

Follow Up Program Monitoring Effects on Mainland Moose

DRAFT FOR DISCUSSION / CIRCULATION

Prepared by

Black Point Aggregates Inc.

November 2024

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1. Objective and Context

This follow up program is intended to verify the accuracy of the environmental assessment as it pertains to the effects of the Black Point quarry and marine terminal on Mainland Moose. This follow up program was created as required by federal condition of Environmental Assessment Approval 5.8¹. This program has been developed and will be implemented in consultation with Indigenous groups. In this context, Indigenous groups means Glooscap, Acadia, Annapolis Valley, Eskasoni, L'sitkuk (Bear River), Paqtnkek, Pictou Landing, Potlotek, Wagmatcook and Waycobah Mi'kmaq First Nations, represented by the Kwilmu'kw Maw-klusuaqn (KMKNO, the Mi'kmaq Rights Initiative Negotiation Office), and Sipekne'katik, Millbrook and Membertou First Nations, who are not represented by KMKNO.

2. Mainland Moose Surveys Conducted to Date

Moose inhabit second-growth forest, openings, swamps, lakes and wetlands, and these habitat types occur within the Project area.

Information provided in 2014 by Mark Pulsifer (NS Natural Resources and Renewables - NRR) during the Environmental Assessment undertaken for this Project suggested that moose or signs of moose had been reported within 5 km of the centre of the Project site on 11 occasions since 1999, including visual sightings of multiple moose within the Property boundary in 2004. Only very low numbers of moose occur in eastern mainland Nova Scotia, so many of the reported moose sightings were likely from the large Cape Breton population, which is an introduced subspecies originally from Alberta. Only the mainland population of moose, which is the native Atlantic subspecies (*Alces alces americana*), is listed as Endangered under the Nova Scotia Endangered Species Act, and as At Risk by the General Status of Wild Species in Canada for Nova Scotia.

2014 Surveys

In August 2014, biologists with AMEC Environment & Infrastructure noted moose tracks and scat during wetland surveys conducted as part of the Environmental Assessment. Subsequently, discussions were initiated between the Proponent and NRR to design a multi-season survey plan for moose, with the aim of determining if these traces were from Mainland Moose or the non-Endangered population.

The objective of the multi-season survey plan was to confirm presence of moose on the site and develop an understanding of the numbers and sex of moose present during the fall rutting season, including which areas and habitats they may be using. The plan comprised three surveys: fall 2014 exploratory survey, winter-spring 2015 pellet & track survey and winter-spring 2017 pellet & track survey.

The two-day fall 2014 exploratory survey was undertaken in late September by AMEC personnel, accompanied by Mr. Kerry Prosper, a Mi'kmaq hunter from Paq'tnkek experienced in tracking moose

¹ IAAC 5.8: The Proponent shall develop and implement a follow up program to verify the accuracy of the EA as it pertains to effects of the Project on Mainland Moose. The Proponent shall conduct field surveys in consultation with Indigenous groups to monitor for the presence of Mainland Moose and its habitat use in the Project area.

and other wildlife. At the time, Mr. Prosper was a member of the provincial Mainland Moose Recovery Team. Mr. Prosper had hunted moose in Cape Breton Island since the mid-1990s and was very familiar with moose tracking and identification of moose sign. The full survey report with site maps (originally included as Appendix H to the Environmental Assessment) is attached here as **Appendix A**.

Surveys were conducted both early and late in the day, when moose are most active. On September 24th, surveys were conducted from sunrise to early afternoon, and from late afternoon until shortly after sunset. On September 25th, additional surveys were conducted in the morning to early afternoon, and the previous day's scent marker stations and calling points were examined for evidence of recent moose presence. A total of seven calling stations were established and three scent markers were deployed on the Project site. Weather conditions were favourable on both days of the survey.

Results

1. **No moose were observed** during the surveys, and no recent evidence of moose was noted when surveyors returned to the calling stations and scent markers.
2. Evidence of past moose presence was noted in the Project site; tracks were observed at several locations, and moose scat and possible scrapes were observed.
3. The survey suggested that the Project site provides marginal moose habitat. There was very little young hardwood growth, which is a preferred food item for moose, and no sign of browse.
4. Moderate ATV use was evident, which would likely discourage moose from the area.
5. Mr. Prosper noted that there are areas of much more suitable habitat nearby, therefore it is unlikely that moose would reside in the Project area.
6. Most of the tracks seen on the Project site were from young (3 to 4 year old) male moose. Young bulls of this age tend to be driven away from prime habitats by territorial adult bulls.
7. Mr. Prosper noted that moose would be capable of crossing Chedabucto Bay; therefore, it may be possible that moose in the Project area are from the introduced Cape Breton population rather than the endangered native mainland population

2015 Winter-Spring Survey

In 2015, moose track and pellet surveys were conducted by Strum Consulting on three occasions in February and May to determine if moose were using the Project site. In collaboration with NRR's Mark Pulsifer, the study team established 13,000 m of transects designed to cover as much of the site as possible, targeting multiple habitat types, incorporating previous locations where moose signs were observed and including on-site trails that might be used by moose.

Two full-day snow tracking surveys were completed in February 2015 followed by a day long pellet group survey completed after snow melt in May 2015. The survey report is attached as **Appendix B**.

Results

1. **No evidence of moose** was encountered, although survey teams observed white-tailed deer, snowshoe hare and eastern coyote throughout the project site.
2. The report concluded that the absence of moose may be attributable to the lack of ideal winter habitat; existing habitat provides little protection from the cold coastal winds.

2017 Winter-Spring Survey

In 2017, moose track and pellet surveys were again conducted by Strum Consulting, this time on six occasions in February, March, April and May. The survey plan used the same 13,000 m of transects utilized in the 2015 surveys, which were designed to cover as much of the site as possible, target multiple habitat types and on-site trails, and revisit previous locations where moose signs were observed.

Single day-long snow tracking surveys were completed on February 24, March 24, April 5 and April 6, 2017 followed by a day long pellet group surveys after snow melt on May 11 and May 29, 2017. The survey report is attached as **Appendix C**.

Results

1. **No evidence of moose** was encountered, although survey teams again observed white-tailed deer, snowshoe hare and eastern coyote throughout the project site.
2. The report concluded that the absence of moose may be attributable to the lack of ideal winter habitat; existing habitat provides little protection from the cold coastal winds.

3. Follow Up Program for Mainland Moose

In summary, targeted surveys in 2014, 2015 and 2017 failed to provide evidence of recent moose presence on the Project site. Mainland Moose have not been documented on the site for over 20 years and it is not clear whether sightings prior to 2004 were endangered Mainland Moose or introduced moose from the Cape Breton population. Nevertheless, the Environmental Assessment (SLR 2015) concluded that the magnitude of residual adverse effects (e.g., project effects such as noise, habitat loss, human presence, etc. remaining after all the mitigation measures are applied) are “not significant” with respect to Mainland Moose. This conclusion was based on:

1. a standard definition of significance used in Environmental Assessments: *“An effect that causes a decline in abundance and/ or a change in distribution beyond which natural recruitment would not return the population to its pre-project level within several generations and/or an adverse effect that causes a net loss of habitat function.”*
2. The poor quality and minimal extent of moose habitat;
3. The mitigation measures that will be applied; and
4. The unlikely presence of this endangered species on the project site.

Despite the apparent absence of moose on the Project site, the Proponent in 2015 committed to three years of moose surveys, in recognition of the biological and cultural importance of endangered Mainland Moose. As noted, two years of winter/spring surveys have been conducted.

4. Monitoring and Reporting

A third winter/spring moose monitoring survey will be undertaken following the protocols and survey transects established in consultation with NRR in 2015. The moose survey is tentatively scheduled for winter/spring of 2026 to permit sufficient time of Indigenous engagement before the survey begins.

The objective of the moose survey is to supplement current understanding of moose use of the Project area, and to further encourage Indigenous participation in project-related field activities.

- Survey transects totalling 13,000 m are shown on figures in Appendices B and C. As with past programs, survey transects will include key habitats within the property boundary and extend into adjacent moose habitats as shown.
- Each survey will consist of one or two day moose track surveys in winter, followed by one or two day pellet surveys in spring once the snow has melted. Survey duration will depend on the number of people available to undertake the surveys. Indigenous groups will be informed of the survey dates in advance and invited to participate in the field work.
- GPS coordinates of all moose sightings or observation of moose sign (tracks, scat, scapings, etc.) will be recorded and photographs taken. Survey results will be summarized in an annual report and provided to Indigenous groups as well as NRR.

5. References

McNeil 2013: McNeil, Jeffie. 2013. Action Plan for the Recovery of Eastern Moose (*Alces alces Americana*) in Mainland Nova Scotia. Mainland Moose Recovery Team and Mersey Tobeatic Research Institute, Kempt, Nova Scotia. 26pp.

NSNRR 2021: Nova Scotia Department of Natural Resources and Renewables. 2021. Recovery Plan for the Moose (*Alces alces Americana*) in Mainland Nova Scotia. Nova Scotia Endangered Species Act Recovery Plan Series. 96pp.

Parker 2003: Status Report on The Eastern Moose (*Alces alces americana* Clinton) in Mainland Nova Scotia. Gerry Parker, June 6, 2003. 77pp.

SLR 2015: Black Point Quarry Project, Municipality of the District of Guysborough, NS Environmental Impact Statement completed by Vulcan Materials Company and SLR Consulting (February 2015).

Appendix A: AMEC 2014 Moose Survey Report

AMEC 2014 Moose Survey

Black Point Quarry Project
Guysborough County, NS
SLR Project No.: 210.05913.00000



**BLACK POINT
FALL 2014 MAINLAND MOOSE SURVEYS
SUMMARY REPORT**

Prepared for:

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Submitted by:

AMEC Earth & Environmental
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October 2014

Project No.: TV144003

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1.0 INTRODUCTION AND BACKGROUND

Vulcan Materials Company and Morien Resources Corp. (the Proponent) proposes the development, operation, decommissioning and abandonment of a granite quarry and marine terminal at Black Point in Guysborough County, Nova Scotia. The Black Point Quarry Project consists of aggregate production (drilling, blasting, processing and stockpiling) on a 354.5 ha property, along with the construction and operation of a 200 m long marine terminal adjacent to the quarry in Chedabucto Bay. The aggregate will be loaded into bulk carriers up to 70,000 DWT and transported to ports along the US eastern and Gulf coasts and potentially to markets in Canada and the Caribbean.

The Black Point Quarry Project (the Project) is located on the south shore of Chedabucto Bay in the District of Guysborough, Nova Scotia. The proposed Project Site is approximately 2 km from the community of Half Island Cove in the west, and 2.5 km from Fox Island Main in the east. The Project is situated between Highway 16 and the Atlantic coast, in an area dominated by coniferous forests, coastal barrens, as well as various types of wetlands, including bog, fen, swamp and marsh. A power transmission line corridor runs along the south end of the property and with the exception of a few ATV trails, skidder tracks and property cut lines, the area is relatively undisturbed.

Following the discovery of moose sign (tracks and scat) during wetland surveys conducted by AMEC Environment & Infrastructure (AMEC) in August of 2014, discussions were initiated between Mr. Russell Dmytriw of SLR and NSDNR to design a survey plan for mainland moose (*Alces alces americana*). The purpose of the survey was to confirm presence of moose on the site and develop an understanding of the numbers and sex of moose present during the fall rutting season, including which areas and habitats they may be using. The survey is intended to supplement winter track surveys and spring pellet surveys that will be conducted in early 2015. This summary report presents the results of the fall survey for mainland moose conducted in late September 2014 by AMEC.

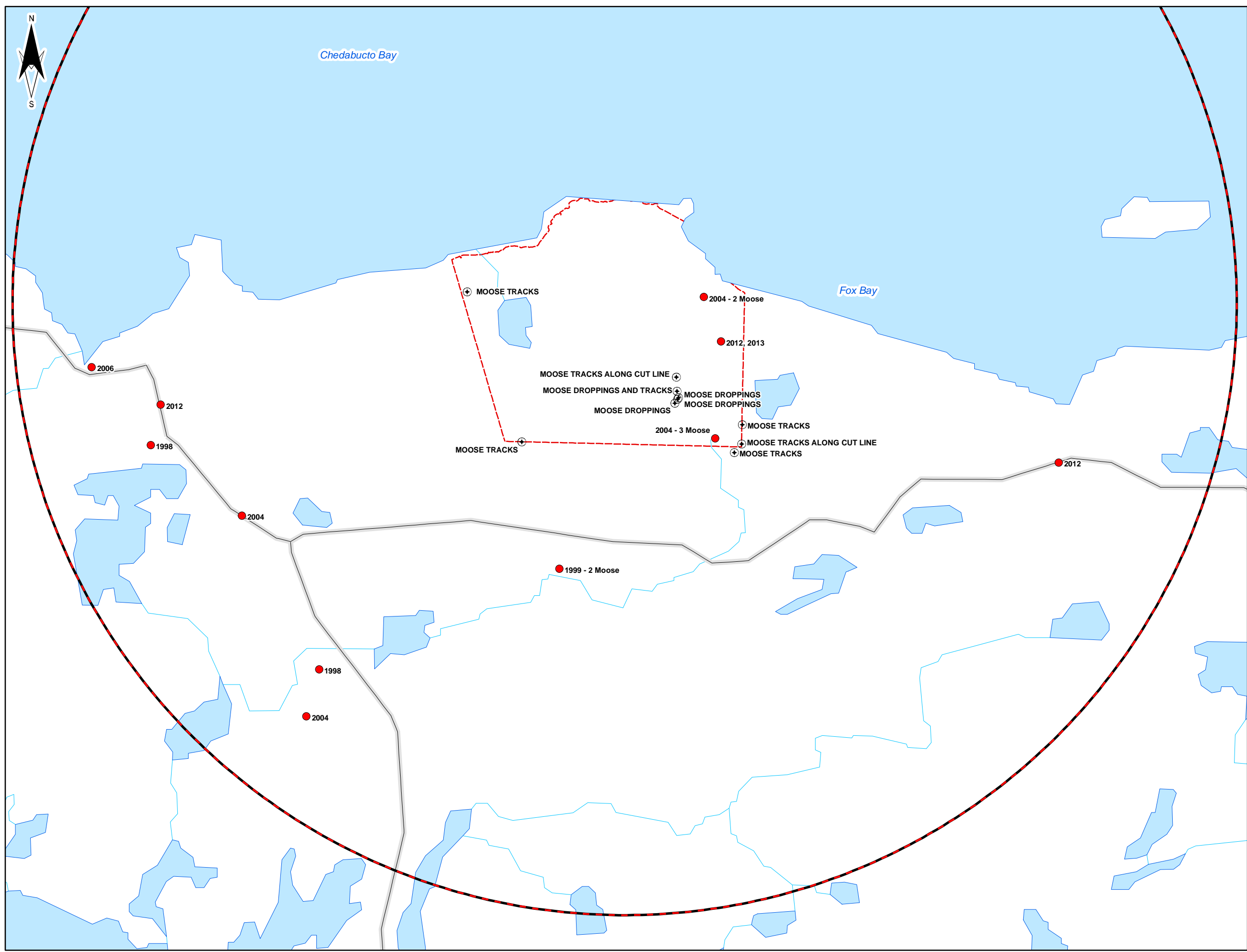
2.0 APPROACH AND METHODOLOGY

For the surveys, an AMEC field biologist familiar with the Project site was accompanied by an experienced moose hunter from the nearby Paq'tnkek First Nation, Mr. Kerry Prosper. Mr. Prosper is a member of the provincial Mainland Moose Recovery Team, who has hunted moose in Cape Breton Island since the mid-1990s and is very familiar with moose tracking and identification of moose sign. Prior to the survey, AMEC field staff reviewed the locations and nature of previous moose sightings reported by NSDNR as well as by AMEC during previous field surveys (August 2014) conducted on site (Figure 2.1 Previous Moose Sightings Within 5 km of Project Location Figure 2.1). The layout of the Project site and the locations of likely suitable habitat were reviewed by all field personnel at the start of the survey program. Survey effort was focussed in areas of high-potential moose habitat on the site, particularly Fogherty Lake and the large bogs near Fogherty Lake (WL11) and on the east side of the property (WL1 and WL14), as well as in likely corridors for moose travel, particularly along the power transmission line and over the barrens between Fogherty Lake and the bogs on the east side of the property.

Surveyors accessed the site from the southwest corner and walked along likely areas of moose corridors, such as the power transmission line along the south of the Project site, carefully looking for signs of moose presence including (but not limited to) tracks, scat, evidence of browsing, and game trails. In areas of suitable moose habitat, including bog edges and the shore of Fogherty Lake, moose calling interspersed with a period of silent observation was conducted over a period of 30 to 90 minutes. Scent markers intended to attract moose were deployed in three locations on the first morning of the survey. Calling stations and scent markers were established in areas where tracks would be evident (e.g. in muddy areas), so that if these sites are visited by moose after the surveyors leave, evidence of moose presence would be obvious upon returning to the location.

In addition to signs of moose, incidental sightings and evidence of other terrestrial fauna were noted, including birds and other mammal species. Efforts were made to detect migrating shorebird species that may utilize the bog and barrens habitats for feeding and staging during high tide; shoreline surveys for shorebirds were conducted in 2010 (AMEC 2014).

Path: \\h1\1s\project\50300_PROJECTS\2014\TV144003 - Black Point Quarry EA Support\CAD\Moose Survey\Figure 2.1 - Previous Moose Sightings Within 5 km of Project Location.mxd User: derrick.schulz Date: 10/8/2014



TITLE: **Figure 2.1
Previous Moose Sightings
Within 5 km of Project Location**

PROJECT: **BLACK POINT
FALL 2014 MAINLAND MOOSE SURVEYS**

CLIENT: **Morien Resources Corp. (Morien)
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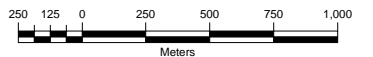
LOCATION: **Guysborough County
Nova Scotia**

DATE: **September 2014**

DATUM & PROJECTION: **NAD83 CSRS UTM Zone 20N**

AMEC PROJECT NO: **TV144003**

- LEGEND:
- Site Boundary
 - NSDNR Moose Sightings Within 5km of Project Location
 - ⊕ Moose Sightings (August 2014 AMEC)
 - 5 km Radius
 - Roads
 - ~ River / Stream
 - Waterbody



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3.0 RESULTS AND DISCUSSION

Surveys were conducted during the early and late parts of the day, when moose are most active. On September 24th, surveys were conducted from sunrise to early afternoon, and from late afternoon until shortly after sunset. On September 25th, additional surveys were conducted in the morning to early afternoon, and the previous day's scent marker stations and calling points were examined for evidence of recent moose presence. Weather conditions were favourable on both days of the survey, with cool morning temperatures (approximately 10°C), no precipitation and calm to light breezes. Winds became fairly gusty in the later morning and early afternoon of September 24th; however, moose are less active at this time of day and as such survey effort was focussed on finding moose sign rather than on attempting to attract moose by calling and scent.

3.1 MOOSE OBSERVATIONS

A total of seven calling stations were established and three scent markers were deployed on the Project site (Figure 3.1); however, no moose were observed during the surveys, and no recent evidence of moose was noted when surveyors returned to the calling stations and scent markers. Evidence of past moose presence was noted in the Project site; tracks were observed at several locations, and there was some moose scat and possible scrapes (Figure 3.1). These observations are further discussed below.

Fogherty Lake and WL11

Two areas identified as possible moose scrapes were noted in the area between Fogherty Lake and WL11 (Appendix A, Photo 1); however, Mr. Prosper noted that a tree with rubbed bark would typically be seen in close proximity to a moose scrape, and no such trees were found near either of these locations. These possible scrapes were not recent, and no additional sign was noted in the area. Moose tracks were observed by AMEC northwest of Fogherty Lake in August 2014 (Figure 2.1), indicating that moose occasionally use this part of the Project site.

WL1 and WL14

Moose activity was evident in the bogs in the southeastern portion of the Project site. A trail made by moose was identified in WL1, running in a north-south direction and appearing to link WL1 and WL14 (Appendix A, Photo 2). Because the individual tracks could not be distinguished, the size and number of individuals using the trail could not be estimated; however, Mr. Prosper noted that the trail did not appear to be heavily used. Old moose scat (likely from the previous year) was observed in two locations near WL14 (Appendix A, Photo 3). Although the scat was fairly decomposed, one pile was identified by Mr. Prosper as being from a bull moose.

The majority of sightings of moose tracks and scat by AMEC field personnel in August 2014 were in this southeastern portion of the site (Figure 2.1). The scat observed in August was very recent, indicating that moose were present in the area in late summer.



Chedabucto Bay

Fox Bay



TITLE: **Figure 3.1
September 2014 Moose
Survey Locations and Observations**

PROJECT: **BLACK POINT
FALL 2014 MAINLAND MOOSE SURVEYS**

CLIENT: **Morien Resources Corp. (Morien)
Metropolitan Place
Suite 1480, 99 Wyse Road
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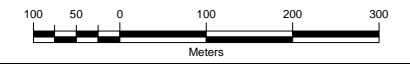
LOCATION: **Guysborough County
Nova Scotia**

DATE: **September 2014**

DATUM & PROJECTION: **NAD83 CSRS UTM Zone 20N**

AMEC PROJECT NO: **TV144003**

- LEGEND:
- Calling Station
 - Scent Marker
 - Old track (3-4 year old male)
 - Old track (adult male)
 - Recent track (3-4 year old male)
 - Possible scrape
 - Scat (old)
 - Moose Path
 - Survey Tracks
 - Site Boundary
 - Delineated Wetlands



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Path: \\h1-1s1\projects\0300 PROJECTS\2014\TV144003 - Black Point Quarry EA Support\CAD\Moose Survey\Figure 3.1 - September 2014 Moose Survey.mxd User: derrick.schulz Date: 10/8/2014

Base Image: Nova Scotia Geomatics Centre; Orthoimagery from GeoNOVA, Dated 2007

Barrens

Moose tracks were observed in a few locations in muddy parts of the trail that runs in a north-south direction through the barrens in the centre of the Project site. This open area of barrens could serve as a corridor for moose to move between the areas of potential habitat to the west (Fogherty Lake and associated wetlands) and east (WL1 and WL14) of the Project site. However, the tracks that were seen on the trail were all made by animals travelling along the trail, not across it in an east-west direction (Figure 3.1), suggesting that moose may not be using the barrens as a direct route between these two wetland areas. At least two distinct sets of tracks were observed, one made by an adult bull (Appendix A, Photo 4) and one by a 3 or 4 year old male, but none of the tracks appeared to be recent.

Power Transmission Line

Moose tracks were observed in many locations along the transmission line corridor, all from young (3 to 4 year old) bulls heading in a westerly direction. There were at least two distinct tracks, one set relatively recent (from within a week prior to the survey; Appendix A, Photo 5) and the other set much older. No other evidence of moose presence was observed in this part of the Project site. Notably, no moose trails were observed leading from the transmission line corridor northwards to the wetland areas on the western edge of the Project site (west of Fogherty Lake), suggesting that these wetlands are not frequented by moose.

3.2 INCIDENTAL OBSERVATIONS

White-tailed deer (*Odocoileus virginianus*) tracks and scat were observed at several locations along the transmission line, and a deer was observed in an area of low shrubs near the southwest corner of the Project site. Coyote (*Canis latrans*) scat (old and recent) was observed in several locations. Black bear (*Ursus americanus*) and bobcat (*Lynx rufus*) tracks were also observed along the transmission line, and bear scat was observed in forested habitat near WL14. Snowshoe hare (*Lepus americanus*) scat was seen along the transmission line, and a partial carcass was seen near the southwest corner of the Project site. Raccoon (*Procyon lotor*) tracks were seen along the transmission line, and possible scat was seen on the barrens. Red squirrel (*Tamiasciurus hudsonicus*) was frequently heard throughout the Project site.

The following bird species were seen and/or heard in several locations and are considered to be widespread on the Project site: American Crow (*Corvus brachyrhynchos*), American Goldfinch (*Spinus tristis*), American Robin (*Turdus migratorius*), Black-capped Chickadee (*Poecile atricapillus*), Boreal Chickadee (*Poecile hudsonicus*), Dark-eyed Junco (*Junco hyemalis*), Golden-crowned Kinglet (*Regulus satrapa*), Red-eyed Vireo (*Vireo olivaceus*) and White-throated Sparrow (*Zonotrichia albicollis*). In forested habitat, Blue Jay (*Cyanocitta cristata*), Gray Jay (*Perisoreus canadensis*), Hermit Thrush (*Catharus guttatus*) and Red-breasted Nuthatch (*Sitta canadensis*) were frequently heard, and a flock of 22 Cedar Waxwings (*Bombycilla cedrorum*) was observed near WL1. Near wetlands, Common Yellowthroat (*Geothlypis trichas*) was fairly abundant and Palm Warbler (*Dendroica palmarum*) was observed on a couple of occasions.

Downy Woodpecker (*Picoides pubescens*), Song Sparrow (*Melospiza melodia*) and Swainson's Thrush (*Catharus ustulatus*) were each heard on a single occasion. Common Raven (*Corvus corax*) was occasionally seen flying over the site. An Osprey (*Pandion haliaetus*) was seen flying to the south of the Project area, and two Bald Eagles (*Haliaeetus leucocephalus*; likely a pair) were observed to the northwest of the Project area. An American Kestrel (*Falco sparverius*) was seen hunting over the barrens near the centre of the Project site.

Six Great Cormorants (*Phalacrocorax carbo*) and a single Herring Gull (*Larus argentatus*) flew over the site on September 24th. Fogherty Lake was scanned on several occasions over the two days of the survey, and no waterfowl or shorebirds were observed on or near the waters. The lake does not appear to provide suitable habitat for breeding shorebirds, as the bank vegetation consists of dense low shrubs that overhang the water, and there is no shallow water for wading along the edges. No shorebirds were observed feeding in the barrens and bog habitat, despite the presence of some suitable berries. Fogherty Lake has a very low pH and, based on the results of AMEC surveys conducted in 2010, it does not appear to support fish; therefore it is unlikely to provide nesting habitat for piscivorous species such as loons or kingfishers. Suitable vegetation for dabbling duck species is also absent in the lake.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the observations made during these preliminary surveys, as well as previous observations from NSDNR reports and previous AMEC field surveys, it is evident that moose are occasionally present in the Project area. Efforts to attract moose using auditory and scent attractants were unsuccessful, suggesting that moose may not be presently using the Project location. However, although the rutting season for moose in Nova Scotia is September to October, it is possible that due to the relatively warm temperatures in the days prior to the survey, the moose rutting season was not yet at its peak.

The preliminary survey work suggests that the Project site provides marginal moose habitat. There was very little young hardwood growth, which is a preferred food item for moose (NSDNR 2007), and no sign of browse was observed during the surveys. As well, the moderate ATV use that was evident along the power transmission line would likely discourage moose from the area. Mr. Prosper noted that there are areas of much more suitable habitat nearby (for example, from the higher portions of the site, large bogs could be seen to the south), therefore it is unlikely that moose would reside in the Project area. Most of the tracks seen on the Project site were from young (3 to 4 year old) male moose. Young bulls of this age tend to be driven away from prime habitats by territorial adult bulls.

Based on these preliminary results, it is recommended that winter track and pellet surveys be conducted in order to supplement the understanding of moose presence and abundance on the Project site in different times of year.

Additionally, Mr. Prosper noted that moose would be capable of crossing Chedabucto Bay; therefore, it may be possible that moose in the Project area are from the introduced Cape Breton population rather than the endangered native mainland population. There is evidence that the Cape Breton and mainland moose populations can be distinguished using genetic markers (Ball 2003; cited in NSDNR 2007). If feasible, it may be worthwhile to collect pellets from the Project site that may be used for genetic testing to better understand the knowledge and movement patterns of moose in this area.

5.0 REFERENCES

AMEC. 2014. Black Point Baseline Ecological Surveys Summary Report (2010 Surveys with Updates from 2014). Dated September 2014.

Ball, M. 2003. Genetic Analysis of the endangered Nova Scotia Moose Populations: Project Progress Report. Unpublished Report.

NSDNR: Nova Scotia Department of Natural Resources. 2007. Recovery Plan for Moose (*Alces alces Americana*) in Mainland Nova Scotia. Available online at: <http://novascotia.ca/natr/wildlife/biodiversity/pdf/recoveryplans/MainlandMooseRecoveryPlan.pdf>

**APPENDIX A
PHOTOS**



Photo 1: Possible old scrape



Photo 2: Moose trail between WL1 and WL14



Photo 3: Old moose droppings



Photo 4: Adult bull track



Photo 5: Young (3 to 4 year old) bull track

Appendix B: Strum 2015 Moose Survey Report



June 2, 2015

Mr. Frank Leith
Vulcan Materials Company
1200 Urban Center Drive
Birmingham, AL 35242

Dear Mr. Leith,

Re: Pre-Construction Mainland Moose Surveys
Black Point Quarry, Guysborough County, NS

Strum Consulting completed pre-construction Mainland Moose (*Alces alces americana*) surveys for the proposed Black Point Quarry Project (the Project) in January, February, and May 2015 to determine if Mainland Moose are utilizing habitat at the Project site during the winter months.

While multiple wildlife species, including White-tailed Deer, Snowshoe Hare (*Lepus americanus*), and Eastern Coyote (*Canis latrans*), were documented during the surveys, no evidence of Mainland Moose was observed.

INTRODUCTION

The proposed Project consists of a granite quarry near Black Point, in Guysborough County, Nova Scotia. The Project site encompasses 354.5 ha of land with habitats consisting of softwood forest, mixed-wood forest, wetlands, and barrens. The Project is currently in the midst of the Environment Assessment (EA) process which requires the development and implementation of a plan to monitor for Mainland Moose. In response, Strum was retained to complete pre-construction Mainland Moose surveys in January, February, and May 2015.

The objective of these surveys was to determine if there are any indications that Mainland Moose are utilizing the habitat at the Project site during the winter months.

To achieve the study objective, the following tasks were completed:

- Identification and development of survey transects;
- Completion of winter snow-tracking surveys and a spring pellet group survey to document the potential use of the Project site by Mainland Moose, as well as other wildlife species, during the winter months; and
- Completion of mapping of the survey areas and notable study results.

Engineering • Surveying • Environmental

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SURVEY METHODOLOGY

The surveys were completed across the Project site and consisted of 13,000 m of transects (Drawing 1, attached). Survey transects were developed with input from Nova Scotia Department of Natural Resources (Mark Pulsifer, Pers. Comm.) and consideration for the following:

- Coverage of the Project site: Survey transects were designed to cover as much of the Project site as possible.
- Habitat: Multiple habitats were targeted including mature softwood forest, mixed wood forest, wetlands, and barrens.
- Incorporation of previous survey results: Survey transects considered areas where the previous survey report identified moose signs.
- Existing trails: Any on-site trails (mainly ATV trails) were incorporated into the survey transects due to their potential use as a transportation corridor by Mainland Moose.

Two pre-construction snow-tracking surveys were completed in February 2015 followed by a pellet group survey after snow melt in May 2015. Surveys were conducted by a team of biologists with a demonstrable knowledge of Mainland Moose sign and the ability to differentiate Mainland Moose sign from that of other wildlife species.

Surveys utilized an ATV (with snow treads for winter surveys) for on-site trails, while inaccessible areas were surveyed on foot. All wildlife sign encountered during the surveys were identified to species, where possible. Wildlife sign consisted of primarily tracks and pellets but also included foraging sign, scat, and rubs. In addition, the locations of all noteworthy observations were recorded using a Garmin 64s GPS receiver capable of sub 5 m accuracy, with representative photos taken. Snow-tracking Surveys were completed 1 to 7 days after a snowfall, and periods of rain, significant snowfall, or blowing snow were avoided. Pellet Group Surveys were completed within 2 weeks of snow melt.

Table 1 (below) outlines the timing and general conditions during the surveys.

Table 1: Survey Details

Survey Day	Date d/m/y	Conditions
Snow Tracking Survey #1		
1	10/2/2015	Snow Depth: 15 cm snow, 5 cm powder on top of crust Weather Conditions: cold, clear Tracking Conditions: good
2	11/2/2015	Snow Depth: 15 cm snow, 5 cm powder on top of crust Weather Conditions: cold, clear Tracking Conditions: good



Survey Day	Date d/m/y	Survey Day
Snow Tracking Survey #2		
1	27/2/2015	Snow Depth: 10-20 cm, thin crust on top Weather Conditions: clear, windy, cold Tracking Conditions: moderate-good, well preserved tracks
2	28/2/2015	Snow Depth: 10-20 cm, thin crust on top Weather Conditions: clear, windy, cold Tracking Conditions: moderate-good, well preserved tracks
Pellet Group Survey		
1	19/5/2015	Weather Conditions: sunny, hot Tracking Conditions: good, ground a little dry for tracks
2	20/5/2015	Weather Conditions: overcast, light rain Tracking Conditions: good

RESULTS

No evidence of Mainland Moose was encountered during field surveys.

Multiple wildlife species were identified during the surveys. The most common species identified were White-tailed Deer, Snowshoe Hare, and Eastern Coyote. Evidence of these species was located throughout the Project site. Table 2 identifies the signs of wildlife species observed during the surveys.

Table 2: Evidence of Wildlife Species Observations

Common Name	Scientific Name	Snow-tracking Survey #1 (10/02/2015 – 11/02/2015)				Snow-tracking Survey #2 (27/02/2015 – 28/02/2015)				Pellet Group Survey (19/05/2015 – 20/05/2015)			
		Tracks	Pellets/ Scat	Browse/ Kill	Sighting	Tracks	Pellets/ Scat	Browse/ Kill	Sighting	Tracks	Pellets/ Scat	Browse/ Kill	Sighting
Snowshoe Hare	<i>Lepus americanus</i>	✓	✓		✓ ¹	✓	✓	✓			✓		
White-tailed Deer	<i>Odocoileus virginianus</i>	✓	✓			✓	✓	✓	✓	✓	✓		
Eastern Coyote	<i>Canis latrans</i>	✓	✓			✓	✓			✓	✓		
Spruce Grouse	<i>Falcapennis Canadensis</i>								✓				
Ruffed Grouse	<i>Bonasa umbellus</i>				✓ ¹				✓				
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	✓			✓								
American Beaver	<i>Castor canadensis</i>			✓	✓					✓		✓	
North American Porcupine	<i>Erethizon dorsatum</i>			✓			✓						
Shrew sp.	<i>Sorex sp.</i>	✓											
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	✓											
White-footed Deermouse	<i>Peromyscus leucopus</i>	✓											
Red Fox	<i>Vulpes vulpes</i>	✓		✓ ¹						✓			

¹ Dead Snowshoe Hare and Ruffed Grouse, killed by a Red Fox

DISCUSSION

A variety of wildlife species were identified throughout the surveys. As expected, common wildlife species such as Snowshoe Hare, Eastern Coyote, and White-tailed Deer dominated the observations, while other small mammals were also prevalent.

Mainland Moose was not observed on the site. This absence may be due to the lack of ideal winter-habitat of mid-successional growth and mature softwood stands. Much of the site consists of open barrens, bogs, and shrub swamps that provide little protection from the cold, coastal winds. The largest patch of suitable overwintering habitat on the site is located along the northern, coastal side of the Project site and is only accessible by descending a steep cliff.

While it is possible that surveys did not coincide with recent Mainland Moose presence, it is more likely that the species does not occur at the Project site during the winter months.

If you have any questions, please contact us.

Thank you,



Scott Dickey, MREM
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Chedabucto Bay

Fogherty Head

Black Point

Fox Bay

Yellow Rocks

Fogherty Lake

Murphys Lake

Portion of
PID 35212505

Cavanaugh Lake

Hayden Lake

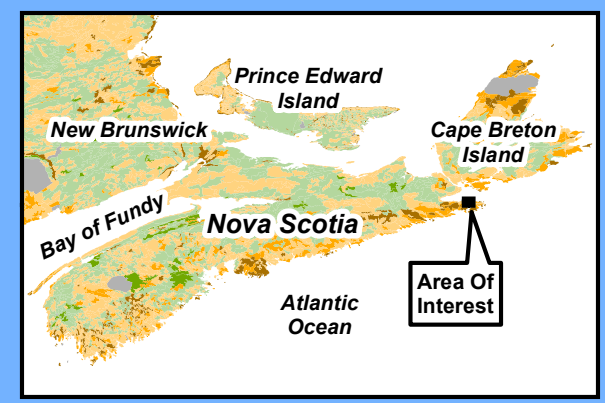
Hendsbee Lake

Highway 16

Dryweather

Legend:

- ★ Moose Pellets (AMEC 2014)
- ★ Moose Tracks (AMEC 2014)
- ★ Possible Moose Rubbings (AMEC 2014)
- Historical Moose Sighting
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- Water Bodies
- Forested Land (Type)**
- Softwood
- Mixedwood
- Hardwood
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- General Wetlands
- Treed Bogs
- Lake/River Wetland
- Cliffs, Dunes, Coastal Rock
- Water
- Rock Barren
- Barren
- Urban and Miscellaneous
- Beach
- Gravel Pit
- Powerline Corridor
- Road Corridor

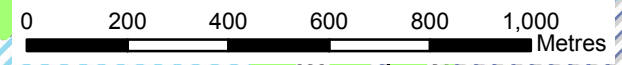


- Notes:**
1. Reference: Digital Topographic Mapping by Nova Scotia Geomatics Centre. AMEC 2014 Black Point Quarry Project Moose Survey Data. Forestry Inventory by Nova Scotia Department of Natural Resources (NS DNR).
 2. Projection: NAD83(CSRS), UTM Zone 20 North.

Black Point Quarry Moose Survey Transects



Date: May 2015	Project #: 15-5283
Scale: 1:15,000	Drawing #: 1
Drawn By: H. Serhan	
Checked By: A. Walter	



Appendix C: Strum 2017 Moose Survey Report



June 19, 2017

Mr. Frank Leith
Vulcan Materials Company
1200 Urban Center Drive
Birmingham, AL 35242

Dear Mr. Leith,

Re: Pre-Construction Mainland Moose Surveys
Black Point Quarry, Guysborough County, NS

Strum Consulting completed pre-construction Mainland Moose (*Alces alces americana*) surveys for the proposed Black Point Quarry Project (the Project) in February, March, April, and May 2017 to determine if Mainland Moose are utilizing habitat at the Project site during the winter months.

While multiple wildlife species, including White-tailed Deer (*Odocoileus virginianus*), Snowshoe Hare (*Lepus americanus*), and Eastern Coyote (*Canis latrans*), were documented during the surveys, no evidence of Mainland Moose was observed.

INTRODUCTION

The proposed Project consists of a granite quarry near Black Point, in Guysborough County, Nova Scotia. The Project site encompasses 354.5 ha of land with habitats consisting of softwood forest, mixed-wood forest, wetlands, and barrens. The Project received Environmental Assessment (EA) approval from the Minister of Environment on April 26, 2016 in accordance with Section 13(1)b of the Environmental Assessment Regulations, pursuant to Part IV of the Environment Act. As part of the EA process, the Proponent was required to develop and implement a plan to monitor for Mainland Moose. Strum previously completed pre-construction Mainland Moose surveys in January, February, and May 2015 and was retained to complete a second round of surveys prior to construction activities.

The objective of these surveys was to determine if there were any indications that Mainland Moose are utilizing the habitat at the Project site during the winter months.

Engineering • Surveying • Environmental

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f. 902.863.1389

Moncton Office
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Moncton, NB E1A 3R1
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Deer Lake Office
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f. 902.835.5574

To achieve the study objective, the following tasks were completed:

- Identification and development of survey transects;
- Completion of winter snow-tracking surveys and a spring pellet group survey to document the potential use of the Project site by Mainland Moose, as well as other wildlife species, during the winter months; and
- Completion of mapping of the survey areas and notable study results.

SURVEY METHODOLOGY

The surveys were completed across the Project site and consisted of 13,000 m of transects (Drawing 1). Survey transects were developed with input from Nova Scotia Department of Natural Resources (Mark Pulsifer, Pers. Comm.) and consideration for the following:

- Coverage of the Project site: Survey transects were designed to cover as much of the Project site as possible.
- Habitat: Multiple habitats were targeted including mature softwood forest, mixed wood forest, wetlands, and barrens.
- Incorporation of previous survey results: Survey transects considered areas where the previous survey report identified moose signs.
- Existing trails: Any on-site trails (mainly ATV trails) were incorporated into the survey transects due to their potential use as a transportation corridor by Mainland Moose.

Snow-tracking surveys were completed in February, March, and April 2017 followed by pellet group surveys after snow melt in May 2017. Surveys were conducted by a team of biologists with a demonstrable knowledge of Mainland Moose sign and the ability to differentiate Mainland Moose sign from that of other wildlife species.

Surveys utilized an ATV (with snow treads for winter surveys) for on-site trails and inaccessible areas were surveyed on foot. All wildlife sign encountered during the surveys were identified to species, where possible. Wildlife sign consisted of primarily tracks and pellets but also include foraging sign, scat, and rubs. In addition, the locations of all noteworthy observations were recorded using a Garmin 64s GPS receiver capable of sub 5 m accuracy, with representative photos taken. Snow-tracking surveys were completed 1 to 7 days after a snowfall and periods of rain, significant snowfall, or blowing snow were avoided.

Table 1 outlines the timing and general conditions during the surveys.

Table 1: Survey Details

Survey Day	Date dd/mm/yyyy	Conditions
Snow Tracking Survey		
1	24/2/2017	Snow Depth: 50 cm snow, thin crust on top Weather Conditions: cold, overcast Tracking Conditions: good
2	24/3/2017	Snow Depth: 30 cm snow, 5 cm powder on top of crust Weather Conditions: cold, clear Tracking Conditions: good
3	5/4/2017	Snow Depth: 10-40 cm in pockets, thin crust on top Weather Conditions: cold, overcast Tracking Conditions: moderate-poor, tracks were faint, limited snow in open areas, lots of melting
4	6/4/2017	Snow Depth: 10-40 cm in pockets, thin crust on top Weather Conditions: sunny, cool, light breeze Tracking Conditions: moderate-poor, tracks were faint, limited snow in open areas, lots of melting
Pellet Group Survey		
1	11/5/2017	Weather Conditions: cool, periods of showers Tracking Conditions: good, ground very wet
2	29/5/2017	Weather Conditions: warm, sunny Tracking Conditions: moderate-poor, vegetative cover limiting visibility of pellet/tracks

RESULTS

No evidence of Mainland Moose was encountered during field surveys.

Multiple wildlife species were identified during the surveys. The most common species identified were White-tailed Deer, Snowshoe Hare, and Eastern Coyote. Evidence of these species were located throughout the Project site. Table 2 identifies the signs of wildlife species observed during the surveys.

Table 2: Evidence of Wildlife Species Observations

Common Name	Scientific Name	Snow-tracking Survey #1 (24/02/2017 – 24/03/2017)				Snow-tracking Survey #2 (05/04/2017 – 06/04/2017)				Pellet Group Survey #1 (11/05/2017)				Pellet Group Survey #2 (29/05/2017)			
		Tracks	Pellets/ Scat	Browse	Sighting	Tracks	Pellets/ Scat	Browse	Sighting	Tracks	Pellets/ Scat	Browse	Sighting	Tracks	Pellets/ Scat	Browse	Sighting
American Beaver	<i>Castor canadensis</i>			✓			✓					✓	✓			✓	
Eastern Coyote	<i>Canis latrans</i>	✓	✓			✓	✓			✓	✓			✓	✓		
North American Porcupine	<i>Erethizon dorsatum</i>	✓				✓	✓			✓	✓		✓				
Red fox	<i>Vulpes vulpes</i>					✓											
Snowshoe Hare	<i>Lepus americanus</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spruce Grouse	<i>Falcapennis Canadensis</i>	✓			✓								✓				
White-tailed Deer	<i>Odocoileus virginianus</i>	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	

DISCUSSION

A variety of wildlife species were identified throughout the surveys. As expected, common wildlife species such as Snowshoe Hare, Eastern Coyote, and White-tailed Deer dominated the observations, while other small mammals were also prevalent.

Mainland Moose was not observed on site. This absence may be due to the lack of ideal winter-habitat of mid-successional growth and mature softwood stands. Much of the site consists of open barrens, bogs, and shrub swamps that provide little protection from the cold, coastal winds. The largest patch of suitable overwintering habitat on the site is located along the northern, coastal side of the Project site and is only accessible by descending a steep cliff.

While it is possible that surveys did not coincide with recent Mainland Moose presence, it is more likely that the species does not occur at the Project site during the winter months.

It is possible that Mainland Moose may frequent the site during the summer months when access to wetlands and submerged and emergent aquatic vegetation is an important summer habitat preference. To escape the summer heat and insects, Moose often seek out streams, ponds, and shorelines, all of which are available on the Project site.

If you have any questions, please contact us.

Thank you,



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Vice President
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Chedabucto Bay

Fogherty Head

Black Point

Fox Bay

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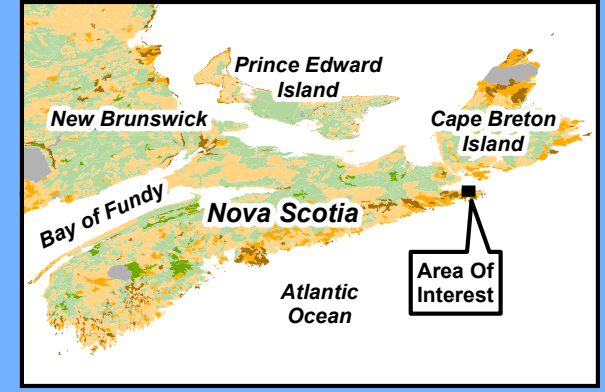
Portion of
PID 35212505

Cavanaugh Lake

Hayden Lake

Hendsbee Lake

Highway 16



- Notes:**
- Reference: Digital Topographic Mapping by Nova Scotia Geomatics Centre. AMEC 2014 Black Point Quarry Project Moose Survey Data. Forestry Inventory by Nova Scotia Department of Natural Resources (NS DNR).
 - Projection: NAD83(CSRS), UTM Zone 20 North.

- Legend:**
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Black Point Quarry Moose Survey Transects



Date:	Project #:
May 2015	15-5283
Scale:	Drawing #:
1:15,000	1
Drawn By:	Checked By:
H. Serhan	A. Walter

