

4.7 Avifauna

4.7.1 Bird Surveys

4.7.1.1 Desktop Review

The diversity and abundance of birds in Nova Scotia is related to habitat factors, geography, and seasonality (Davis and Browne, 1996). Most of the Project Area is dominated by softwood and clear cut (62.5% and 10.9% cover, respectively) with other habitat types such as wetlands, mixed wood forests, and lakes interspersed throughout. This diversity of cover types provides suitable habitat for a variety of breeding, resident, and migratory bird species.

A review of the IBAs in Canada (IBA Canada, 2010) revealed that there are no listed IBAs in the vicinity of the Project Area. The closest IBA is the Southern Bight, Minas Basin IBA located approximately 35 km northeast of the Project Area. This site is classified as a globally significant site by IBA Canada due to high concentrations of shorebirds and congregatory species. In addition, a review of the Nova Scotia Significant Species and Habitat Database indicates that loon nesting habitat exists in the Avon River located directly east of the Project Area and North Canoe Lake (located just north of the Project Area) (Drawing 4.4).

Information on the use of the habitat within the Property Boundaries by birds was also obtained through a desktop review of available data from sources including the Maritime Breeding Bird Atlas (MBBA) and the ACCDC. This information was used to gain insight into which species were utilizing the area and to identify priority species potentially occurring at or near the Property Boundary.

The majority of the Property is contained within map square 20LQ95, and in the most recent edition of the MBBA (covering the years 2006-2010), 71 species were identified as being possible, probable, or confirmed breeders. This list includes four species listed as 'yellow' or sensitive to human disturbance, including: Common Loon (*Gavia immer*), Olive-sided Flycatcher (*Contopus borealis*), Gray Jay (*Perisoreus canadensis*), and Barn Swallow (*Hirundo rustica*).

Data from the ACCDC database was reviewed to evaluate the bird community within a 100 km radius of the Property Boundary. Table 4.23 lists the bird species recorded within this search radius, as well as provincial and national conservation status ranks.

Table 4.23: Bird Species Recorded within a 100 km Radius of the Property Boundary

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³
American Coot	<i>Fulica americana</i>	Green	Not Listed	Not Listed
American Golden-Plover	<i>Pluvialis dominica</i>	Green	Not Listed	Not Listed
Arctic Tern	<i>Sterna paradisaea</i>	Yellow	Not Listed	Not Listed
Atlantic Puffin	<i>Fratercula arctica</i>	Yellow	Not Listed	Not Listed
Baltimore Oriole	<i>Icterus galbula</i>	No Status	Not Listed	Not Listed
Bicknell's Thrush	<i>Catharus bicknelli</i>	Yellow	Threatened	Special Concern
Black Guillemot	<i>Cephus grille</i>	Green	Not Listed	Not Listed
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Green	Not Listed	Not Listed
Black-legged Kittiwake	<i>Rissa tridactyla</i>	Green	Not Listed	Not Listed
Bobolink	<i>Dolichonyx oryzivorus</i>	Yellow	Not Listed	Not Listed
Boreal Owl	<i>Aegolius funereus</i>	Green	Not Listed	Not Listed
Brown Thrasher	<i>Toxostoma rufum</i>	Green	Not Listed	Not Listed
Common Goldeneye	<i>Bucephala clangula</i>	Green	Not Listed	Not Listed
Common Moorhen	<i>Gallinula chloropus</i>	Green	Not Listed	Not Listed
Common Tern	<i>Sterna hirundo</i>	Yellow	Not Listed	Not Listed
Eastern Bluebird	<i>Sialia sialis</i>	Yellow	Not Listed	Not Listed
Eastern Meadowlark	<i>Sturnella magna</i>	Green	Threatened	Not Listed
Eastern Phoebe	<i>Sayornis phoebe</i>	Green	Not Listed	Not Listed
Eskimo Curlew	<i>Numenius borealis</i>	Undetermined	Endangered	Not Listed
Gadwall	<i>Anas strepera</i>	Green	Not Listed	Not Listed
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Green	Not Listed	Not Listed
Greater Yellowlegs	<i>Tringa melanoleuca</i>	Green	Not Listed	Not Listed
Harlequin Duck	<i>Histrionicus histrionicus</i>	Yellow	Special Concern	Special Concern
Horned Lark	<i>Eremophila alpestris</i>	Green	Not Listed	Not Listed
Hudsonian Godwit	<i>Limosa haemastica</i>	Undetermined	Not Listed	Not Listed
Indigo Bunting	<i>Passerina cyanea</i>	Green	Not Listed	Not Listed
Least Sandpiper	<i>Calidris minutilla</i>	Green	Not Listed	Not Listed
Long-eared Owl	<i>Asio otus</i>	Green	Not Listed	Not Listed
Northern Cardinal	<i>Cardinalis cardinalis</i>	Green	Not Listed	Not Listed
Northern Goshawk	<i>Accipiter gentilis</i>	Yellow	Not Listed	Not Listed
Northern Mockingbird	<i>Mimus polyglottos</i>	Green	Not Listed	Not Listed
Northern Pintail	<i>Anas acuta</i>	Green	Not Listed	Not Listed
Northern Shoveler	<i>Anas clypeata</i>	Green	Not Listed	Not Listed
Peregrine Falcon	<i>Falco peregrines</i>	Red	Special Concern	Threatened
Philadelphia Vireo	<i>Vireo philadelphicus</i>	Green	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³
Purple Martin	<i>Progne subis</i>	Red	Not Listed	Not Listed
Purple Sandpiper	<i>Calidris maritime</i>	Yellow	Not Listed	Not Listed
Razorbill	<i>Alca torda</i>	Yellow	Not Listed	Not Listed
Red Knot	<i>Calidris canutus</i>	Yellow	Endangered	Not Listed
Red Phalarope	<i>Phalaropus fulicaria</i>	Green	Not Listed	Not Listed
Red-breasted Merganser	<i>Mergus serrator</i>	Green	Not Listed	Not Listed
Red-necked Phalarope	<i>Phalaropus lobatus</i>	Green	Not Listed	Not Listed
Roseate Tern	<i>Sterna dougallii</i>	Red	Endangered	Not Listed
Rusty Blackbird	<i>Euphagus carolinus</i>	Yellow	Special Concern	Special Concern
Scarlet Tanager	<i>Piranga olivacea</i>	Green	Not Listed	Not Listed
Semipalmated Plover	<i>Charadrius semipalmatus</i>	Green	Not Listed	Not Listed
Short-eared Owl	<i>Asio flammeus</i>	Yellow	Special Concern	Special Concern
Solitary Sandpiper	<i>Tringa solitaria</i>	Green	Not Listed	Not Listed
Vesper Sparrow	<i>Pooecetes gramineus</i>	Yellow	Not Listed	Not Listed
Virginia Rail	<i>Rallus limicola</i>	Green	Not Listed	Not Listed
Warbling Vireo	<i>Vireo gilvus</i>	Green	Not Listed	Not Listed
Whimbrel	<i>Numenius phaeopus</i>	Green	Not Listed	Not Listed
Whip-poor-will	<i>Caprimulgus vociferus</i>	Green	Threatened	Threatened
Willow Flycatcher	<i>Empidonax traillii</i>	Accidental	Not Listed	Not Listed
Wood Thrush	<i>Hylocichla mustelina</i>	Green	Not Listed	Not Listed

¹ NSNDR, 2009b; ² COSEWIC, 2009; ³ SARA, 2011
Source: ACCDC, 2011

4.7.1.2 Field Surveys

Field surveys were conducted to complement the desktop information and to characterize the pre-construction (baseline) bird community. As the field surveys were initiated prior to finalizing a Project layout, the Property Boundaries were used to provide a broad geographic “on site” area for the surveys. In addition to bird surveys being carried out “on site”, reference sites of similar habitat were established outside of the Property Boundaries to characterize this bird community and provide additional baseline data for post-construction surveys. Since the completion of field surveys, the Project Area has been defined as the area in close proximity to the proposed turbines and roads (Drawings 4.7-4.11). The sections that follow present the on site (i.e. within the Property Boundary) and reference site (i.e. outside the Property Boundary) results of seasonal bird surveys.

All surveys were carried out by an expert birder and were designed to capture changes in the diversity and abundance of bird species coinciding with important events such as breeding and migration. Field surveys were designed in consultation with officials from NSDNR and the Canadian Wildlife Service (CWS), and conformed to protocols outlined

in “*Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds*” (CWS, 2007).

Detailed information on survey methodology and results is provided in Appendix E.

Winter Bird Surveys

The resident winter bird community within the Property Boundary, and at adjacent reference sites, was investigated using the area search methodology (CWS, 2007). Detailed information on survey methodology and results are provided in Appendix E.

There were 32 area searches conducted within the Property Boundary on December 9, 2011 and January 15, 2012 (Drawing 4.7). A total of 22 species were identified, including 401 individual birds. Black-capped Chickadee (*Poecile atricapillus*) was the most abundant species, although Golden-crowned Kinglets (*Regulus satrapa*) were observed on more occasions. Non-passerine species identified during winter surveys within the Property Boundary included Bald Eagle (*Haliaeetus leucocephalus*), Broad-winged Hawk (*Buteo platypterus*), Cooper’s Hawk (*Accipiter cooperii*), Downy Woodpecker (*Picoides pubescens*), Hairy Woodpecker (*Picoides villosus*), Hooded Merganser (*Lophodytes cucullatus*), Pileated Woodpecker (*Dryocopus pileatus*), Red-tailed Hawk (*Buteo jamaicensis*), and Spruce Grouse (*Dendragapus canadensis*).

The following priority species were identified within the Property Boundary during these winter surveys:

- Boreal Chickadee (*Parus hudsonicus*) – “Yellow” (NSDNR, 2009b); and
- Gray Jay – “Yellow” (NSDNR, 2009b).

There were 43 area searches conducted at reference sites adjacent to the Property Boundary on December 9, and December 21, 2011, and January 22, 2012 (Drawing 4.8). A total of 30 species were identified, representing 776 individual birds. Black-capped Chickadee was the most abundant and most commonly observed species, while American Goldfinch (*Spinus tristis*), Golden-Crowned Kinglet, and Dark-eyed Junco (*Junco hyemalis*) were also prevalent.

The following priority species were identified at the reference sites during these winter surveys:

- Gray Jay – “Yellow” (NSDNR, 2009b); and
- Northern Goshawk – “Yellow” (NSDNR, 2009b)

Spring Bird Migration Surveys

Spring migration surveys were conducted within and adjacent to the Property Boundary during three site visits between late-April and the end of May 2007. These surveys consisted of avian passage counts and stop over count observations at four stations, with each survey at least one hour in duration (Drawing 4.9). Detailed survey results are provided in Appendix E. A total of 51 bird species, comprising 1,371 individual birds, were observed throughout the spring migration surveys. The most frequently observed species was Yellow-rumped Warbler (*Dendroica coronata*), which was recorded during every survey, followed by Hermit Thrush (*Catharus guttatus*), Common Yellowthroat (*Geothlypis trichas*), Eastern Wood-pewee (*Contopus virens*), and Yellow Warbler (*Dendroica petechial*). The largest single flock was 72 Yellow-rumped Warblers, and flocks of at least 40 White-throated Sparrows (*Zonotrichia albicollis*) were also recorded during each survey day.

The majority of bird species observed were passerines, although six waterfowl species were recorded in varying abundances. Other non-passerine birds noted during the spring migration surveys include Chimney Swift (*Chaetura pelagica*), Herring Gull (*Larus argentatus*), Downy Woodpecker, Hairy Woodpecker, Northern Flicker (*Colaptes auratus*), and Spotted Sandpiper (*Actitis macularia*). No birds of prey or upland game birds were identified during the spring migration surveys.

The following priority species were identified within the Property Boundary during these spring migration surveys:

- Barn Swallow – “Yellow” (NSDNR, 2009b), “Threatened” (COSEWIC, 2009);
- Canada Warbler (*Wilsonia canadensis*)– “Yellow” (NSDNR, 2009b), “Threatened” (COSEWIC, 2009), “Threatened” (SARA, 2011);
- Chimney Swift – “Yellow” (NSDNR, 2009b), “Threatened” (COSEWIC, 2009), “Threatened” (SARA, 2011), “Endangered” (NSES, 2011); and
- Common Loon – “Yellow” (NSDNR, 2009b)

Breeding Bird Surveys

Breeding bird surveys were carried out within the Property Boundary in 2011 using the point count and area search methodologies (CWS, 2007). Survey times and locations were chosen to coincide with the peak of the breeding season and to investigate the breeding bird communities at areas of interest. There were 20 point count locations surveyed on June 20 and 22 and from July 4-6, 2011. Area searches were also conducted at three locations during these dates (Drawing 4.9).

Detailed survey results are provided in Appendix E. A total of 1,312 individual birds, representing 57 species, were observed during 40 point counts. Only six species were confirmed breeders, with seven probable breeding species and 44 possible breeding

species. The most frequently observed species, in terms of the number of point counts, were Hermit Thrush and White-throated Sparrow. Hermit Thrush was also the most abundant species observed; 151 individuals were recorded during the point count surveys.

A total of 928 individual birds, representing 51 species, were observed during area searches. Five species were confirmed breeders, six as probable breeding species, and 40 as possible breeding species. At all three area search locations, more than twice the number of birds was observed during the July survey than in the June survey. The most abundant species, as determined from area searches, were Golden-crowned Kinglet, Common Yellowthroat, and Black-capped Chickadee.

As in the spring migration surveys, most species identified during the breeding bird surveys were passerines. However, several groups of non-passerine birds were represented during these surveys, including Common Loon and Common Merganser (*Mergus merganser*) (waterfowl); Bald Eagle, Broad-winged Hawk, Merlin (*Falco columbarius*), and Red-tailed Hawk (birds of prey); Black-backed Woodpecker (*Picoides arcticus*), Downy Woodpecker, Hairy Woodpecker, Northern Flicker, and Pileated Woodpecker (woodpeckers); Ruffed Grouse (*Bonasa umbellus*) and Spruce Grouse (upland game birds); and Herring Gull and Spotted Sandpiper (shorebirds).

The following priority species were identified within the Property Boundaries during these breeding bird surveys:

- Boreal Chickadee – “Yellow” (NSDNR, 2009b);
- Common Loon – “Yellow” (NSDNR, 2009b);
- Gray Jay – “Yellow” (NSDNR, 2009b); and
- Olive-sided Flycatcher – “Yellow” (NSDNR, 2009b), “Threatened” (COSEWIC, 2009), “Threatened” (SARA, 2011)

Fall Bird Migration Surveys

The use of the Project Area by migratory birds in the fall season was evaluated using four survey types: nocturnal surveys to assess night migrants; point counts to assess migrating flocks of passerines; passage migration counts to assess migrating raptors and other diurnal migrants; and standardized area searches of lakes to assess migrating waterfowl. For all survey types, survey locations within the Property Boundary were matched with reference locations sharing similar habitat features in the lands adjacent to the site (i.e. controls). Detailed information on survey methodology and results are provided in Appendix E.

Nocturnal Surveys

Nocturnal surveys were conducted between September 7 and 17, 2011, and consisted of identification of overhead migrants by call. All surveys were completed between 3:43 AM and 6:20 AM. The most commonly identified species within the Property Boundary was Yellow-rumped Warbler, with 24 separate observations, followed by Magnolia Warbler (*Dendroica magnolia*) and Black-throated Green Warbler (*Dendroica virens*) (Drawing 4.10). Yellow-rumped Warbler was also the most commonly observed species at the reference sites, although Black-capped Chickadee and Blackpoll Warbler (*Dendroica striata*) were more evident at these locations (Drawing 4.11).

Common Loon (“Yellow”, NSDNR, 2009b) was the only priority species identified during nocturnal bird surveys. Aside from Common Loon, other non-passerine bird species observed incidentally while conducting the nocturnal surveys included Barred Owl (*Strix varia*), American Woodcock (*Scolopax minor*), and Long-eared Owl.

Stopover Count Surveys

There were 42 stopover count surveys conducted at 27 locations within the Property Boundary from September 7 to November 2, 2011 (Drawing 4.10). A total of 66 species, including 2,915 individual birds, were identified during these surveys. Black-capped Chickadee was the most frequently observed and most abundant species. The next most common were Dark-eyed Junco and Yellow-rumped Warbler. Pine Siskin (*Carduelis pinus*) was the second most abundant bird observed during the surveys as this species was regularly identified in flocks of 10 or more individuals.

The following priority species were observed within the Property Boundaries during these stopover count surveys:

- Bicknell’s Thrush– “Yellow” (NSDNR, 2009b), “Threatened” (COSEWIC, 2009), ‘Special Concern (SARA, 2011);
- Boreal Chickadee– “Yellow” (NSDNR, 2009b);
- Canada Warbler– “Yellow” (NSDNR, 2009b), “Threatened” (COSEWIC, 2009), ‘Threatened’ (SARA, 2011);
- Common Loon – “Yellow” (NSDNR, 2009b);
- Eastern Bluebird – “Yellow” (NSDNR, 2009b);
- Gray Jay – “Yellow” (NSDNR, 2009b); and
- Northern Goshawk – “Yellow” (NSDNR, 2009b).

There were 50 stopover count surveys conducted at 35 reference locations situated on the lands adjacent to the Property Boundary from September 9 to November 10, 2011 (Drawing 4.11). A total of 78 species, including 3,671 individual birds, were identified during these surveys. Black-capped Chickadee were again the most prevalent and abundant species, followed by Dark-eyed Junco, American Robin (*Turdus migratorius*),

and Yellow-rumped Warbler. Thus, it appears that while reference sites may support a greater diversity and abundance of birds, the dominant species are similar to those within the Property Boundary.

The following priority species were observed at the reference sites during these stopover count surveys:

- Common Nighthawk (*Chordeiles minor*) – “Yellow” (NSDNR, 2009b);
- Gray Jay – “Yellow” (NSDNR, 2009b);
- Northern Goshawk – “Yellow” (NSDNR, 2009b); and
- Rusty Blackbird – “Yellow” (NSDNR, 2009b), “Special Concern” (COSEWIC 2009), “Special Concern” (SARA, 2011).

Passage Migration Surveys

There were 10 passage migration surveys conducted at three locations within the Property Boundary from September 7 to November 2, 2011 (Drawing 4.10). Care was taken to conduct these surveys at sites that provided an unobstructed view of the horizon enabling the identification of all migrating birds. A total of 21 species were identified during these surveys, including 499 individual birds. Approximately 73% of the individual birds were American Robin, which were observed migrating six times in flocks of at least 20 individuals.

The following priority species were observed within the Property Boundaries during these passage migration surveys:

- Common Loon – “Yellow” (NSDNR, 2009b); and
- Rusty Blackbird – “Yellow” (NSDNR 2009b), “Special Concern” (COSEWIC, 2009), “Special Concern” (SARA, 2011).

There were 16 passage migration surveys conducted at two locations on the lands adjacent to the Property Boundary between September 9 and November 10, 2011 (Drawing 4.11). Locations were chosen primarily based on the extent of visibility, with care taken to ensure that sight lines did not include the Property Boundary. A total of 24 species were identified during these surveys, including 1,520 individual birds. American Robin was once again the most abundant bird, twice occurring in flocks exceeding 200 individuals. The largest single flock observed consisted of 242 Common Grackle (*Quiscalus quiscula*) flying to the southeast. Unlike the trends observed within the Property Boundary, Common Raven (*Corvus corax*) was quite prevalent at the reference sites, particularly at the location in close proximity to a municipal landfill. It is expected that the congregation of Common Raven in this area is due to use of the landfill as a food source.

The following priority species were observed at the reference sites during these passage migration surveys:

- Eastern Bluebird – “Yellow” (NSDNR, 2009b);
- Northern Goshawk – “Yellow” (NSDNR, 2009b);
- Peregrine Falcon – “Red” (NSDNR, 2009b), “Special Concern” (COSEWIC, 2009), “Threatened” (SARA, 2011); and
- Rusty Blackbird – “Yellow” (NSDNR, 2009b), “Special Concern” (COSEWIC, 2009), “Special Concern” (SARA, 2011).

Area Searches

There were 45 standardized area searches conducted at eight lakes within the Property Boundaries from September 7 to November 2, 2011 (Drawing 4.10). Each survey involved scanning the lake area for waterfowl or other birds using the lake habitat. Six species, including 27 individual birds, were identified within the Property Boundary during these surveys. The most productive lakes in terms of waterfowl abundance were Big Otter Lake, and South Canoe Lake. Common Loon was the most frequently observed species, followed by American Black Duck (*Anas rubripes*) and Belted Kingfisher (*Ceryle alcyon*). A single observation of Ring-Necked Duck (*Aythya collaris*) was of six individuals. The Common Loon, a “Yellow” listed species (NSDNR, 2009b), was the only priority waterfowl species observed during these surveys.

There were 61 standardized area searches were conducted at eight lakes situated close to the Property Boundary from September 7 to November 10, 2011 (Drawing 4.11). A total of 11 species, including 153 individual birds, were identified at the reference lakes during these surveys. The most frequently observed species was American Black Duck, followed by Common Loon. A single flock of Herring Gulls contained 70 individuals. Common Loon was the only priority species observed during these surveys.

Notes:

1. Reference: Nova Scotia Property Records, 1:10,000 digital topographic mapping by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.

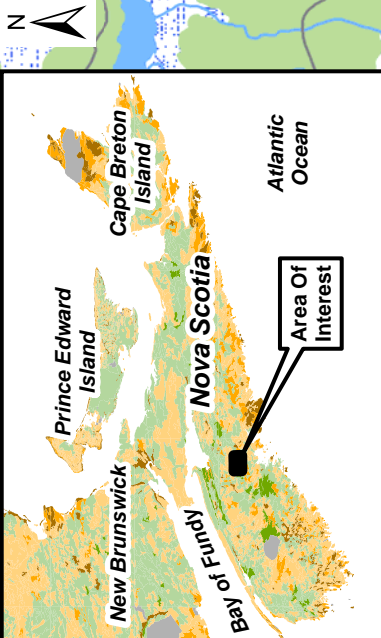
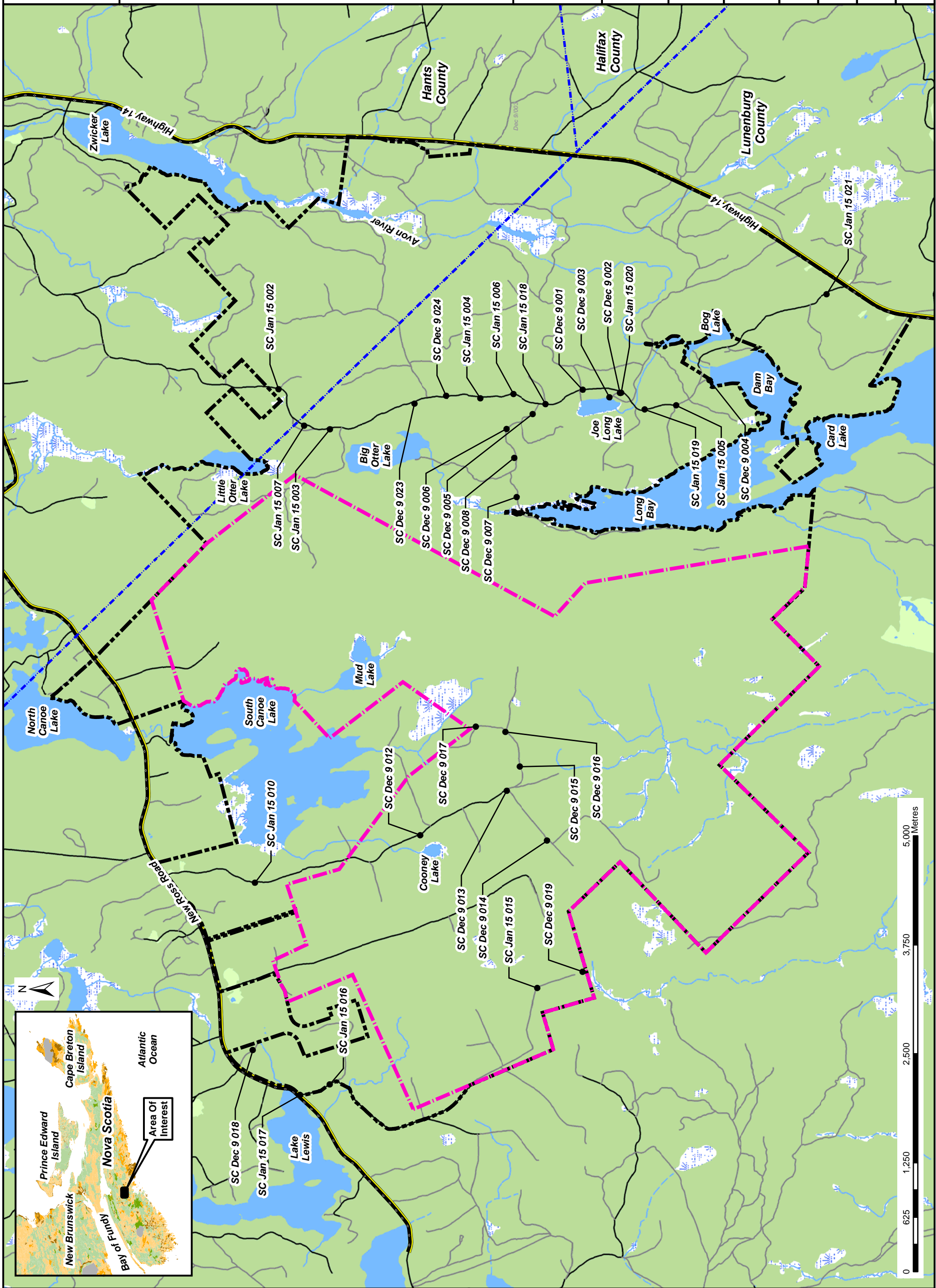
Legend:

- Winter Area Search (2011 / 2012)
- Project Area
- Property Boundary
- County Boundary
- Major Roads
- Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream
- Mapped Wet Area
- Water Bodies

Winter Bird Survey Locations



Date:	May 2012	Project #:	12-4361
Scale:	1:40,000	Sheet:	4.7
Drawn By:	G. Gregory	Checked By:	A. Walter



Notes:

- 1. Reference: Nova Scotia Property Records, 1:10,000 digital topographic mapping by Nova Scotia Geomatics Centre.
- 2. Projection: NAD83(CSRS), UTM Zone 20 North.

Legend:

- Winter Area Search (2011 / 2012)
- Proposed Roads
- Project Area
- Property Boundary
- County Boundary
- Major Roads
- Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream
- Mapped Wet Area
- Water Bodies

**Reference Sites
Winter Bird Survey
Locations**



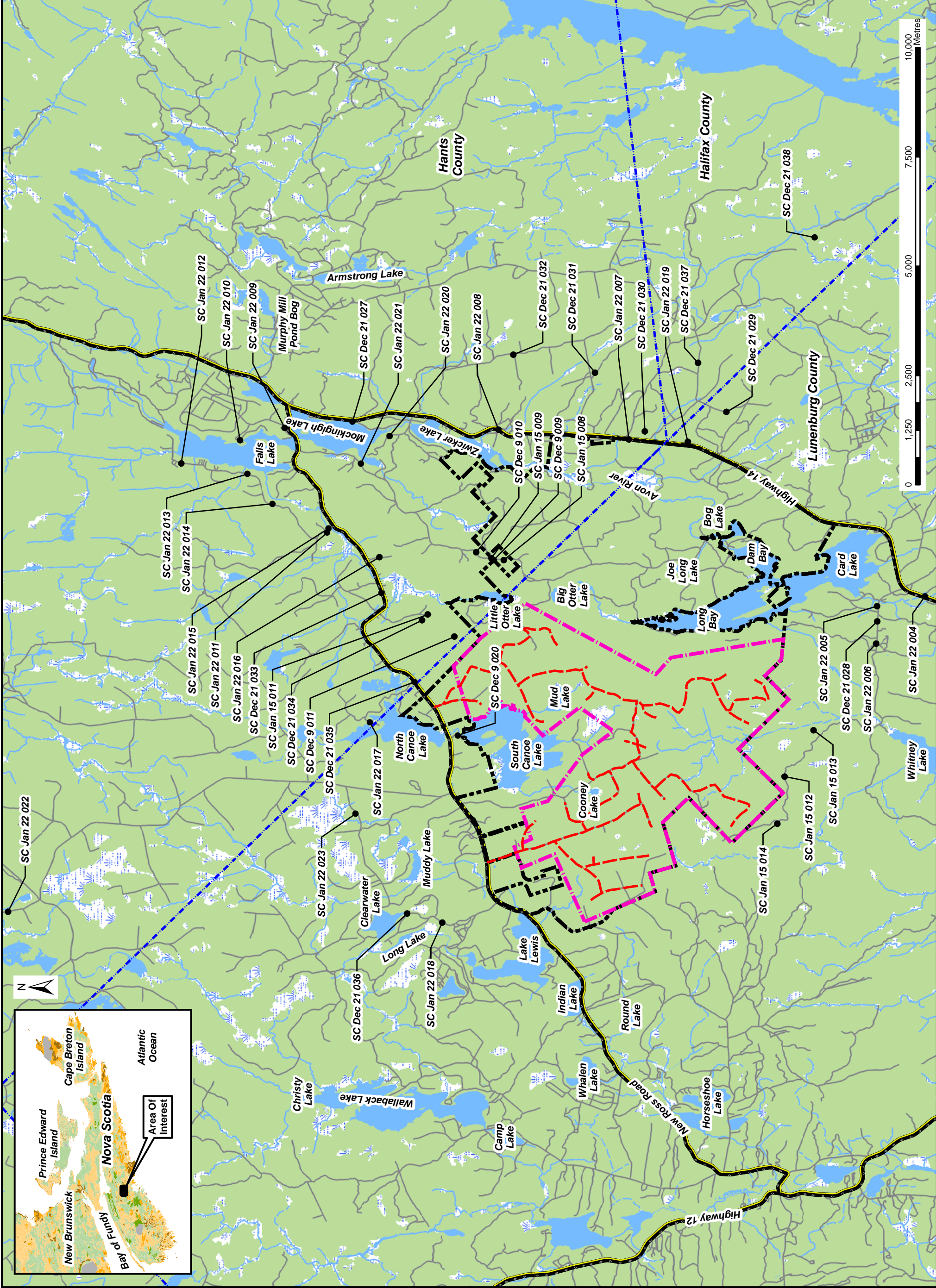
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Drawn By: H. Serhan

Checked By: M. Smith

4.8



Notes:

- Reference: Nova Scotia Property Records, 1:10,000 digital topographic mapping by Nova Scotia Geomatics Centre.
- Projection: NAD83(CSRS), UTM Zone 20 North.

Legend:

- Spring Migration Stopover Counts (2007) ●
- Breeding Bird Point Counts (2011) ●
- Buildings ■
- Breeding Bird Area Searches (2011) ▭
- Project Area ▭
- Property Boundary - - -
- County Boundary - - -
- Major Roads —
- Roads —
- Access Roads / Trails —
- Mapped Stream —
- Mapped Indefinite Stream - - -
- Mapped Wet Area ▭
- Water Bodies ▭

Spring Migration and Breeding Bird Survey Locations

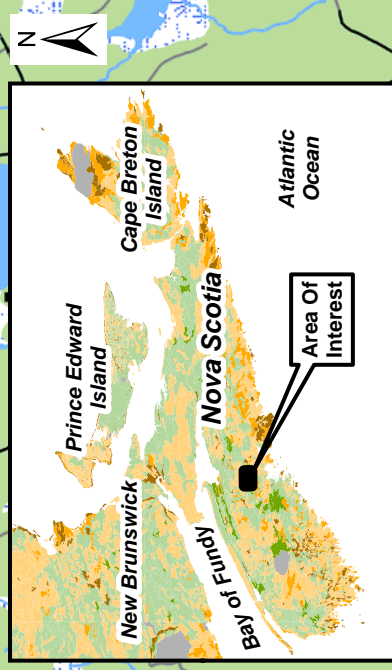
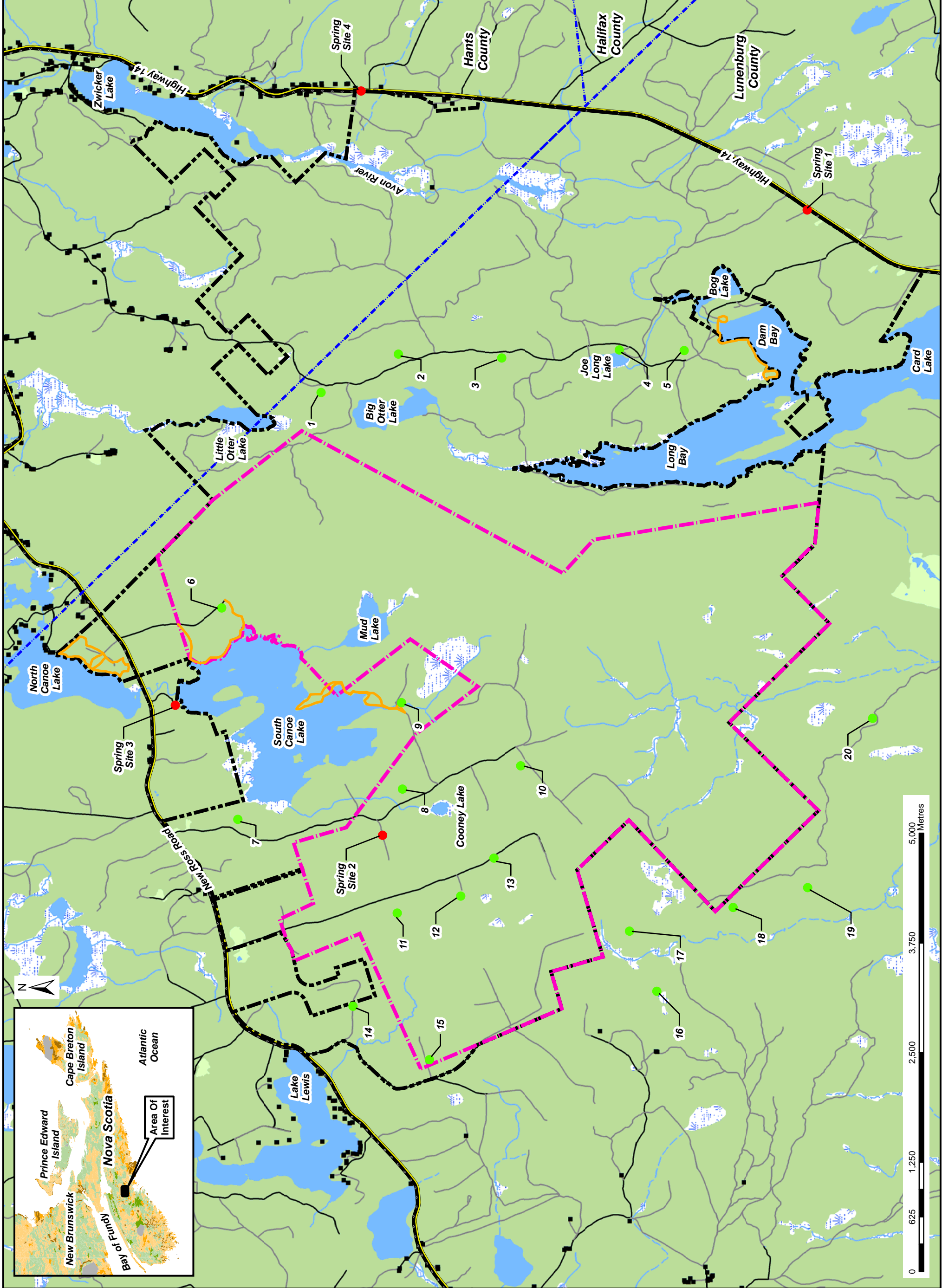








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Drawn By:	G. Gregory		
Checked By:	A. Walter		



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- Reference: Nova Scotia Property Records, 1:10,000 digital topographic mapping by Nova Scotia Geomatics Centre.
- Projection: NAD83(CSRS), UTM Zone 20 North.

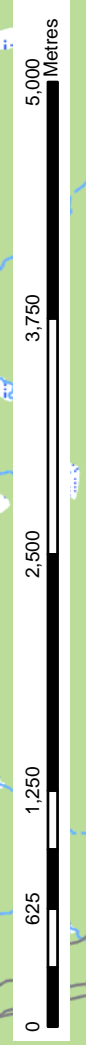
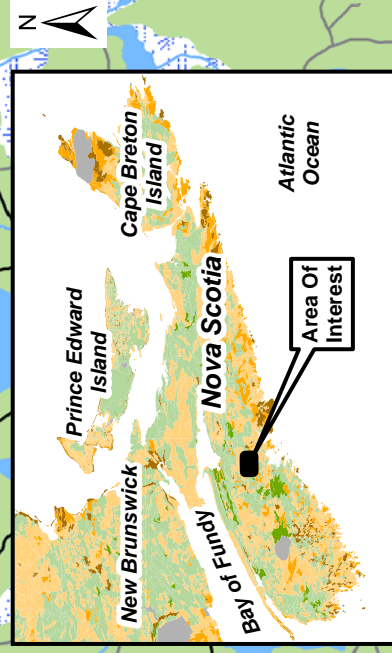
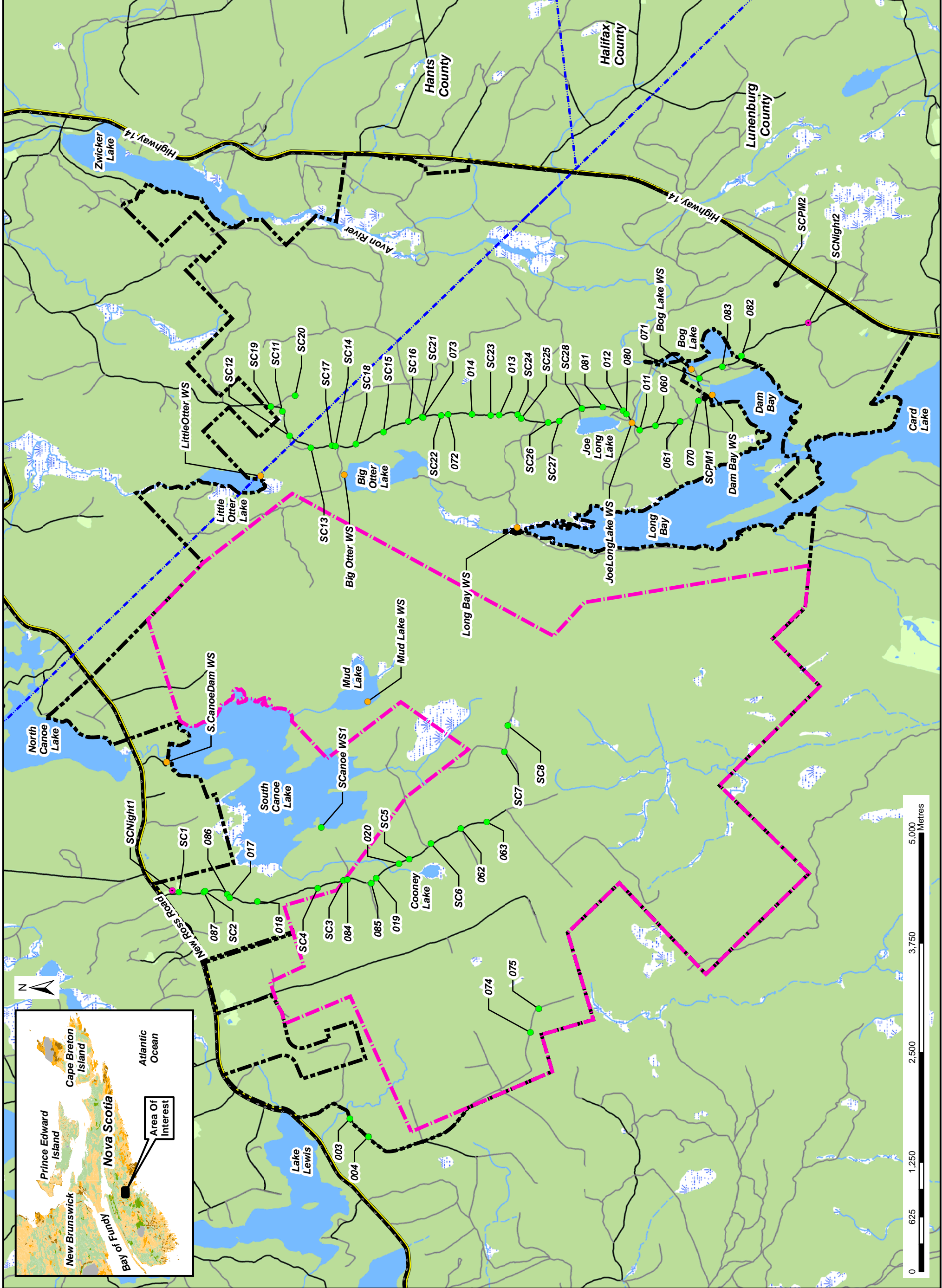
Legend:

- Passage Migration (2011)
- Nocturnal (2011)
- Waterfowl Stopover Count (2011)
- Fall Migration Stopover Count (2011)
- Project Area
- Property Boundary
- County Boundary
- Major Roads
- Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream
- Mapped Wet Area
- Water Bodies

Fall Migration and Waterfowl Survey Locations



Date:	May 2012	Project #:	12-4361
Scale:	1:40,000	Sheet:	4.10
Drawn By:	G. Gregory		
Checked By:	A. Walter		



Notes:

1. Reference: Nova Scotia Property Records, 1:10,000 digital topographic mapping by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.

Legend:

- Passage Migration (2011)
- Nocturnal (2011)
- Waterfowl Stopover Count (2011)
- Fall Migration Stopover Count (2011)
- Project Area
- ▭ Property Boundary
- ▭ County Boundary
- ▭ Major Roads
- ▭ Mapped Stream
- ▭ Mapped Indefinite Stream
- ▭ Mapped Wet Area
- ▭ Water Bodies

**Reference Sites
Fall Migration and
Waterfowl Survey
Locations**



Date:	May 2012	Project #:	12-4361
Scale:	1:65,000	Sheet:	4.11
Drawn By:	H. Serhan	Checked By:	A. Walter

