S5
<i>Rhododendron canadense</i>	Rhodora	x		u		Secure	S5
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry	x	x	c		Secure	S5
<i>Vaccinium macrocarpon</i>	Large Cranberry	x		r		Secure	S5
<i>Vaccinium myrtilloides</i>	Velvetleaf Blueberry	x	x	f		Secure	S5
PYROLACEAE Pyrola Family							
<i>Moneses uniflora</i>	One-Flower Wintergreen	x		r		Secure	S5
<i>Orthilia secunda</i>	One-Side Wintergreen	x		r		Secure	S5
<i>Pyrola americana</i>	American Wintergreen	x		r		Secure	S5
<i>Pyrola elliptica</i>	Shinleaf	x		f		Secure	S5
MONOTROPACEAE Indian Pipe Family							
<i>Monotropa uniflora</i>	Indian-Pipe	x		u		Secure	S5
PRIMULACEAE Primrose Family							
<i>Lysimachia terrestris</i>	Swamp Loosestrife	x		f		Secure	S5
<i>Trientalis borealis</i>	Northern Starflower	x	x	c		Secure	S5
GROSSULARIACEAE Gooseberry Family							
<i>Ribes glandulosum</i>	Skunk Currant	x	x	f		Secure	S5
<i>Ribes hirtellum</i>	Smooth Gooseberry	x	x	u		Secure	S5
<i>Ribes lacustre</i>	Bristly Black Currant	x	x	r		Secure	S5
<i>Ribes triste</i>	Swamp Red Currant	x		r		Secure	S4
CRASSULACEAE Stonecrop Family							
<i>Hylotelephium telephium</i>	Witch's-Moneybags	x		r		Exotic	SE
SAXIFRAGACEAE Saxifrage Family							
<i>Chrysosplenium americanum</i>	American Golden-Saxifrage	x	x	f		Secure	S5
ROSACEAE Rose Family							
<i>Agrimonia striata</i>	Woodland Agrimony	x	x	u	ID probable only coppery leaves - <i>A. interior</i> &/or <i>laevis</i>	Secure	S5
<i>Amelanchier sp.</i>	Serviceberry species	x	x	c		[Secure]	
<i>Comarum palustre</i>	Marsh Cinquefoil	x		r		Secure	S5
<i>Fragaria virginiana</i>	Virginia Strawberry	x	x	c		Secure	S5
<i>Geum aleppicum</i>	Yellow Avens		x	r		Secure	S4
<i>Geum laciniatum</i>	Rough Avens		x	r		Secure	S4S5
<i>Geum macrophyllum</i>	Large-Leaved Avens	x	x	c		Secure	S5
<i>Geum rivale</i>	Purple Avens	x		u	ID probable only	Secure	S5

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<i>Malus pumila</i>	Common Apple	x	x	r		Exotic	SE
<i>Potentilla argentea</i>	Silvery Cinquefoil	x		r		Exotic	SE
<i>Potentilla norvegica</i> ssp. <i>monspeliensis</i>	Norwegian Cinquefoil	x	x	c		Secure	S5
<i>Potentilla recta</i>	Sulphur Cinquefoil	x		r		Exotic	SE
<i>Potentilla simplex</i>	Old-Field Cinquefoil	x	x	c		Secure	S5
<i>Prunus pensylvanica</i>	Fire Cherry	x	x	f		Secure	S5
<i>Prunus virginiana</i>	Choke Cherry	x	x	f		Secure	S5
<i>Rosa virginiana</i>	Virginia Rose	x	x	u		Secure	S5
<i>Rubus allegheniensis</i>	Allegheny Blackberry	x	x	u		Secure	S5
<i>Rubus canadensis</i>	Smooth Blackberry	x	x	c		Secure	S5
<i>Rubus idaeus</i>	Red Raspberry	x	x	c		Secure	S5
<i>Rubus pubescens</i>	Dwarf Red Raspberry	x	x	c		Secure	S5
<i>Rubus setosus</i>	Small Bristleberry	x	x	r		Secure	S4?
	Green Mountain						
<i>Rubus vermontanus</i>	Blackberry	x		r	ID probable only	Undetermined	SR
<i>Sibbaldiopsis tridentata</i>	Three-Toothed Cinquefoil	x	x	r		Secure	S5
<i>Sorbus americana</i>	American Mountain-Ash	x	x	f		Secure	S5
<i>Sorbus decora</i>	Northern Mountain-Ash		x			Secure	S4
<i>Spiraea alba</i> var. <i>latifolia</i>	Northern Meadow-Sweet	x	x	c		Secure	S5
<i>Spiraea tomentosa</i>	Hardhack Spiraea	x	x	f		Secure	S5
FABACEAE		Bean Family					
<i>Lathyrus palustris</i>	Vetchling Peavine	x		r		Secure	S5
<i>Lotus corniculatus</i>	Birds-Foot Trefoil	x	x	r		Exotic	SE
<i>Medicago lupulina</i>	Black Medic	x	x	r		Exotic	SE
<i>Melilotus albus</i>	White Sweet Clover	x		r		Exotic	SE
<i>Trifolium aureum</i>	Yellow Clover	x	x	r		Exotic	SE
<i>Trifolium campestre</i>	Low Hop Clover	x		u		Exotic	SE
<i>Trifolium hybridum</i>	Alsike Clover	x		f		Exotic	SE
<i>Trifolium pratense</i>	Red Clover	x	x	c		Exotic	SE
<i>Trifolium repens</i>	White Clover	x	x	c		Exotic	SE
<i>Vicia cracca</i>	Tufted Vetch	x	x	c		Exotic	SE
<i>Vicia tetrasperma</i>	Lentil Vetch	x		r		Exotic	SE
ONAGRACEAE		Evening-Primrose Family					
<i>Chamerion angustifolium</i>	Fireweed	x	x	c		Secure	S5
	Small Enchanter's						
<i>Circaea alpina</i>	Nightshade	x	x	u		Secure	S5
<i>Epilobium ciliatum</i>	Hairy Willow-Herb	x	x	c		Secure	S5
<i>Epilobium palustre</i>	Marsh Willow-Herb	x		r		Secure	S5
<i>Oenothera perennis</i>	Small Sundrops	x	x	f		Secure	S5
	Evening-Primrose						
<i>Oenothera</i> sp.	species	x	x	c	<i>O. biennis</i> or <i>parviflora</i>	[Secure]	
CORNACEAE		Dogwood Family					
<i>Cornus alternifolia</i>	Alternate-Leaf Dogwood	x	x	f		Secure	S5
<i>Cornus canadensis</i>	Dwarf Dogwood	x	x	c		Secure	S5
AQUIFOLIACEAE		Holly Family					
<i>Ilex verticillata</i>	Black Holly	x	x	r		Secure	S5
<i>Nemopanthus mucronatus</i>	Mountain Holly	x	x	r		Secure	S5
ACERACEAE		Maple Family					
<i>Acer pensylvanicum</i>	Striped Maple	x	x	c		Secure	S5
<i>Acer rubrum</i>	Red Maple	x	x	c		Secure	S5

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<i>Acer saccharum</i>	Sugar Maple	x	x	c		Secure	S5
<i>Acer spicatum</i>	Mountain Maple	x	x	c		Secure	S5
OXALIDACEAE	Wood-Sorrel Family						
<i>Oxalis montana</i>	White Wood-Sorrel	x	x	c		Secure	S5
<i>Oxalis stricta</i>	Upright Yellow Wood-Sorrel	x	x	c		Secure	S5
GERANIACEAE	Geranium Family						
<i>Geranium robertianum</i>	Herb-Robert	x	x	r		Secure	S4S5
BALSAMINACEAE	Touch-Me-Not Family						
<i>Impatiens capensis</i>	Spotted Jewel-Weed	x	x	c		Secure	S5
ARALIACEAE	Sarsaparilla Family						
<i>Aralia hispida</i>	Bristly Sarsaparilla	x	x	r		Secure	S5
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	x	x	c		Secure	S5
<i>Aralia racemosa</i>	American Spikenard		x	r		Secure	S4
<i>Panax trifolius</i>	Dwarf Ginseng	x	x	f		Secure	S3
APIACEAE	Carrot Family						
<i>Cicuta maculata</i>	Spotted Water-Hemlock		x	r		Secure	S5
<i>Daucus carota</i>	Wild Carrot	x	x	u		Exotic	SE
<i>Hydrocotyle americana</i>	American Water-Pennywort	x		r		Secure	S5
<i>Osmorhiza berteroi</i>	Chilean Sweet Cicely	x	x	r	ID probable only	Secure	S4
<i>Osmorhiza claytonii</i>	Hairy Sweet-Cicely		x	r		Secure	S4S5
<i>Sium suave</i>	Hemlock Water-Parsnip	x		r		Secure	S5
APOCYNACEAE	Dogbane Family						
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	x		u		Secure	S5
BORAGINACEAE	Borage Family						
<i>Myosotis laxa</i>	Small Forget-Me-Not	x	x	r		Secure	S5
LAMIACEAE	Mint Family						
<i>Galeopsis tetrahit</i>	Brittle-Stem Hempnettle	x	x	c	ID refers to the species in the broad sense	Exotic	SE
<i>Lycopus americanus</i>	American Bugleweed	x		r		Secure	S5
<i>Lycopus uniflorus</i>	Northern Bugleweed	x	x	c		Secure	S5
<i>Mentha arvensis</i>	Corn Mint	x		r		Secure	S5
<i>Prunella vulgaris</i>	Self-Heal	x	x	c		Secure	S5
<i>Scutellaria galericulata</i>	Hooded Skullcap	x		r		Secure	S5
<i>Scutellaria lateriflora</i>	Mad Dog Skullcap	x	x	u		Secure	S5
PLANTAGINACEAE	Plantain Family						
<i>Plantago lanceolata</i>	English Plantain	x	x	r		Exotic	SE
<i>Plantago major</i>	Nipple-Seed Plantain	x	x	c		Exotic	SE
OLEACEAE	Olive Family						
<i>Fraxinus americana</i>	White Ash	x	x	f		Secure	S5
SCROPHULARIACEAE	Snapdragon Family						
<i>Chelone glabra</i>	White Turtlehead	x	x	f		Secure	S5
<i>Linaria vulgaris</i>	Butter-And-Eggs	x		r		Exotic	SE
<i>Mimulus ringens</i>	Square-Stem Monkeyflower	x		r		Secure	S4S5
<i>Rhinanthus minor</i>	Little Yellow-Rattle		x	r		Secure	S5
<i>Verbascum thapsus</i>	Great Mullein	x		r		Exotic	SE
<i>Veronica americana</i>	American Speedwell	x		u		Secure	S5

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<i>Veronica officinalis</i>	Gypsy-Weed	x	x	c		Exotic	S5SE
<i>Veronica peregrina</i>	Purslane Speedwell	x		r		Exotic	SE?
<i>Veronica scutellata</i>	Marsh-Speedwell	x		r		Secure	S5
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	Thyme-Leaved Speedwell	x		f		Exotic	SE
CAMPANULACEAE		Bellflower Family					
<i>Lobelia dortmanna</i>	Water Lobelia	x		r		Secure	S5
RUBIACEAE		Bedstraw Family					
<i>Galium asprellum</i>	Rough Bedstraw	x	x	c		Secure	S5
<i>Galium mollugo</i>	Great Hedge Bedstraw	x		c		Exotic	SE
<i>Galium palustre</i>	Marsh Bedstraw	x	x	c		Secure	S5
<i>Galium trifidum</i>	Small Bedstraw	x		u		Secure	S5
<i>Galium triflorum</i>	Sweet-Scent Bedstraw	x	x	c		Secure	S5
<i>Mitchella repens</i>	Partridge-Berry	x	x	f		Secure	S5
CAPRIFOLIACEAE		Honeysuckle Family					
<i>Diervilla lonicera</i>	Northern Bush- Honeysuckle	x	x	f		Secure	S5
<i>Linnaea borealis</i> ssp. <i>americana</i>	Twinflower	x	x	f		Secure	S5
<i>Lonicera canadensis</i>	American Fly- Honeysuckle	x	x	c		Secure	S5
<i>Sambucus racemosa</i>	Red Elderberry	x	x	c		Secure	S5
<i>Viburnum lantanoides</i>	Alderleaf Viburnum	x	x	f		Secure	S5
<i>Viburnum nudum</i> var. <i>cassinoides</i>	Wild Raisin Possum-Haw Viburnum	x	x	f		Secure	S5
ASTERACEAE		Aster Family					
<i>Achillea millefolium</i>	Common Yarrow	x	x	f		Secure	S5
<i>Anaphalis margaritacea</i>	Pearly Everlasting	x	x	c		Secure	S5
<i>Antennaria</i> sp.	Pussytoes species	x	x	f	<i>A. neglecta</i> / <i>howellii</i>	[Secure]	
<i>Arctium minus</i>	Lesser Burdock	x	x	r		Exotic	SE
<i>Artemisia vulgaris</i>	Common Wormwood	x		r		Exotic	SE
<i>Bidens frondosa</i>	Devil's Beggar-Ticks	x	x	u		Secure	S5
<i>Centaurea nigra</i>	Black Starthistle	x		u		Exotic	SE
<i>Cirsium arvense</i>	Creeping Thistle	x	x	r		Exotic	SE
<i>Conyza canadensis</i>	Canada Horseweed	x		f		Secure	S5
<i>Doellingeria umbellata</i>	Parasol White-Top	x	x	c		Secure	S5
<i>Erigeron strigosus</i>	Daisy Fleabane	x	x	c		Secure	S5
<i>Eupatorium maculatum</i>	Spotted Joe-Pye Weed	x	x	f		Secure	S5
<i>Eupatorium perfoliatum</i>	Common Boneset	x	x	u		Secure	S5
<i>Euthamia graminifolia</i>	Flat-Top Fragrant- Golden-Rod	x	x	c		Secure	S5
<i>Gnaphalium uliginosum</i>	Low Cudweed	x	x	u		Exotic	SE
<i>Hieracium</i> x <i>floribundum</i>	Smoothish Hawkweed	x	x	f		[Exotic]	SE
<i>Hieracium aurantiacum</i>	Orange Hawkweed	x	x	c		Exotic	SE
<i>Hieracium caespitosum</i>	Meadow Hawkweed	x		c	ID probable only	Exotic	SE
<i>Hieracium canadense</i>	Canada Hawkweed	x	x	r		Secure	S4S5
<i>Hieracium lachenalii</i>	Common Hawkweed	x	x	c		Exotic	SE
<i>Hieracium pilosella</i>	Mouseear	x	x	f		Exotic	SE
<i>Hieracium piloselloides</i>	Tall Hawkweed	x		u		Exotic	SE
<i>Hieracium scabrum</i>	Rough Hawkweed	x	x	u		Secure	S5

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					An introduced European species, sometimes classified within <i>H. umbellatum</i>		
<i>Hieracium tridentatum</i>	Three-Tooth Hawkweed	x		r		[Exotic]	SE
<i>Hieracium x flagellare</i>	Whiplash Hawkweed	x		c	ID probable only	Exotic	SE
<i>Hieracium x floribundum</i>	Smoothish Hawkweed	x		c		Exotic	SE
<i>Lactuca biennis</i>	Tall Blue Lettuce	x	x	f		Secure	S5
<i>Lactuca canadensis</i>	Canada Lettuce	x	x	r		Secure	S5
<i>Leontodon autumnalis</i>	Autumn Hawkbit	x	x	f		Exotic	SE
<i>Leucanthemum vulgare</i>	Oxeye Daisy	x	x	c		Exotic	SE
	Pineapple-Weed						
<i>Matricaria discoidea</i>	Chamomile	x	x	f		Exotic	SE
<i>Oclemena acuminata</i>	Whorled Aster	x	x	c		Secure	S5
<i>Packera schweinitziana</i>	Robbins Squaw-Weed	x		u		Secure	S4S5
<i>Prenanthes altissima</i>	Tall Rattlesnake-root	x	x	c		Secure	S4S5
	Three-Leaved						
<i>Prenanthes trifoliolata</i>	Rattlesnake-root	x		r		Secure	S5
<i>Senecio jacobaea</i>	Tansy Ragwort	x	x	u		Exotic	SE
<i>Solidago bicolor</i>	White Goldenrod	x	x	f		Secure	S5
<i>Solidago canadensis</i>	Canada Goldenrod	x	x	c		Secure	S5
<i>Solidago flexicaulis</i>	Broad-Leaved Goldenrod	x	x	f		Secure	S5
<i>Solidago gigantea</i>	Smooth Goldenrod	x		r		Secure	S5
<i>Solidago juncea</i>	Early Goldenrod	x	x	u		Secure	S5
<i>Solidago puberula</i>	Downy Goldenrod	x	x	c		Secure	S5
<i>Solidago rugosa</i>	Rough-Leaf Goldenrod	x	x	c		Secure	S5
<i>Solidago uliginosa</i>	Bog Goldenrod	x		u		Secure	S5
<i>Sonchus arvensis</i>	Field Sowthistle	x		r		Exotic	SE
<i>Symphotrichum cordifolium</i>	Heart-Leaf Aster	x	x	u		Secure	S4S5
<i>Symphotrichum lanceolatum</i>	White Panicked American-Aster	x		r		Secure	S4S5
<i>Symphotrichum lateriflorum</i>	Farewell-Summer New Belgium American-	x	x	c		Secure	S5
	Aster						
<i>Symphotrichum novi-belgii</i>	Aster	x	x	r		Secure	S5
<i>Symphotrichum puniceum</i>	Swamp Aster	x	x	c		Secure	S5
<i>Taraxacum officinale</i>	Common Dandelion	x	x	c		Exotic	SE
<i>Tussilago farfara</i>	Colt's Foot	x		f		Exotic	SE
	Broad-Leaved Water-						
<i>Alisma triviale</i>	Plantain		x	r		Secure	S5
ARACEAE	Arum Family						
	Swamp Jack-In-The-						
<i>Arisaema triphyllum</i>	Pulpit	x	x	r		Secure	S4S5
<i>Calla palustris</i>	Wild Calla	x		r		Secure	S4
ERIOCAULACEAE	Pipewort Family						
<i>Eriocaulon aquaticum</i>	Seven-Angled Pipewort	x	x	r		Secure	S5
JUNCACEAE	Rush Family						
<i>Juncus articulatus</i>	Jointed Rush	x		r		Secure	S5
<i>Juncus brevicaudatus</i>	Narrow-Panicked Rush		x	r	ID probable only	Secure	S5
<i>Juncus bufonius</i>	Toad Rush	x		u		Secure	S5
<i>Juncus effusus</i>	Soft Rush	x	x	c		Secure	S5
<i>Juncus filiformis</i>	Thread Rush	x		r		Secure	S5
<i>Juncus militaris</i>	Bayonet Rush	x	x	r		Secure	S5
<i>Juncus tenuis</i>	Slender Rush	x	x	c		Secure	S5

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S- rank
<i>Luzula acuminata</i>	Hairy Woodrush	x		u		Secure	S5
<i>Luzula multiflora</i>	Common Woodrush	x	x	c		Secure	S5
CYPERACEAE		Sedge Family					
<i>Carex arctata</i>	Black Sedge	x	x	c		Secure	S5
<i>Carex bromoides</i>	Brome-Like Sedge	x		f		Secure	S3
<i>Carex brunnescens</i> ssp. <i>sphaerostachya</i>	Brownish Sedge	x	x	c		Secure	S5
<i>Carex canescens</i>	Hoary Sedge	x	x	u		Secure	S5
<i>Carex communis</i>	Fibrous-Root Sedge	x	x	c		Secure	S5
<i>Carex crawfordii</i>	Crawford Sedge	x	x	f		Secure	S5
<i>Carex crinita</i>	Fringed Sedge	x	x	r		Secure	S4S5
<i>Carex debilis</i> var. <i>rudgei</i>	White-Edge Sedge	x	x	c		Secure	S5
<i>Carex deflexa</i>	Short-Stemmed Sedge	x		r	ID questionable - may have been <i>C.</i> <i>novae-angliae</i>	Secure	S4
<i>Carex deweyana</i>	Short-Scale Sedge	x	x	f		Secure	S4
<i>Carex disperma</i>	Softleaf Sedge	x	x	u		Secure	S5
<i>Carex echinata</i>	Little Prickly Sedge	x	x	f		Secure	S5
<i>Carex flava</i>	Yellow Sedge	x		u		Secure	S5
<i>Carex foenea</i>	Dry-Spike Sedge	x		r		Secure	S3?
<i>Carex gracillima</i>	Graceful Sedge	x	x	u		Secure	S4S5
<i>Carex gynandra</i>	A Sedge	x	x	c		Secure	S5
<i>Carex interior</i>	Inland Sedge	x		u		Secure	S4S5
<i>Carex intumescens</i>	Bladder Sedge	x	x	c		Secure	S5
<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender Sedge	x		r		Secure	S5
<i>Carex leptalea</i>	Bristly-Stalk Sedge	x	x	c		Secure	S5
<i>Carex leptoneuria</i>	Finely-Nerved Sedge	x	x	c		Secure	S5
<i>Carex lucorum</i>	A Sedge	x		r	or possibly <i>C.</i> <i>pensylvanicum</i>	Secure	S4
<i>Carex lurida</i>	Shallow Sedge	x		r		Secure	S5
<i>Carex magellanica</i> ssp. <i>irrigua</i>	A Sedge	x		r		Secure	S5
<i>Carex nigra</i>	Black Sedge	x	x	u		Secure	S5
<i>Carex novae-angliae</i>	New England Sedge	x	x	c		Secure	S5
<i>Carex pallescens</i>	Pale Sedge	x	x	f		Secure	S5
<i>Carex panicea</i>	A Sedge	x		r		Exotic	SE
<i>Carex pedunculata</i>	Longstalk Sedge	x		r		Secure	S4
<i>Carex projecta</i>	Necklace Sedge	x	x	c		Secure	S4S5
<i>Carex scabrata</i>	Rough Sedge	x	x	f		Secure	S5
<i>Carex scoparia</i>	Pointed Broom Sedge	x	x	c		Secure	S5
<i>Carex stipata</i>	Stalk-Grain Sedge	x	x	c		Secure	S5
<i>Carex stricta</i>	Tussock Sedge	x		r		Secure	S5
<i>Carex tonsa</i>	Shaved Sedge	x		r	probably var. <i>rugosperma</i>	Secure	S5
<i>Carex torta</i>	Twisted Sedge	x		u		Secure	S5
<i>Carex trisperma</i> var. <i>trisperma</i>	Three-Seed Sedge	x	x	u		Secure	S5
<i>Carex utriculata</i>	Bear Sedge	x		r		Secure	S5
<i>Carex vesicaria</i>	Inflated Sedge	x		r		Secure	S4S5
<i>Dulichium arundinaceum</i>	Three-Way Sedge	x		r		Secure	S5
<i>Eleocharis obtusa</i>	Blunt Spike-Rush	x		r		Secure	S4S5
<i>Eleocharis palustris</i>	Creeping Spike-Rush	x		r		Secure	S5

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S- rank
<i>Eleocharis tenuis</i>	Slender Spike-Rush	x	x	u		Secure	S5
<i>Eriophorum vaginatum</i> var. <i>spissum</i>	Sheathed Cottongrass	x		r		Secure	S5
<i>Scirpus atrocinctus</i>	Black-Girdle Bulrush	x		f		Secure	S5
<i>Scirpus cyperinus</i>	Cottongrass Bulrush	x	x	c		Secure	S5
<i>Scirpus hattorianus</i>	Bulrush	x	x	f		Secure	S5
<i>Scirpus microcarpus</i>	Small-Fruit Bulrush	x	x	c		Secure	S5
POACEAE	Grass Family						
<i>Agrostis capillaris</i>	Colonial Bentgrass	x		c	ID probable only	Exotic	SE
<i>Agrostis gigantea</i>	Black Bentgrass	x	x	u		Exotic	SE
<i>Agrostis scabra</i>	Rough Bentgrass	x	x	c		Secure	S5
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	x	x	c		Exotic	SE
<i>Brachyelytrum</i> <i>septentrionale</i>	Bearded Short-Husk	x	x	c		Secure	S4S5
<i>Bromus ciliatus</i>	Fringed Brome	x	x	u		Secure	S4S5
<i>Calamagrostis canadensis</i>	Blue-Joint Reedgrass	x	x	c		Secure	S5
<i>Cinna latifolia</i>	Slender Wood Reedgrass	x	x	c		Secure	S5
<i>Dactylis glomerata</i>	Orchard Grass	x	x	r		Exotic	SE
<i>Danthonia compressa</i>	Flattened Oatgrass	x		c		Secure	S4
<i>Danthonia spicata</i>	Poverty Oat-Grass	x	x	c		Secure	S5
<i>Dichanthelium acuminatum</i>	Panic Grass	x	x	c		Secure	S5
<i>Dichanthelium boreale</i>	Northern Witchgrass	x	x	r		Secure	S5
<i>Elymus repens</i>	Quackgrass	x		r		Exotic	SE
<i>Festuca filiformis</i>	Hair Fescue	x	x	f		Exotic	SE
<i>Festuca heteromalla</i>	Spreading Fescue	x	x	r	ID probable only vs. other spp. in <i>F.</i> <i>rubra</i> complex	Exotic	SE
	Small Floating Manna- Grass	x		r		Secure	S5
<i>Glyceria borealis</i>		x		r		Secure	S5
<i>Glyceria canadensis</i>	Canada Manna-Grass	x		r	ID probable only possibly just <i>G.</i> <i>canadensis</i>	Secure	S5
<i>Glyceria laxa</i>	Northern Mannagrass	x		r		Secure	S4?
<i>Glyceria melicaria</i>	Slender Manna Grass	x	x	f		Secure	S4
<i>Glyceria striata</i>	Fowl Manna-Grass	x	x	c		Secure	S5
<i>Leersia oryzoides</i>	Rice Cutgrass		x	r		Secure	S5
<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	x	x	f		Secure	S3
<i>Muhlenbergia uniflora</i>	Fall Dropseed Muhly	x		r		Secure	S5
<i>Phalaris arundinacea</i>	Reed Canary Grass	x	x	r		Secure	S5
<i>Phleum pratense</i>	Meadow Timothy	x	x	u		Exotic	SE
<i>Poa alsodes</i>	Grove Meadow Grass	x		c		Secure	S4
<i>Poa annua</i>	Annual Bluegrass	x	x	c		Exotic	SE
<i>Poa compressa</i>	Canada Bluegrass	x	x	c		Exotic	SE
<i>Poa palustris</i>	Fowl Bluegrass	x	x	c		Secure	S5
<i>Poa pratensis</i>	Kentucky Bluegrass	x	x	c		Secure	S5
<i>Poa saltuensis</i>	Drooping Bluegrass	x	x	c		Secure	S4S5
SPARGANIACEAE	Bur-Reed Family						
<i>Sparganium americanum</i>	American Bur-Reed	x		r		Secure	S5
<i>Sparganium</i> sp.	Bur-Reed species		x	r			
TYPHACEAE	Cattail Family						
<i>Typha latifolia</i>	Broad-Leaf Cattail	x	x	f		Secure	S5
LILIACEAE	Lily Family						

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S- rank
<i>Clintonia borealis</i>	Clinton Lily	x	x	c		Secure	S5
<i>Erythronium americanum</i>	Yellow Trout-Lily	x	x	c		Secure	S4S5
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	x	x	c		Secure	S5
<i>Maianthemum racemosum</i>	Solomon's-Plume	x		f		Secure	S4S5
<i>Maianthemum trifolium</i>	Three-Leaf Solomon's- Plume	x		u		Secure	S4S5
<i>Medeola virginiana</i>	Indian Cucumber-Root	x		f		Secure	S5
<i>Polygonatum pubescens</i>	Downy Solomon's-Seal	x	x	f		Secure	S4S5
<i>Streptopus amplexifolius</i>	Clasping Twisted-Stalk	x	x	r		Secure	S4S5
<i>Streptopus lanceolatus</i>	Rosy Twistedstalk	x	x	c		Secure	S5
<i>Trillium cernuum</i>	Nodding Trillium	x	x	f		Secure	S4
<i>Trillium erectum</i>	Ill-Scent Trillium	x	x	r		Secure	S3
<i>Trillium undulatum</i>	Painted Trillium	x	x	f		Secure	S5
IRIDACEAE		Iris Family					
<i>Iris versicolor</i>	Blueflag	x	x	c		Secure	S5
<i>Sisyrinchium montanum</i>	Strict Blue-Eyed-Grass	x	x	f		Secure	S5
ORCHIDACEAE		Orchid Family					
<i>Corallorhiza maculata</i>	Spotted Coralroot	x	x	r		Secure	S4
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	x	x	f		Secure	S5
<i>Listera convallarioides</i>	Broad-Leaved Twayblade	x		r		Secure	S3
<i>Platanthera aquilonis</i>	Leafy Northern Green Orchis	x	x	r	ID probable only	Secure	S4
<i>Platanthera clavellata</i>	Small Green Woodland Orchid	x		r		Secure	S5
<i>Platanthera psycodes</i>	Small Purple-Fringe Orchis	x	x	r		Secure	S4

Table 3. Rare species and significant community locations and notes. Rare plant and significant community sites are mapped in Figure 2 under the numbers given in the ‘Map#’ column. For the species or communities with start and end points, the end point is mapped under the number followed by an ‘a’.

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
1	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	80m from turbine 11	one patch of 13 flowering stems over 2m, plus more 10m away	mature sugar maple forest	2008	45.675304	-62.223012
2	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	130m from road	small patch	very rich seepage area in sugar maple forest	2008	45.674969	-62.224042
3	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	~0m from turbine 5	common	margins of young, cut-over hardwood forest and more mature sugar maple forest	2008	45.67292	-62.22516
4	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	240m from turbine 31	10 stems	open balsam fir - yellow birch - sugar maple	2008	45.667925	-62.203722
5	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	90m from road	1m2 patch	60 year old sugar maple - beech forest	2008	45.67073	-62.197082
6	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	25m from turbine 26	1m2 patch	60 year old sugar maple - beech forest	2008	45.670989	-62.195526
7	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	60m from road	1 small patch	very mature sugar maple forest	2008	45.679377	-62.214962
8	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	180m from turbine 10	1 patch, 1m x 1m	80 year old sugar maple forest	2008	45.681674	-62.21536
9	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	on road	11 stems over 3m radius	mature sugar maple forest	2008	45.673259	-62.202123
10	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	on road	11 stems over 3m x 1m area	mature sugar maple forest	2008	45.673558	-62.201557
11	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	190m from road	locally fairly common	60 year old sugar maple - beech forest	2008	45.670734	-62.199292
12	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	130m from road	11 stems	60 year old sugar maple - beech - yellow birch forest	2008	45.670577	-62.197641
13	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	160m from road	3 stems	60 year old sugar maple - beech - yellow birch forest	2008	45.670717	-62.198492
14	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	25m from turbine 34	uncommon	70 year old sugar maple forest	2008	45.676327	-62.200283
15	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	80m from turbine 12	2 immature plants	mature sugar maple forest	2008	45.684621	-62.211805
16	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	25m from road	small patch of seedlings	60-70 year old sugar maple, recently selectively cut	2008	45.681413	-62.200322
17	<i>Polystichum braunii</i>	Braun's Holly-Fern	S3S4	Secure	300m from road	rare	rich seepage area along small stream in mature sugar maple forest	2008	45.682328	-62.212956
18	<i>Trillium erectum</i>	Red Trillium	S3	Secure	80m from road	rare	rich, mature deciduous forest seepage area	2008	45.67445	-62.22378
19	<i>Trillium erectum</i>	Red Trillium	S3	Secure	30m from turbine 5	common	fairly rich, mature sugar maple slope	2008	45.67273	-62.22486

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
17	<i>Trillium erectum</i>	Red Trillium	S3	Secure	on road	fairly common	rich seepage area along small stream in mature sugar maple forest	2008	45.682328	-62.212956
21	<i>Trillium erectum</i>	Red Trillium	S3	Secure	140m from turbine 36	uncommon	~90 year old sugar maple forest	2008	45.669811	-62.210654
22	<i>Contopus borealis</i>	Olive-sided Flycatcher	S3	At Risk	~100m from road	1 singing male, could be the same individual as below	cutover forest with scattered standing trees	2008	45.66694	-62.21852
23	<i>Contopus borealis</i>	Olive-sided Flycatcher	S3	At Risk	~100m from road	1 singing male, could be the same individual as above	cutover forest with scattered standing trees	2008	45.66833	-62.21554
24	<i>Contopus borealis</i>	Olive-sided Flycatcher	S3	At Risk	~160m from road	1 singing male	young mixed forest near lake	2008	45.653564	-62.222737
25	<i>Wilsonia canadensis</i>	Canada Warbler	S4	At Risk	~25m from road	1 singing male	young mixed forest swamp	2008	45.65376	-62.22533
26		small stream crossing in deciduous forest			observed 190m from road, but same stream should cross road		as noted	2008	45.671914	-62.203939
27		seep and vernal pool in mature deciduous forest			30m from road		as noted	2008	45.672669	-62.203481
28		large deciduous forest seep			130m from turbine 30		as noted	2008	45.679827	-62.202877
2		rich deciduous forest seep			140m from road		as noted	2008	45.674969	-62.224042
17		rich seep and stream in mature deciduous forest			300m from road		as noted	2008	45.682328	-62.212956
31		sugar maple - white ash - ironwood forest on bedrock ridge			150m from road	extending over ~300m along ridge top	as noted	2007	45.656805 to 45.65423	-62.246341 to -62.247734
32		rich seepage area in sugar maple forest			180m from road	within ~40m radius	as noted	2007	45.680238	-62.208343
33	<i>Carex foenea</i>	Dry-Spike Sedge	S3?	Secure	120m from turbine 4	1 clump	margins of recently disturbed gravelly roadbed	2007	45.651733	-62.250109
32	<i>Listera convallarioides</i>	Broad-Leaved Twayblade	S3	Secure	180m from road	locally common - 100s of plants over 40m radius	rich seepage area in sugar maple forest	2007	45.680238	-62.208343
35	<i>Lycopodium hickeyi</i>	Hickey's Clubmoss	S2?	Undetermined	85m from road	good population; locally common	balsam fir-dominated regeneration from old field	2007	45.644211	-62.241378

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
36	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	130m from road	150+	sugar maple forest	2007	45.674869	-62.206578
14	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	280m from road	50	deciduous forest	2007	45.676346	-62.194692
38	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	270m from road	70+	sugar maple forest	2007	45.677078	-62.194856
39	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	30m from road	one patch	sugar maple forest	2007	45.65437	-62.231612
40	<i>Milium effusum</i> var. <i>cisatlanticum</i>	Tall Millet-Grass	S3	Secure	220m from road	large population in this area	sugar maple - white ash - ironwood forest on bedrock ridge	2007	45.656947	-62.247054
41	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	160m from turbine 34	30	recent deciduous forest clearcut	2007	45.676305	-62.202472
42	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	160m from turbine 34	8	recent deciduous forest clearcut	2007	45.67658	-62.202069
43	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	160m from turbine 34	7	intermediate-mature deciduous forest	2007	45.675229	-62.200476
44	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	160m from turbine 34	15	intermediate-mature deciduous forest	2007	45.675084	-62.200755
45	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	35m from road	200+	mature sugar maple forest	2007	45.675822	-62.197752
46	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	280m from road	20	deciduous forest	2007	45.676346	-62.194692
47	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	300m from road	50+	intermediate-mature deciduous forest	2007	45.676651	-62.19438

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
48	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	300m from road	11	sugar maple forest	2007	45.676927	-62.194389
49	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	280m from road	30+	mature sugar maple forest	2007	45.677831	-62.195071
50	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	zone crosses road twicem from road	500+ seen, probably well over 1000 present	sugar maple forest	2007	45.680076 to 45.681891	-62.198449 to -62.200559
51	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	180m from road	rare	mature sugar maple forest	2007	45.659869	-62.217035
52	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	260m from road	rare	mature sugar maple forest	2007	45.660539	-62.215972
53	<i>Panax trifolius</i>	Dwarf Ginseng	S3	Secure	450m from road	rare	mature sugar maple forest	2007	45.660397	-62.213561
31a	<i>Polystichum braunii</i>	Braun's Holly-Fern	S3S4	Secure	160m from turbine 7	rare - 1 large clump	sugar maple - white ash - ironwood - white spruce forest on bedrock ridge	2007	45.65423	-62.247734

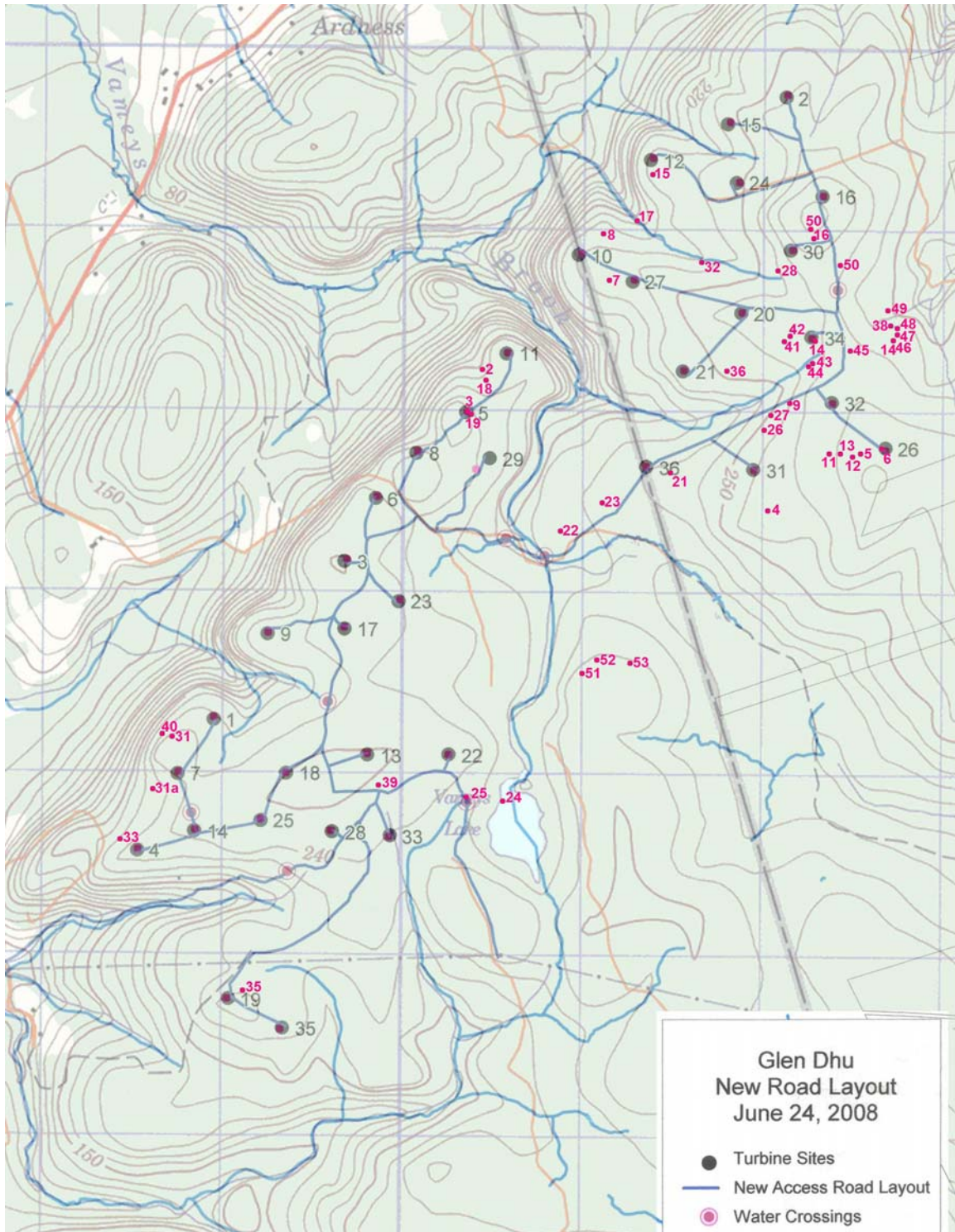


Figure 2. Map of rare species and significant communities located during 2007 and 2008 fieldwork within area covered during 2008 (numbered pink dots). Significant site numbers correspond to those in Table 2.

IV. Breeding Birds

Table 4 lists the 64 bird species recorded within or around the site in 2007 and 2008, along with the breeding evidence obtained for each in each of the four 10km breeding bird atlas topographic grid squares in which the turbine project falls. Only the Avondale and Vameys Lake squares are relevant to the current turbine layout. The list in Table 4 should not be considered a comprehensive list of the breeding birds of the site because birds were not the primary focus of the fieldwork.

Five significant species based on General Status or S-ranks were found: Canada Warbler and Olive-sided Flycatcher are both federally ranked *Threatened* because of significant recent declines and their 2008 locations are mapped in Figure 2. Gray Jay and Boreal Chickadee have provincial General Status ranks of *Sensitive* because of significant recent declines. All of these four species are still common breeding birds in Nova Scotia. Common Goldeneye is a rare breeding bird in Nova Scotia, with an S2B rank for the breeding population. I saw four Common Goldeneyes on Vameys Lake, which is a suitable breeding habitat, but saw no further evidence of breeding on site. I found three different groups of Gray Jays on the site in coniferous forest in 2007 and one in 2008, three of which were family groups with fledged young. Boreal Chickadees were widely present in coniferous forest on site and I heard single Olive-sided Flycatchers singing from near turbines 25 and 63 in 2007.

Table 4. Birds observed on or near site with breeding evidence obtained by 10km breeding bird atlas square. Species are listed alphabetically by common name. Breeding evidence codes are as follows: Possible – H = observed in suitable habitat, S = singing male in suitable habitat. Probable – P = pair observed in suitable habitat, D = territorial or breeding display between two adult birds, A = agitated behaviour observed. Confirmed - NB = nest building, AE = adult entering/leaving presumed nest site, FY = fledged young, NY = nest with young.

Species	Avondale	Vameys Lk	Marshy Hope	Barney R Stn	Maximum Breeding Evidence	S-rank	General Status Rank
Alder Flycatcher	S	S	S		S	S5B	Secure
American Goldfinch	S		H		S	S5	Secure
American Redstart	S	S	S		S	S5B	Secure
American Robin	P	A	H		A	S5B	Secure
Barred Owl	H					S5B	Secure
Belted Kingfisher	AE		H		AE	S5B	Secure
Black-and-white Warbler	S	S	S		S	S5B	Secure
Black-backed Woodpecker	NY				NY	S4	Secure
Blackburnian Warbler	S	S		S	S	S4S5B	Secure
Black-capped Chickadee	P	S	H		P	S5	Secure
Black-throated Blue Warbler	S	P			P	S4B	Secure

Species	Avondale	Vameys Lk	Marshy Hope	Barney R Stn	Maximum Breeding Evidence	S-rank	General Status Rank
Black-throated Green Warbler	P	D	D		D	S5B	Secure
Blue Jay	P	P	H		P	S5	Secure
Blue-headed Vireo	S	D	AE		AE	S5B	Secure
Boreal Chickadee	CF	P	H		CF	S4	Sensitive
Brown Creeper		S			S	S5	Secure
Canada Warbler		S			S	S4B	At Risk
Cape May Warbler		S			S	S4B	Secure
Cedar Waxwing	H	NB			NB	S5B	Secure
Chestnut-sided Warbler	S	S	S		S	S5B	Secure
Common Goldeneye		P			H	S2B,S4N	Secure
Common Grackle	FS	H			FS	S5B	Secure
Common Raven		H			H	S5	Secure
Common Yellowthroat	A	S	P		A	S5B	Secure
Dark-eyed Junco	A	S	A		A	S5	Secure
Eastern Wood-Pewee	S				S	S4B	Secure
European Starling			H		H	SE	Secure
Evening Grosbeak	H					S5B	Secure
Golden-crowned Kinglet		S	S		S	S5B	Secure
Gray Catbird	S				S	S5B	Secure
Gray Jay	FY	P	FY		FY	S4	Sensitive
Hairy Woodpecker	H		H		H	S5	Secure
Hermit Thrush	S	A	NY		NY	S5B	Secure
Least Flycatcher	D	H	S		D	S5B	Secure
Lincoln's Sparrow	S	S			S	S5B	Secure
Magnolia Warbler	S		S		S	S5B	Secure
Mourning Dove		S			S	S5B	Secure
Mourning Warbler	S	S	S		S	S5B	Secure
Nashville Warbler	S	S			S	S5B	Secure
Northern Flicker	H				H	S5B	Secure
Northern Parula	S	S	S		S	S5B	Secure
Northern Waterthrush			S		S	S5B	Secure
Olive-sided Flycatcher	S	S			S	S4B	At Risk
Osprey		H				S5B	Secure
Ovenbird	D	A	A		D	S5B	Secure
Pileated Woodpecker	S		old holes		S	S5	Secure
Pine Siskin		H				S5	Secure
Purple Finch	S	S			S	S5B	Secure
Red-breasted Nuthatch		H			H	S5	Secure
Red-eyed Vireo	P	S	S		P	S5B	Secure
Red-tailed Hawk	H	H			H	S5B	Secure
Rose-breasted Grosbeak				S	S	S4B	Secure

Species	Avondale	Vameys Lk	Marshy Hope	Barney R Stn	Maximum Breeding Evidence	S-rank	General Status Rank
Ruby-crowned Kinglet	S	S	S		S	S5B	Secure
Ruby-throated Hummingbird		H			H	S5B	Secure
Ruffed Grouse		FY	FY		FY	S5	Secure
Song Sparrow		P	A		A	S5B	Secure
Swainson's Thrush	S	S	S		S	S5B	Secure
Swamp Sparrow		A			A	S5B	Secure
White-breasted Nuthatch	S				S	S4	Secure
White-throated Sparrow	AE	CF	S		AE	S5B,SZ N	Secure
Winter Wren		S			S	S5B	Secure
Yellow-bellied Flycatcher	S	S	S		S	S5B	Secure
Yellow-bellied Sapsucker	H	S			S	S5B	Secure
Yellow-rumped Warbler	S	S	D		D	S5B	Secure

Appendix 1. Plant species rare in Nova Scotia and occurring within 100 km of the proposed development in AC CDC records that were identified as potentially occurring on the site. Species are listed alphabetically, along with Nova Scotia S-rank, General Status rank and distance to the nearest known record. Distance value is distance to nearest known record.

Species	Common Name	Distance	S-rank	GS Rank
<i>Adiantum pedatum</i>	Northern Maidenhair-Fern	32 km +/-1	S1	May be at-risk
<i>Ageratina altissima</i>	White Snakeroot	82 km +/-10 km	S1	Sensitive
<i>Agrimonia gryposepala</i>	Tall Hairy Groovebur	9 km +/-0 km	S3?	Secure
<i>Allium tricoccum</i>	Small White Leek	14 km +/-0.1 km	S1	May be at-risk
<i>Alopecurus aequalis</i>	Short-Awn Foxtail	28 km +/-10 km	S2S3	Sensitive
<i>Amelanchier fernaldii</i>	Fernald Serviceberry	83 km +/-5 km	S2?	Undetermined
<i>Amelanchier nantucketensis</i>	Nantucket Shadbush	88 km +/-1	S1	May be at-risk
<i>Amelanchier stolonifera</i>	Running Serviceberry	56 km +/-1 km	S1?	Secure
<i>Anemone quinquefolia</i>	Wood Anemone	39 km +/-0.1 km	S2	Sensitive
<i>Bidens connata</i>	Purple-Stem Swamp Beggar-Ticks	51 km +/-0 km	S3?	Sensitive
<i>Botrychium dissectum</i>	Cutleaf Grape-Fern	10 km +/-5 km	S3	Secure
<i>Botrychium lanceolatum var. angustisegmentum</i>	Lance-Leaf Grape-Fern	8 km +/-1 km	S2	Sensitive
<i>Botrychium simplex</i>	Least Grape-Fern	78 km +/-1 km	S2	Sensitive
<i>Caltha palustris</i>	Marsh Marigold	40 km +/-0.1 km	S2	Sensitive
<i>Campanula aparinoides</i>	Marsh Bellflower	7 km +/-0 km	S3?	Sensitive
<i>Carex adusta</i>	Crowded Sedge	34 km +/-0.5 km	S2S3	Sensitive
<i>Carex albicans var. emmonsii</i>	Emmons Sedge	56 km +/-5 km	S3S4	Secure
<i>Carex argyrantha</i>	Hay Sedge	61 km +/-5 km	S1	Secure
<i>Carex bebbii</i>	Bebb's Sedge	49 km +/-0 km	S1S2	May be at-risk
<i>Carex bromoides</i>	Brome-Like Sedge	12 km +/-0 km	S3	Secure
<i>Carex foenea</i>	Dry-Spike Sedge	42 km +/-0.5 km	S3?	Secure
<i>Carex hirtifolia</i>	Pubescent Sedge	12 km +/-0 km	S2S3	Sensitive
<i>Carex houghtoniana</i>	A Sedge	50 km +/-5 km	S2?	Sensitive
<i>Carex ormostachya</i>	Necklace Spike Sedge	94 km +/-1 km	S2S3	May be at-risk
<i>Carex peckii</i>	White-Tinged Sedge	30 km +/-0.1 km	S2?	Undetermined
<i>Carex pennsylvanica</i>	Pennsylvania Sedge	90 km +/-0.1 km	S1S2	Undetermined
<i>Carex plantaginea</i>	Plantain-Leaved Sedge	28 km +/-0.1 km	S1	May be at-risk
<i>Carex rosea</i>	Rosy Sedge	17 km +/-0 km	S3	Secure
<i>Carex tenera</i>	Slender Sedge	6 km +/-5 km	S1S2	Sensitive
<i>Carex tincta</i>	Tinged Sedge	92 km +/-1 km	S1	May be at-risk
<i>Carex tribuloides</i>	Blunt Broom Sedge	96 km +/-0	S3S4	Secure
<i>Carex wiegandii</i>	Wiegand's Sedge	56 km +/-5 km	S1S2	May be at-risk
<i>Coeloglossum viride var. virescens</i>	Long-Bract Green Orchis	60 km +/-0.1 km	S2	Sensitive
<i>Corallorhiza trifida</i>	Early Coralroot	34 km +/-0.5 km	S3	Secure
<i>Crataegus robinsonii</i>	A Hawthorn	18 km +/-1 km	S1?	Undetermined
<i>Cypripedium parviflorum var. makasin</i>	Small Yellow Lady's-Slipper	98 km +/-5	S2	Sensitive
<i>Cypripedium parviflorum var. pubescens</i>	Large Yellow Lady's-Slipper	22 km +/-10 km	S2	Sensitive
<i>Cypripedium reginae</i>	Showy Lady's-Slipper	42 km +/-10 km	S2	May be at-risk
<i>Cystopteris bulbifera</i>	Bulblet Fern	26 km +/-0.1 km	S3S4	Secure
<i>Cystopteris tenuis</i>	A Bladderfern	14 km +/-1 km	S3?	Secure
<i>Eleocharis nitida</i>	Slender Spike-Rush	76 km +/-1 km	S3	Secure
<i>Eleocharis ovata</i>	Ovate Spikerush	14 km +/-0.5 km	S2?	Sensitive
<i>Epilobium coloratum</i>	Purple-Leaf Willow-Herb	28 km +/-1 km	S2?	Sensitive

Species	Common Name	Distance	S-rank	GS Rank
<i>Equisetum pratense</i>	Meadow Horsetail	25 km +/-0.1 km	S2	Sensitive
<i>Equisetum scirpoides</i>	Dwarf Scouring Rush	30 km +/-1 km	S3S4	Secure
<i>Equisetum variegatum</i>	Variegated Horsetail	23 km +/-0 km	S3	Secure
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane	46 km +/-5 km	S2	Sensitive
<i>Festuca subverticillata</i>	Nodding Fescue	64 km +/-5 km	S1S2	May be at-risk
<i>Fraxinus nigra</i>	Black Ash	13 km +/-0 km	S3	Sensitive
<i>Fraxinus pennsylvanica</i>	Green Ash	97 km +/-0.5	S1	May be at-risk
<i>Galium boreale</i>	Northern Bedstraw	57 km +/-5 km	S2	May be at-risk
<i>Geocaulon lividum</i>	Northern Comandra	55 km +/-0	S2S3	Sensitive
<i>Geranium bicknellii</i>	Bicknell Northern Crane's-Bill	76 km +/-0.1 km	S3	Secure
<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain	70 km +/-1 km	S1	May be at-risk
<i>Goodyera repens</i>	Dwarf Rattlesnake-Plantain	47 km +/-1 km	S2	Sensitive
<i>Goodyera tessellata</i>	Checkered Rattlesnake-Plantain	25 km +/-0 km	S3	Secure
<i>Gratiola neglecta</i>	Clammy Hedge-Hyssop	41 km +/-0.1 km	S1	Sensitive
<i>Hedeoma pulegioides</i>	American Pennyroyal	24 km +/-5 km	S2S3	Sensitive
<i>Hepatica nobilis var. obtusa</i>	Round-Leaved Liverleaf	55 km +/-0.1	S1	May be at-risk
<i>Hieracium kalmii</i>	Kalm's Hawkweed	7 km +/-1 km	S2?	Undetermined
<i>Hieracium umbellatum</i>	Umbellate Hawkweed	34 km +/-5 km	S2?	Undetermined
<i>Humulus lupulus var. lupuloides</i>	American Hop	57 km +/-5 km	S1?	Undetermined
<i>Hypericum dissimulatum</i>	Disguised St. John's-Wort	82 km +/-0.5 km	S2S3	Sensitive
<i>Hypericum majus</i>	Larger Canadian St. John's Wort	76 km +/-0 km	S1	May be at-risk
<i>Juncus alpinoarticulatus ssp. nodulosus</i>	Richardson's Rush	97 km +/-0.5 km	S3S4	Undetermined
<i>Juncus dudleyi</i>	Dudley's Rush	23 km +/-0 km	S2?	Sensitive
<i>Juncus nodosus</i>	Knotted Rush	12 km +/-0 km	S3S4	Secure
<i>Juncus subcaudatus var. planisepalus</i>	Woods-Rush	41 km +/-10	S3	Undetermined
<i>Lactuca hirsuta var. sanguinea</i>	Hairy Wild Lettuce	74 km +/-5 km	SH	Sensitive
<i>Lindernia dubia</i>	Yellow-Seed False-Pimpernel	16 km +/-0 km	S3S4	Secure
<i>Liparis loeselii</i>	Loesel's Twayblade	46 km +/-1 km	S3S4	Secure
<i>Listera convallarioides</i>	Broad-Leaved Twayblade	60 km +/-0.1 km	S3	Secure
<i>Lobelia spicata</i>	Pale-Spiked Lobelia	48 km +/-10 km	S1S2SE	May be at-risk
<i>Lycopodium complanatum</i>	Trailing Clubmoss	76 km +/-5 km	S2S3	Secure
<i>Lycopodium hickeyi</i>	Hickey's Clubmoss	35 km +/-1 km	S2?	Undetermined
<i>Lycopodium sabinifolium</i>	Ground-Fir	42 km +/-0.1 km	S3?	Secure
<i>Lycopodium sitchense</i>	Alaskan Clubmoss	25 km +/-5	S3?	Secure
<i>Lysimachia thyrsiflora</i>	Water Loosestrife	28 km +/-0.1	S3S4	Secure
<i>Milium effusum var. cisatlanticum</i>	Tall Millet-Grass	58 km +/-0.5 km	S3	Secure
<i>Oenothera fruticosa ssp. glauca</i>	Shrubby Sundrops	14 km +/-10 km	S2SE	Undetermined
<i>Ophioglossum pusillum</i>	Adder's Tongue	90 km +/-0 km	S2S3	Sensitive
<i>Panax trifolius</i>	Dwarf Ginseng	29 km +/-1 km	S3	Secure
<i>Pilea pumila</i>	Canada Clearweed	43 km +/-0	S1	May be at-risk
<i>Plantago rugelii</i>	Black-Seed Plantain	17 km +/-0 km	S1SE	Undetermined
<i>Platanthera grandiflora</i>	Large Purple-Fringe Orchis	27 km +/-1 km	S3	Secure
<i>Platanthera hookeri</i>	Hooker Orchis	48 km +/-0.1 km	S3	Secure
<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid	7 km +/-5 km	S2	Sensitive
<i>Platanthera orbiculata</i>	Large Roundleaf Orchid	7 km +/-10 km	S3	Secure
<i>Polygala sanguinea</i>	Field Milkwort	22 km +/-1 km	S2S3	Sensitive
<i>Polystichum braunii</i>	Braun's Holly-Fern	46 km +/-5 km	S3S4	Secure
<i>Pyrola asarifolia</i>	Pink Wintergreen	19 km +/-0 km	S3	Secure
<i>Pyrola minor</i>	Lesser Wintergreen	92 km +/-5 km	SH	Sensitive
<i>Rhamnus alnifolia</i>	Alderleaf Buckthorn	51 km +/-0 km	S3	Sensitive

Species	Common Name	Distance	S-rank	GS Rank
<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry	56 km +/-5 km	S1?	Secure
<i>Salix petiolaris</i>	Meadow Willow	18 km +/-0 km	S3	Secure
<i>Sanguinaria canadensis</i>	Bloodroot	12 km +/-0 km	S3S4	Secure
<i>Sphenopholis intermedia</i>	Slender Wedge Grass	12 km +/-0 km	S3S4	Sensitive
<i>Spiranthes ochroleuca</i>	Yellow Nodding Ladies'-Tresses	83 km +/-1 km	S2	Sensitive
<i>Spiranthes romanzoffiana</i>	Hooded Ladies'-Tresses	10 km +/-0.1 km	S3S4	Secure
<i>Symphotrichum ciliolatum</i>	Lindley's Aster	22 km +/-0 km	S2S3	Sensitive
<i>Tiarella cordifolia</i>	Heart-Leaved Foam-Flower	9 km +/-10 km	S2	Sensitive
<i>Trillium erectum</i>	Ill-Scent Trillium	25 km +/-0.1 km	S3	Secure
<i>Viola sagittata var. ovata</i>	Arrow-Leaved Violet	72 km +/-1 km	S1?	Secure

Appendix 2. Plant species rare in Nova Scotia and occurring within 100 km of the proposed development in AC CDC records but which were identified as very unlikely to occur on the site based on habitat needs. Species are listed alphabetically with Nova Scotia S-rank and General Status rank, along with preferred habitat type. Distance value is distance to nearest known record.

Species	Common Name	S-rank	GS Rank	Habitat	Distance
<i>Adiantum pedatum</i>	Northern Maidenhair-Fern	S1	May be at-risk	rich deciduous forest	32 km +/-1
<i>Alisma gramineum</i>	Narrow-Leaf Water-Plantain	S1SE	Undetermined	freshwater shoreline	12 km +/-5
<i>Allium schoenoprasum var. sibiricum</i>	Wild Chives	S2	Undetermined	river shore	31 km +/-10
<i>Anemone canadensis</i>	Canada Anemone	S2	Sensitive	calcareous river shore	97 km +/-1
<i>Anemone virginiana var. alba</i>	River Anemone	S1S2	Sensitive	calcareous river shore	31 km +/-1
<i>Anemone virginiana var. virginiana</i>	River Anemone	S2	Sensitive	calcareous river shore	41 km +/-10
<i>Antennaria parlinii</i>	a Pussytoes	S1	May be at-risk	dryish, open, calcareous forest	17 km +/-0
<i>Arabis drummondii</i>	Drummond Rockcress	S2	Sensitive	rock outcrop	11 km +/-1
<i>Arabis hirsuta var. pycnocarpa</i>	Hairy Rock-Cress	S1S2	May be at-risk	rock outcrop	74 km +/-0.1
<i>Asclepias incarnata</i>	Swamp Milkweed	S3	Secure	river & lake shores	44 km +/-1
<i>Asclepias incarnata ssp. pulchra</i>	Swamp Milkweed	S2S3	Undetermined	richer or southern shores and shoreline wetlands	67 km +/-1
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort	S2	Sensitive	calcareous outcrop	88 km +/-5
<i>Asplenium trichomanes-ramosum</i>	Green Spleenwort	S2	Sensitive	calcareous outcrop	39 km +/-10
<i>Atriplex acadensis</i>	Maritime Saltbush	S1?	Undetermined	saltmarsh	62 km +/-10
<i>Atriplex franktonii</i>	Frankton's Saltbush	S3S4	Secure	sea beach	18 km +/-1
<i>Atriplex littoralis</i>	Tropical Saltbush	S2S3SE	Exotic	saltmarsh & sea beach	52 km +/-5
<i>Bartonia virginica</i>	Yellow Screwstem	S3	Secure	peatland; acidic lakeshore or swamp	85 km +/-10
<i>Betula pumila</i>	Swamp Birch	S2	Sensitive	calcareous fen	86 km +/-0
<i>Bidens hyperborea</i>	Estuary Beggar-Ticks	S1	Sensitive	brackish river	47 km +/-0.1
<i>Blysmus rufus</i>	Red Bulrush	S1S2	May be at-risk	saltmarsh	85 km +/-5
<i>Calamagrostis stricta</i>	Slim-Stem Small-Reedgrass	S1S2	Sensitive	saltmarsh - upper, or circumneutral fen	79 km +/-0.1
<i>Calamagrostis stricta ssp. inexpansa</i>	New England Northern Reed Grass	S1	Sensitive	saltmarsh - upper, or circumneutral fen	87 km +/-1
<i>Calamagrostis stricta var. stricta</i>	Bentgrass	S1S2	Sensitive	saltmarsh margins	78 km +/-10

<i>Callitriche hermaphroditica</i>	Autumnal Water-Starwort	S1	May be at-risk	brackish river	84 km +/- 0.1
<i>Cardamine parviflora</i> var. <i>arenicola</i>	Small-Flower Bitter-Cress	S2	Sensitive	dry rock outcrop	96 km +/-1
<i>Carex atratiformis</i>	Black Sedge	S2	Sensitive	calcareous river shore outcrop	84 km +/-1
<i>Carex capillaris</i>	Hair-Like Sedge	S2	Sensitive	calcareous river shore outcrop	80 km +/- 0.1
<i>Carex castanea</i>	Chestnut-Colored Sedge	S2	May be at-risk	calcareous outcrop or forest	79 km +/-0
<i>Carex chordorrhiza</i>	Creeping Sedge	S1	May be at-risk	calcareous marsh or fen	77 km +/- 0.1
<i>Carex comosa</i>	Bristly Sedge	S2	Sensitive	richer marsh	27 km +/- 10
<i>Carex cryptolepis</i>	Northeastern Sedge	S3?	Secure	lakeshores	40 km +/-0
<i>Carex eburnea</i>	Ebony Sedge	S3	Sensitive	calcareous outcrop, esp. gypsum	48 km +/- 0.1
<i>Carex garberi</i>	Elk Sedge	S1	May be at-risk	calcareous river shore	29 km +/-0
<i>Carex haydenii</i>	Cloud Sedge	S1	May be at-risk	wet meadow	31 km +/-1
<i>Carex hystericina</i>	Porcupine Sedge	S1S2	May be at-risk	calcareous river shore	60 km +/-1
<i>Carex livida</i>	Livid Sedge	S1	May be at-risk	calcareous fen - wet	93 km +/-5
<i>Carex lupulina</i>	Hop Sedge	S3	Secure	richer floodplain pools	38 km +/-0
<i>Carex pellita</i>	Woolly Sedge	S1	May be at-risk	calcareous river shore seep	45 km +/-0
<i>Carex tenuiflora</i>	Sparse-Flowered Sedge	S1	May be at-risk	calcareous fen	99 km +/-0
<i>Carex tuckermanii</i>	Tuckerman Sedge	S1	May be at-risk	richer floodplain pools	26 km +/-1
<i>Caulophyllum thalictroides</i>	Blue Cohosh	S2	May be at-risk	rich deciduous floodplain	23 km +/- 0.1
<i>Ceratophyllum demersum</i>	Common Hornwort	S3?	Secure	lake / pond / river - aquatic	40 km +/-0
<i>Chamaesyce polygonifolia</i>	Seaside Spurge	S2	Secure	sea beach	50 km +/-1
<i>Chenopodium rubrum</i>	Coast-Blite Goosefoot	S1?	May be at-risk	saltmarsh & sea beach	42 km +/- 10
<i>Clematis occidentalis</i>	Purple Clematis	S1	May be at-risk	calcareous outcrop or slope	84 km +/- 0.5
<i>Comandra umbellata</i>	Umbellate Bastard Toad- Flax	S2S3	May be at-risk	coastal dune	85 km +/-5
<i>Conioselinum chinense</i>	Hemlock Parsley	S2S3	Sensitive	calcareous river shore	29 km +/-5
<i>Crassula aquatica</i>	Water Pigmy-Weed	S1	Sensitive	brackish estuary shore	84 km +/-5
<i>Crataegus submollis</i>	A Hawthorn	S1?	Undetermined	rich floodplain	12 km +/-5
<i>Cryptogramma stelleri</i>	Fragile Rockbrake	S1S2	May be at-risk	calcareous outcrop	59 km +/-0
<i>Cuscuta cephalanthi</i>	Button-Bush Dodder	S1	May be at-risk	saltmarsh margins	37 km +/-1
<i>Cynoglossum virginianum</i> var. <i>boreale</i>	Wild Comfrey	S1	May be at-risk	rich forest on gypsum	99 km +/-1
<i>Cyperus lupulinus</i>	Slender Flatsedge	SH	Extirpated	coastal dune	92 km +/- 10
<i>Cypripedium arietinum</i>	Ram's-Head Lady's- Slipper	S1	May be at-risk	primarily forest on gypsum	28 km +/-5
<i>Decodon verticillatus</i>	Hairy Swamp Loosestrife	S1	Sensitive	lake or river shore	86 km +/-0
<i>Desmodium canadense</i>	Showy Tick-Trefoil	S1	May be at-risk	larger river shore	32 km +/- 0.1
<i>Desmodium glutinosum</i>	Large Tick-Trefoil	S2	May be at-risk	rich deciduous forest or calcareous shore	89 km +/-0
<i>Dichanthelium acuminatum</i> var. <i>lindheimeri</i>	Panic Grass	S1?	Undetermined	freshwater shoreline	49 km +/- 0.1
<i>Dichanthelium clandestinum</i>	Deer-Tongue Witchgrass	S3	Secure	river & lake shores	70 km +/-0
<i>Dichanthelium linearifolium</i>	Slim-Leaf Witchgrass	S2?	Sensitive	sand barren; sandy roadside	44 km +/- 10
<i>Dirca palustris</i>	Eastern Leatherwood	S1	May be at-risk	rich deciduous - esp. associated with gypsum	63 km +/- 10
<i>Draba arabisans</i>	Rock Whitlow-Grass	S2	Sensitive	calcareous outcrop	86 km +/-1
<i>Draba glabella</i>	Rock Whitlow-Grass	S1	May be at-risk	calcareous outcrop	96 km +/- 0.1

<i>Dryopteris fragrans</i> var. <i>remotiuscula</i>	Fragrant Fern	S2	Sensitive	rock outcrop	21 km +/-10
<i>Eleocharis erythropoda</i>	Bald Spikerush	SH	Extirpated	calcareous river shore or fen	88 km +/-1
<i>Eleocharis olivacea</i> var. <i>olivacea</i>	Capitate Spikerush	S2	Sensitive	acidic lake or pond	96 km +/-5
<i>Elodea canadensis</i>	Broad Waterweed	S3?	Secure	lake / pond / river - aquatic	55 km +/-0
<i>Elodea nuttallii</i>	Nuttall Waterweed	S1	Undetermined	calcareous waters	83 km +/-1
<i>Elymus hystrix</i> var. <i>bigeloviana</i>	Bottlebrush Grass	S1	May be at-risk	rich deciduous floodplain	51 km +/-1
<i>Elymus wiegandii</i>	Wiegand's Wild Rye	S1	May be at-risk	rich deciduous floodplain	14 km +/-0
<i>Empetrum eamesii</i>	Rock Crowberry	S2?	Sensitive	coastal dune or outcrop	57 km +/-5
<i>Empetrum eamesii</i> ssp. <i>atropurpureum</i>	Purple Crowberry	S2?	Sensitive	coastal dune or outcrop	85 km +/-5
<i>Epilobium strictum</i>	Downy Willow-Herb	S2S3	Sensitive	fen or richer marsh	66 km +/-5
<i>Erigeron hyssopifolius</i>	Daisy Fleabane	S2S3	Sensitive	rock outcrop	37 km +/-0
<i>Eriophorum chamissonis</i>	Russet Cotton-Grass	S2S3	Secure	open peatland	73 km +/-0.1
<i>Eriophorum gracile</i>	Slender Cotton-Grass	S2	Sensitive	fen	32 km +/-10
<i>Euthamia caroliniana</i>	Grass-Leaved Goldenrod	S3	Sensitive	lakeshores	76 km +/-10
<i>Euthamia galetorum</i>	Narrow-Leaf Fragrant Golden-Rod	S3S4	Secure	lakeshores	93 km +/-10
<i>Floerkea proserpinacoides</i>	False Mermaid-Weed	S2S3	Sensitive	rich deciduous floodplain	31 km +/-10
<i>Galium labradoricum</i>	Bog Bedstraw	S2	Sensitive	calcareous peatland	73 km +/-0.1
<i>Galium obtusum</i>	Blunt-Leaf Bedstraw	S2?	May be at-risk	lowland swamps	73 km +/-1
<i>Geocaulon lividum</i>	Northern Comandra	S2S3	Sensitive	bogs & poor fens; acidic conifer forest	55 km +/-0
<i>Hepatica nobilis</i> var. <i>obtusata</i>	Round-Leaved Liverleaf	S1	May be at-risk	dryish, open, calcareous forest	55 km +/-0.1
<i>Hieracium robinsonii</i>	Robinson's Hawkweed	S2	Sensitive	rocky river shore	16 km +/-10
<i>Hudsonia ericoides</i>	Golden-Heather	S1	Sensitive	dry sand barren	85 km +/-5
<i>Hudsonia tomentosa</i>	Sand-Heather	S1	May be at-risk	coastal dune	52 km +/-10
<i>Huperzia selago</i>	Fir Clubmoss	S1S3	Undetermined	rock outcrop	13 km +/-10
<i>Impatiens pallida</i>	Pale Jewel-Weed	S2	Sensitive	rich deciduous floodplain	97 km +/-10
<i>Iris prismatica</i>	Slender Blue Flag	S1	May be at-risk	coastal meadows	101 km +/-10
<i>Isoetes acadensis</i>	Acadian Quillwort	S3	Sensitive	lake / pond / river - aquatic	28 km +/-1
<i>Isoetes lacustris</i>	Lake Quillwort	S3?	Secure	lake / pond / river - aquatic	28 km +/-1
<i>Isoetes prototypus</i>	Prototype Quillwort	S2	Sensitive	oligotrophic lake	39 km +/-0
<i>Iva frutescens</i> ssp. <i>oraria</i>	Marsh Elder	S2SE	Undetermined	saltmarsh margins	98 km +/-10
<i>Juncus greenei</i>	Greene's Rush	S1S2	May be at-risk	dunes & coastal headland meadows	41 km +/-5
<i>Juncus stygius</i> ssp. <i>americanus</i>	Moor Rush	S1	Sensitive	calcareous fen	79 km +/-0.1
<i>Juncus vaseyi</i>	Vasey Rush	S1	Undetermined	dune slacks & coastal meadows	40 km +/-10
<i>Laportea canadensis</i>	Wood Nettle	S3	Sensitive	rich deciduous floodplain	16 km +/-0
<i>Lilium canadense</i>	Canada Lily	S2S3	Sensitive	rich deciduous floodplain	10 km +/-5
<i>Limosella australis</i>	Mudwort	S2S3	Sensitive	brackish river	47 km +/-5
<i>Listera australis</i>	Southern Twayblade	S1	May be at-risk	open peatland; acidic swamps	88 km +/-0
<i>Luzula parviflora</i>	Small-Flowered Wood-Rush	S3	Secure	river and stream shores; highland forest	59 km +/-0
<i>Lycopodiella appressa</i>	Southern Bog Clubmoss	S3	Secure	lake or river shore	35 km +/-1

<i>Lycopodium sitchense</i>	Alaskan Clubmoss	S3?	Secure	exposed headlands, highlands	25 km +/-5
<i>Lysimachia thyrsiflora</i>	Water Loosestrife	S3S4	Secure	swamp or marsh	28 km +/-0.1
<i>Malaxis brachypoda</i>	White Adder's-Mouth	S1	May be at-risk	calcareous swamp or outcrop seep	69 km +/-1
<i>Megalodonta beckii</i>	Beck Water-Marigold	S3	Sensitive	lake / pond / river - aquatic	20 km +/-1
<i>Minuartia groenlandica</i>	Mountain Sandwort	S2	Sensitive	granitic outcrop	85 km +/-0.1
<i>Montia fontana</i>	Fountain Miner's-Lettuce	SH	May be at-risk	coastal stream or seep	92 km +/-5
<i>Myriophyllum farwellii</i>	Farwell's Water-Milfoil	S2	Sensitive	acidic lake or pond	48 km +/-0.1
<i>Myriophyllum verticillatum</i>	Whorled Water-Milfoil	S2	Sensitive	lake / pond / river - aquatic	77 km +/-10
<i>Najas gracillima</i>	Thread-Like Naiad	S1S2	Undetermined	acidic lake or pond	97 km +/-0.1
<i>Osmorhiza longistylis</i>	Smoother Sweet-Cicely	S2	Sensitive	rich deciduous floodplain	38 km +/-0
<i>Packeria paupercula</i>	Balsam Groundsel	S3	Secure	gypsum outcrop	45 km +/-0
<i>Panicum philadelphicum</i>	Philadelphia Panic Grass	S2S3SE	Sensitive	muddy river shores	28 km +/-0
<i>Parnassia palustris</i> var. <i>parviflora</i>	a Marsh Grass-of-Parnassus	S2	May be at-risk	calcareous river shore	83 km +/-1
<i>Piptatherum canadense</i>	Canada Mountain-Ricegrass	S2	Sensitive	sand barren	30 km +/-1
<i>Platanthera flava</i> var. <i>flava</i>	Southern Rein Orchid	S2	Sensitive	lake or river shore	24 km +/-10
<i>Platanthera flava</i> var. <i>herbiola</i>	Pale Green Orchid	S1S2	Secure	river shores	15 km +/-0
<i>Poa glauca</i>	White Bluegrass	S2S3	Sensitive	calcareous rock outcrop	89 km +/-1
<i>Polygonum arifolium</i>	Halberd-Leaf Tearthumb	S2	Sensitive	lowland swamps	26 km +/-0.1
<i>Polygonum buxiforme</i>	Small's Knotweed	S2S3SE	Undetermined	sea beach & waste ground	31 km +/-10
<i>Polygonum pensylvanicum</i>	Pennsylvania Smartweed	S3	Secure	muddy river shores	29 km +/-0
<i>Polygonum raii</i>	Pondshore Knotweed	S1?	Undetermined	saltmarsh & sea beach	84 km +/-5
<i>Polygonum ramosissimum</i>	Bushy Knotweed	S2S3	Secure	saltmarsh	98 km +/-0.1
<i>Polygonum scandens</i>	Climbing False-Buckwheat	S2	Sensitive	rich floodplain	27 km +/-0
<i>Polypodium appalachianum</i>	Appalachian Polypody	S3?	Undetermined	rock outcrop	33 km +/-0
<i>Potamogeton confervoides</i>	Algae-Like Pondweed	S3S4	Secure	acidic lake or pond	59 km +/-1
<i>Potamogeton friesii</i>	Fries' Pondweed	S2	Undetermined	calcareous waters	32 km +/-1
<i>Potamogeton obtusifolius</i>	Blunt-Leaf Pondweed	S2	Sensitive	calcareous waters	40 km +/-0
<i>Potamogeton praelongus</i>	White-Stem Pondweed	S3?	Undetermined	calcareous waters	13 km +/-1
<i>Potamogeton pulcher</i>	Spotted Pondweed	S1	Undetermined	acidic lake or pond	61 km +/-0.1
<i>Potamogeton richardsonii</i>	Redhead Grass	S1?	Undetermined	calcareous waters	86 km +/-0.1
<i>Potamogeton zosteriformis</i>	Flatstem Pondweed	S2S3	Sensitive	calcareous waters	49 km +/-1
<i>Primula mistassinica</i>	Bird's-Eye Primrose	S2	Sensitive	calcareous outcrop	31 km +/-10
<i>Proserpinaca palustris</i>	Marsh Mermaid-Weed	S3S4	Secure	lake / pond / river - aquatic	25 km +/-0.1
<i>Proserpinaca pectinata</i>	Comb-Leaved Mermaid-Weed	S3	Sensitive	acidic swamp or shore	59 km +/-1
<i>Pseudognaphalium obtusifolium</i>	Fragrant Cudweed	S1	Secure	dunes or dry open ground	70 km +/-1
<i>Ranunculus flammula</i> var. <i>flammula</i>	Greater Creeping Spearwort	S2	Sensitive	lake or river shore - sand or gravel	31 km +/-10
<i>Ranunculus gmelinii</i>	Small Yellow Water-Crowfoot	S2	Secure	basic or circumneutral wetland	51 km +/-5
<i>Ranunculus pensylvanicus</i>	Bristly Crowfoot	S1	May be at-risk	lake or pond shore	29 km +/-0
<i>Ribes americanum</i>	Wild Black Currant	S1SE	Undetermined	rich deciduous floodplain	32 km +/-5

<i>Rosa palustris</i>	Swamp Rose	S2	Secure	acidic lake or pond	87 km +/- 0.1
<i>Rudbeckia laciniata</i>	Cut-Leaved Coneflower	S2S3	Sensitive	rich deciduous floodplain	27 km +/-0
<i>Rumex maritimus</i>	Sea-Side Dock	S2S3	Secure	saltmarsh	61 km +/-5
<i>Rumex salicifolius</i>	Willow Dock	S2	Sensitive	muddy river shore; saltmarsh	99 km +/-1
<i>Sagina nodosa ssp. borealis</i>	Knotted Pearlwort	S1S2	Secure	dune & coastal headland	84 km +/-5
<i>Salix pedicellaris</i>	Bog Willow	S2	Sensitive	calcareous peatland	43 km +/- 10
<i>Salix sericea</i>	Silky Willow	S2	Sensitive	lake or river shore	85 km +/-1
<i>Samolus valerandi ssp. parviflorus</i>	Water Pimpernel	S2	Sensitive	brackish river	47 km +/- 0.1
<i>Sanicula odorata</i>	Black Snake-Root	S1	May be at-risk	rich deciduous floodplain	31 km +/- 10
<i>Saxifraga paniculata ssp. neogaea</i>	a White Mountain Saxifrage	S2	Sensitive	calcareous outcrop	95 km +/-1
<i>Schoenoplectus robustus</i>	Saltmarsh Bulrush	S1?	Undetermined	saltmarsh	26 km +/- 10
<i>Scirpus pedicellatus</i>	Stalked Bulrush	S1	Undetermined	river & lake shores	69 km +/-1
<i>Senecio pseudoarnica</i>	Seabeach Groundsel	S2	Sensitive	sea beach	31 km +/- 10
<i>Shepherdia canadensis</i>	Canada Buffalo-Berry	S2	Sensitive	gypsum outcrop	91 km +/- 10
<i>Sisyrinchium angustifolium</i>	Pointed Blue-Eyed-Grass	S3S4	Secure	lake or river shore	26 km +/- 0.1
<i>Solidago hispida</i>	Hairy Goldenrod	S1?	May be at-risk	outcrop, esp. calcareous	73 km +/- 10
<i>Sparganium fluctuans</i>	Floating Bur-Reed	S3?	Undetermined	lake / pond / river - aquatic	39 km +/-5
<i>Sparganium natans</i>	Small Bur-Reed	S3	Secure	lake / pond / river - aquatic	31 km +/-5
<i>Spiranthes lucida</i>	Shining Ladies'-Tresses	S2	May be at-risk	calcareous river shore seep	15 km +/-0
<i>Stellaria crassifolia</i>	Fleshy Stitchwort	SH	May be at-risk	saltmarsh	93 km +/-5
<i>Stellaria humifusa</i>	Creeping Sandwort	S2	Sensitive	saltmarsh	56 km +/-1
<i>Stellaria longifolia</i>	Longleaf Stitchwort	S3	Sensitive	rich floodplain	23 km +/-1
<i>Stuckenia filiformis ssp. alpina</i>	Northern Slender Pondweed	S2S3	Undetermined	basic waters	68 km +/- 0.5
<i>Stuckenia vaginata</i>	Sheathed Pondweed	S1	Undetermined	calcareous waters	83 km +/-0
<i>Suaeda calceoliformis</i>	American Sea-Blite	S2S3	Secure	saltmarsh & sea beach	40 km +/-1
<i>Suaeda rolandii</i>	Roland's Sea-Blite	S1?	May be at-risk	saltmarsh	80 km +/- 10
<i>Symphyotrichum boreale</i>	Boreal American-Aster	S2?	Sensitive	calcareous peatland	31 km +/- 10
<i>Symphyotrichum undulatum</i>	Wavy-leaf American-Aster	S2	Sensitive	sand barren - dry, southern; gypsum cliff	98 km +/-0
<i>Symplocarpus foetidus</i>	Skunk Cabbage	S2	Secure	lowland swamps	71 km +/-0
<i>Teucrium canadense</i>	American Germander	S2S3	Sensitive	saltmarsh margins	40 km +/-5
<i>Thuja occidentalis</i>	Northern White Cedar	S1S2	At-risk	calcareous or circumneutral lowlands	45 km +/- 0.1
<i>Triglochin gaspensis</i>	Gaspé Peninsula Arrow-Grass	S2S3	Undetermined	saltmarsh	91 km +/-1
<i>Triosteum aurantiacum</i>	Coffee Tinker's-Weed	S2	Sensitive	rich deciduous floodplain	14 km +/-0
<i>Trisetum spicatum</i>	Narrow False Oats	S3	Secure	rock outcrop	46 km +/-0
<i>Utricularia gibba</i>	Humped Bladderwort	S2	Sensitive	lake / pond / river - aquatic	71 km +/- 10
<i>Vaccinium boreale</i>	Northern Blueberry	S1	May be at-risk	highlands; exposed shores	87 km +/- 0.5
<i>Vaccinium caespitosum</i>	Dwarf Blueberry	S2	Sensitive	river shore rock outcrop	32 km +/-1
<i>Vallisneria americana</i>	Eel-Grass	S2	May be at-risk	calcareous waters	49 km +/-1
<i>Verbena hastata</i>	Blue Vervain	S3	Secure	river shores	14 km +/-0
<i>Viola canadensis</i>	Canada Violet	S1	Extirpated	rich deciduous forest, esp. gypsum	31 km +/- 10

<i>Viola nephrophylla</i>	Northern Bog Violet	S2	Sensitive	calcareous river shore or fen	14 km +/-1
<i>Woodsia glabella</i>	Smooth Woodsia	S2	Sensitive	calcareous outcrop	87 km +/-1
<i>Zizia aurea</i>	Common Alexanders	S1S2	Sensitive	river shore meadow & thicket	29 km +/-1