PENN ENERGY RENEWABLES, LTD.

DRAFT

Construction Plan Report

In support of an application for a
Renewable Energy Approval (REA)
Pursuant to Ontario Regulation 359/09

For the

Penn Energy – Ridgefield

SOLAR ENERGY FACILITY

FIT Contract No. F-001549- SPV-130-505
FIT Application No. FIT-FITFRZ1



In the
City of Kawartha Lakes
ONTARIO, CANADA

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A note regarding REA application requirements and additional Project Information:
This document is one component of a series of reports and other related documents that, collectively, constitute a complete Renewable Energy Approval (REA) application package which will be submitted to the Ministry of the Environment (MOE) for review and approval. As such, this report is intended to compliment the other documents and may reference and/or rely upon information contained in them; therefore, the contents herein should not be considered independently.

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1.0 INTRODUCTION

Penn Energy Renewables, Ltd. (Penn) has executed a FIT contract with the Ontario Power Authority (OPA) for the construction of an 8 MW, ground-mounted, Class 3 solar energy facility located west of the village of Dunsford, within the City of Kawartha Lakes, Ontario. The subject lands are located in part of Lot 5 Concession 10, in the City of Kawartha Lakes, geographic village of Fenelon. The proposed Renewable Energy Generation Facility (REGF) would consist of a collection of solar photovoltaic (PV) modules (each approximately 1.00 m x 1.67 m or 1.00 m x 2.00 m in dimension) that are grouped into arrays tilted and facing south. These stationary arrays are strung together forming a series of rows oriented east to west. The Environmental Protection Act (EPA) administered by the Ministry of the Environment (MOE) regulates Renewable Energy Approvals (REAs) under Part V.0.1 of the act, pursuant to Ontario Regulation 359/09. A proponent of a renewable energy project is required to submit numerous reports as part of an REA application; one of which is a Construction Plan Report (CPR).

According to the MOE's publication "Technical Guide to Renewable Energy Approvals Chapter 5: Guidance for preparing the Construction Plan Report" (2011)…

> *The purpose of the Construction Plan Report is to describe in sufficient detail project activities related to the construction phase so that all potential negative environmental effects may be identified. The report must describe mitigation measures in respect of negative environmental effects of the construction or installation.*

This report begins with a summary of the construction stages and general timing of each. It continues by detailing specific tasks and attributes of each stage, potential negative environmental effects due to construction/installation activities, and any proposed mitigation or monitoring. Much of this information is taken from other reports prepared for this REA application, for example, the *Natural Heritage Assessment and Environmental Impact Study Report* by Bowfin Environmental Consulting Inc. (**NHA/EIS**), the *Archaeological Assessment (Stages 1 and 2) Report* by Northeastern Archaeological Associates (**AA**) and the *Water Assessment Report* by Bowfin Environmental Consulting Inc. (**WA**).

2.0 DESCRIPTION OF CONSTRUCTION PROCESS

The primary stages (with approximate timing) of REGF construction are **Site Preparation** (3 months), **Facility and Equipment Installation** (4 months), **Interconnection/Testing/Commissioning** (1 month) and **Close-out** (2 weeks). Since these stages will overlap significantly, the anticipated total duration is approximately 6 months – anticipated to commence in Summer 2013. The entire REGF will likely be constructed and installed in one continuous phase, unless interrupted by winter weather.

2.1 Site Preparation

Surveyor layout and staking; temporary power; water well; erosion and sediment controls; clearing/ grubbing; topsoil stockpiling; rough grading; temporary parking and staging areas; internal lanes and roadway access connections; perimeter fencing.

Materials Brought On Site: Utility poles and low-voltage conductor; erosion/sediment control materials (fencing, fabric, straw bales, etc.); gravel/aggregate to provide necessary bearing capacity for lanes, parking and staging areas; chain-link fencing and barbed-wire. Portable toilets, an office trailer and refuse/recycling dumpster(s) will also be utilized throughout construction.

Construction Equipment Utilized: Typical earth-moving equipment (grader, bulldozer, backhoe, front-loader, dump truck, water storage tank/truck, etc.); light-duty trucks and similar vehicles.

Timing and Operational Plans: Approximately three months overall; the surveying and utility installation will occur in the first month, while all erosion and sediment controls are installed; any necessary clearing and grubbing will coincide with stockpiling of topsoil and rough grading which should take about 6-8 weeks; then (during the last few weeks) internal lanes, road access, perimeter fencing and temporary parking/staging areas will be constructed.

Temporary Land Uses: Much of the REGF Project Location will encounter changes and various uses during this stage. Some will be permanent (rough grading and construction of internal lanes/road connections) while others will only be temporary (e.g., staging areas and erosion/sediment controls).

Materials Generated at/Transported from Project Location: None anticipated other than waste from clearing and grubbing; rough grading is designed to balance cut and fill materials; topsoil will be retained for reapplication, landscaping and re-seeding; standard construction waste will be disposed of according to applicable regulations and standard practice.

2.1.1 Potential Negative Environmental Effects of Site Preparation

Stormwater Runoff Impacts: According to the NHA/EIS, grading and leveling of the site may increase erosion, however, grading is expected to be minimal as the majority of the project installation will follow existing grades to maintain the direction and quantity of surface flow. There is no planned import or export of fill or other material to or from the site. The anticipated grading is not expected to significantly increase the rate and/or flow of stormwater discharge from the site and may, in fact, increase stormwater infiltration by slightly reducing the average pitch of the site. In the further interest of maintaining the existing hydrogeological regime, impervious surfaces will be limited with access roads and parking areas to be gravel rather than asphalt to encourage infiltration. Impact will be limited to potential sediment runoff prior to the land being restabilized. A sediment erosion control plan will be developed with final engineering plans prior to the removal of vegetation and grading.

Dust and Noise Emissions: Dust and noise emissions due to typical construction activities are unavoidable, but no negative environmental effects are anticipated – especially since stock mufflers will be utilized on construction equipment and machinery.

Destruction of Vegetation and Habitat: Much of the area within the limits of the project location has been historically cleared for grazing. Areas of new vegetation removal will be re-seeded or landscaped prior to close-out of construction. Potential negative environmental effects to vegetation and habitat can be mitigated by following the measures below.

Impacts on Water Bodies: None. A water assessment has been prepared by Bowfin Environmental. There are no features meeting the definition of water bodies located on or within 120m of the project location. There are no lake trout lakes on or within 300m of the project location.

Impacts Related to Water Taking: None. An existing well is located on this property. Penn anticipates using this well to provide water to the REGF. During the Site Preparation phase of the construction, water from the well will be utilized primarily for dust control and, to a lesser extent, for other construction-related water needs during the construction of the project. During the construction phase of the project, Penn anticipates that it would utilize not more than 7,600 liters of water per day on any day. According to a Hydrogeological Impact Statement prepared by Levac Robichaud Leclerc Associates Ltd, dated February 2012, "the proposed water taking operation described above is expected to have no significant impacts on the local hydrogeological regime, including interference with neighbouring wells (dug or drilled), and land uses as well as any local surface water features."

Fuel Spills: Spills from construction equipment/machinery are a potential threat to the environment, but this can be mitigated by following the Treatment Technologies below.

Impacts on Archaeological Resources: None. The AA survey resulted in the recovery of a single groundstone tool. Concentrated survey did not locate any associated cultural material. Consequently, the consultant, Northeastern Archaeological Associates Limited, recommended that the development property be cleared for development. This recommendation was concurred with by the Ministry of Tourism and Culture.

2.1.2 Proposed Mitigation/Monitoring Plan for Site Preparation

Modifications of Construction Activities:

- Clearly delineate the limits/perimeter of the area to be cleared to prevent the loss of woody vegetation not intended for removal;
- No removal of woody vegetation (trees or shrubs) between April 15th and July 31st, inclusive, unless a biologist has walked the site no earlier than five days prior to the planned clearing and has indicated that no nesting activity is occurring within the area to be cleared;
- Install, monitor and maintain silt fence around the project location boundary (excluding site accesses) to prevent sediment from traveling to neighboring properties;
- Instruct personnel onsite to respect the project location boundaries and any additional setbacks;

- Dust suppression to be utilized when necessary;
- Utilize small machinery outside of perimeter fence during all activities to avoid accidental damage to the root system of trees (drip lines) not intended for removal and minimize soil compaction; and
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts.

Additional Modifications of Construction Activities – Reptile Hibernacula

If Reptile Hibernacula is confirmed is confirmed by Spring 2013 surveys as scheduled in the NHA/EIS, the following shall also be implemented:

- 30 m area will be established around the hibernacula. No work would take place within this area;
- The 30 m area will be flagged and demarcated (in field and on construction drawings);
- Construction crew would be educated about the location and significance of these features and will be trained to avoid snakes by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming snakes. Workers will be provided with an ID manual of snakes and protocol of what to do if snakes are present (i.e. wait for snakes to pass, avoid snakes). The contact information of a SAR biologist who will be responsible for safely transporting snakes will be provided. Construction crew will record the number and species of any snakes observed;
- The access road use and vehicular speeds will be minimized during September and October (when snakes are moving towards the hibernacula) and between March 15 and May 15, when snakes are leaving the hibernacula. During these same periods a thorough sweep of the work areas within 100m of the hibernacula will be performed daily prior to any work commencing within this area; and
- The 100m buffer area will be flagged and demarcated in field.

Additional Modifications of Construction Activities - Turtle Wintering and Nesting Area

If Turtle Wintering and Nesting Area is confirmed by Spring 2013 surveys, the following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be trained to avoid turtles by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming turtles. Workers will be provided with an ID manual of turtles and protocol of what to do if s are present (i.e. wait for turtles to pass, avoid turtles). The contact information of a SAR biologist who will be responsible for safely transporting turtles will be provided. Construction crew will record the number and species of any turtles observed.
- The access road use and vehicular speeds will be minimized during mid-October to November (when turtles are moving towards the wintering area) and early spring (i.e. after ice melt till mid-end of June, when turtles leave the wintering area for nesting sites). During these same periods a thorough sweep of the work areas within 100m of the wintering area will be performed daily prior to any work commencing within this area.

Additional Modifications of Construction Activities – Amphibian Breeding Habitat (Woodland)
If Amphibian Breeding Habitat (Woodland) is confirmed by Spring 2013 surveys, mitigation measures will follow the above measures that protect the Wetlands within 120m of the project location. The following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be made aware that they need to avoid harming frogs.
- The access road use and vehicular speeds will be minimized between April and June (when frogs are moving towards the breeding area).

Additional Modifications of Construction Activities – Generalized Significant Wildlife Habitat
Pursuant to the NHA, mitigation for this feature is included in the above mitigation for wetlands ad woodlands. For reinforcement the following specific mitigation measures are to be implemented:

- No natural vegetation other than the fencerows will be removed
- No work will occur within the drip line of Woodland 1 as identified in the NHA.
- Sediment fence will be installed around the perimeter of the project location.

Treatment Technologies:

- Fueling and maintenance activities would occur within an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow. Such activities will be a minimum of 30 m from any significant natural feature as identified in the NHA;
- Develop a spill response plan as part of final engineering and train staff;
- Keep emergency spill kits onsite;
- Disposal of waste shall be in accordance with governmental regulation;
- Monitor area for leakage, in the unlikely event of spillage halt all construction activities and corrective measures must be implemented. Any spills must be immediately reported to the MOE Spills Action Centre (1.800. 268.6060).

Scheduling and Operational Changes:

- Conduct construction activities during daylight hours whenever possible to minimize light and noise impacts to wildlife.

Environmental Effects Monitoring Plan: Required construction and post-construction monitoring are addressed in the Design and Operations Report.

2.2 Facility and Equipment Installation

PV array foundations (piles/screw-posts), racking and modules; low-voltage wiring and combiner/ collection cabling; trenching for conductors; collection house/transformer foundation pads; placement of collection houses; inverters and mid-size transformers; final connections of collection equipment; overhead structures; high-voltage conductors to substation; permanent power (120-240v).

Materials Brought On Site: Metal posts and racking materials for assembly of PV arrays; PV modules and associated wiring; combiner/collection accessories (cables, connectors, etc.); stone and conduit for trenches; stone and concrete for building/transformer foundations; pre-fabricated collection houses (including pre-installed inverters, control equipment and accessories); mid-size transformers; wood or steel poles and high-voltage conductors; related wiring, cables, controls, switches, disconnects, etc.

Construction Equipment Utilized: Typical light-duty construction equipment; specialized machines for installation of PV array foundations (similar to a Bobcat); delivery and staging vehicles (medium and large trucks, fork lift, etc.); bucket truck; concrete truck; small- to medium-sized grading/compacting equipment; hand tools.

Timing and Operational Plans: Numerous tasks and trades will be concurrently underway throughout this 4-month stage. Because of the large number of modular, repetitive components, installation can be progressively staggered (e.g. the panel installation following the racking installers who can be right behind the foundation crew.) Additionally, other components can be erected at the same time: low- and high-voltage conductors, collection houses, transformers, etc.

Temporary Land Uses: In addition to the construction office trailer, dumpster and parking areas, the primary temporary use of land will be for staging of materials, equipment and related supplies.

Materials Generated at/Transported from Project Location: No materials requiring export from the site will be generated other than standard construction waste, which will be disposed of according to applicable regulations and standard practice.

2.2.1 Potential Negative Environmental Effects of Facility and Equipment Installation

Stormwater Runoff Impacts: None. Although the solar panels are themselves impervious, the design and placement of the solar panels promotes the flow of rainwater to the ground surface beneath and surrounding the panels. Grasses and/or alternative species of groundcover will be planted in these areas. As a result, runoff from these solar panels will travel predominantly along the surface of the ground, maintaining the opportunity to infiltrate in a manner similar to pre-development conditions. Limited impervious surfaces (e.g., inverter, transformer and substation pads) will be constructed for this development. The site access lanes and a small parking area would be constructed of gravel and would, as a consequence, maintain some level of stormwater infiltration.

Dust and Noise Emissions: Dust and noise emissions due to typical construction activities are unavoidable, but no negative environmental effects are anticipated – especially since stock mufflers will be utilized on construction equipment and machinery.

Destruction of Vegetation and Habitat: There are no anticipated potential negative environmental effects attributable to this phase, maintenance of mitigation measures from the site preparation phase should be followed to ensure such.

Impacts on Water Bodies: None. A water assessment has been prepared by Bowfin Environmental. There are no features meeting the definition of water bodies located on or within 120m of the project location. There are no lake trout lakes on or within 300m of the project location.

Impacts Related to Water Taking: None. An existing supply well exists on the property. Penn anticipates using a well to provide water to the REGF. Penn anticipates that the well located by the existing house on the eastern edge of the property will be the primary well that Penn will utilize. During the Facility and Equipment Installation phase of the construction, water from the well will be utilized primarily for dust control and, to a lesser extent, for other construction-related water needs during the construction of the project. During the construction phase of the project, Penn anticipates that it would utilize not more than 7,600 liters of water per day on any day. A hydrogeological report by Levac Robichaud Leclerc Associates Ltd., dated February 2012, confirms such taking would have "no significant impacts on the local hydrogeological regime."

Fuel Spills: Spills from construction equipment/machinery are a potential threat to the environment, but this can be mitigated per the Treatment Technologies listed below. Penn anticipates selecting a primary transformer for the grid-tie substation that utilizes biodegradable transformer oil(s), such as, by way of example, vegetable-based FR-3. Such transformer oils are non-toxic and readily biodegradable. They are less volatile that petroleum-based oils and have higher flash points for improved safety. They are known to quickly and thoroughly degrade in both soil and aquatic environments.

Impacts on Archaeological Resources: None. The AA survey resulted in the recovery of a single groundstone tool. Concentrated survey did not locate any associated cultural material. Consequently, the consultant, Northeastern Archaeological Associates Limited, recommended that the development property be cleared for development. This recommendation was concurred with by the Ministry of Tourism and Culture.

2.2.2 Proposed Mitigation/Monitoring Plan for Facility and Equipment Installation

- Monitor and maintain silt fence around the project location boundary (excluding site accesses) to prevent sediment from traveling to neighboring properties;
- Instruct personnel onsite to respect the project location boundaries and any additional setbacks;
- Dust suppression to be utilized when necessary;
- Utilize small machinery outside of perimeter fence during all activities to avoid accidental damage to the root system of trees (drip lines) not intended for removal and minimize soil compaction; and
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts.

Additional Modifications of Construction Activities – Reptile Hibernacula

If Reptile Hibernacula is confirmed is confirmed by Spring 2013 surveys as scheduled in the NHA/EIS, the following shall also be implemented:

- 30 m area will be maintained around the hibernacula. No work would take place within this area;
- The 30 m area will remain flagged and demarcated (in field and on construction drawings);
- Construction crew would be educated about the location and significance of these features and will be trained to avoid snakes by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming snakes. Workers will be provided with an ID manual of snakes and protocol of what to do if snakes are present (i.e. wait for snakes to pass, avoid snakes). The contact information of a SAR biologist who will be responsible for safely transporting snakes will be provided. Construction crew will record the number and species of any snakes observed;
- The access road use and vehicular speeds will be minimized during September and October (when snakes are moving towards the hibernacula) and between March 15 and May 15, when snakes are leaving the hibernacula. During these same periods a thorough sweep of the work areas within 100m of the hibernacula will be performed daily prior to any work commencing within this area; and
- The 100m buffer area will be flagged and demarcated in field.

Additional Modifications of Construction Activities - Turtle Wintering and Nesting Area

If Turtle Wintering and Nesting Area is confirmed by Spring 2013 surveys, the following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be trained to avoid turtles by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming turtles. Workers will be provided with an ID manual of turtles and protocol of what to do if s are present (i.e. wait for turtles to pass, avoid turtles). The contact information of a SAR biologist who will be responsible for safely transporting turtles will be provided. Construction crew will record the number and species of any turtles observed.
- The access road use and vehicular speeds will be minimized during mid-October to November (when turtles are moving towards the wintering area) and early spring (i.e. after ice melt till mid-end of June, when turtles leave the wintering area for nesting sites). During these same periods a thorough sweep of the work areas within 100m of the wintering area will be performed daily prior to any work commencing within this area.

Additional Modifications of Construction Activities – Amphibian Breeding Habitat (Woodland)

If Amphibian Breeding Habitat (Woodland) is confirmed by Spring 2013 surveys, mitigation measures will follow the above measures that protect the Wetlands within 120m of the project location. The following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be made aware that they need to avoid harming frogs.
- The access road use and vehicular speeds will be minimized between April and June (when frogs are moving towards the breeding area).

Additional Modifications of Construction Activities – Generalized Significant Wildlife Habitat
Pursuant to the NHA, mitigation for this feature is included in the above mitigation for wetlands ad woodlands. For reinforcement the following specific mitigation measures are to be implemented:

- No natural vegetation other than the fencerows will be removed
- No work will occur within the drip line of Woodland 1 as identified in the NHA.
- Sediment fence will be installed around the perimeter of the project location.

Treatment Technologies:

- Fueling and maintenance activities would occur within an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow. Such activities will be a minimum of 30 m from any significant natural feature as identified in the NHA;
- Develop a spill response plan as part of final engineering and train staff;
- Keep emergency spill kits onsite;
- Disposal of waste shall be in accordance with governmental regulation;
- Monitor area for leakage, in the unlikely event of spillage halt all construction activities and corrective measures must be implemented. Any spills must be immediately reported to the MOE Spills Action Centre (1.800. 268.6060).

Scheduling and Operational Changes:

- Conduct construction activities during daylight hours whenever possible to minimize light and noise impacts to wildlife.

Environmental Effects Monitoring Plan: Required construction and post-construction monitoring are addressed in the Design and Operations Report.

2.3 Interconnection/Testing/Commissioning

Grid-tie substation (main 44 kV transformer, switchgear, disconnects, meter, etc.); foundation pads for various equipment and a maintenance building; placement of pre-fab maintenance building; overhead structure(s); 44 kV conductor to existing LDC distribution line; LDC coordination; system testing, calibration and troubleshooting; commissioning.

Materials Brought On Site: 44kV transformer, switchgear, disconnects, meter and related equipment; pre-fabricated maintenance building; wood or steel poles and high-voltage interconnection conductor; fencing and gates; tele-protection communication equipment and mounting pole; site lighting and security system.

Construction Equipment Utilized: Small- to medium-sized grading/compacting equipment; delivery and staging vehicles (medium and large trucks, fork lift, etc.); bucket truck; concrete truck; typical light-duty construction equipment; small crane; hand tools.

Timing and Operational Plans: Much of this work can be executed in parallel with the previous stage (Facility and Equipment Installation); of course the testing and commissioning require almost all construction and installation activities to have been completed. Overall, these activities may last approximately one month;

Temporary Land Uses: Only a relatively small area will be used temporarily for tasks in this stage; they will be primarily for staging of the equipment and supplies as well as crew parking.

Materials Generated at/Transported from Project Location: No materials requiring export from the site will be generated other than standard construction waste, which will be disposed of according to applicable regulations and standard practice.

2.3.1 Potential Negative Environmental Effects of Interconnection/Testing/Commissioning

Stormwater Runoff Impacts: None.

Dust and Noise Emissions: Dust and noise emissions due to typical construction activities are unavoidable, but no negative environmental effects are anticipated – especially since stock mufflers will be utilized on construction equipment and machinery.

Destruction of Vegetation and Habitat: None anticipated.

Impacts on Water Bodies: None. A water assessment has been prepared by Bowfin Environmental. There are no features meeting the definition of water bodies located on or within 120m of the project location. There are no lake trout lakes on or within 300m of the project location.

Impacts Related to Water Taking: None. During the Interconnection/Testing/Commissioning phase of the construction, Penn anticipates that it will perform the initial cleaning of the modules. The duration of the module cleaning scope of work is approximately one week. It is anticipated that the module cleaning process will use not more than 30,240 liters of water per day on any day. . A hydrogeological report by Levac Robichaud Leclerc Associates Ltd., dated February 2012, confirms such taking would have “no significant impacts on the local hydrogeological regime.”

Fuel Spills: Spills from construction equipment/machinery are a potential threat to the environment, but this can be mitigated by following Treatment Technologies listed below. Penn anticipates selecting a primary transformer for the grid-tie substation that utilizes biodegradable transformer oil(s), such as, by way of example, vegetable-based FR-3. Such transformer oils are non-toxic and readily biodegradable. They are less volatile that petroleum-based oils and have higher flash points for improved safety. They are known to quickly and thoroughly degrade in both soil and aquatic environments.

Impacts on Archaeological Resources: None. The AA survey resulted in the recovery of a single groundstone tool. Concentrated survey did not locate any associated cultural material. Consequently, the consultant, Northeastern Archaeological Associates Limited, recommended that the development

property be cleared for development. This recommendation was concurred with by the Ministry of Tourism and Culture.

2.3.2 Proposed Mitigation/Monitoring Plan for Interconnection/Testing/Commissioning

- Monitor and maintain silt fence around the project location boundary (excluding site accesses) to prevent sediment from traveling to neighboring properties;
- Instruct personnel onsite to respect the project location boundaries and any additional setbacks;
- Dust suppression to be utilized when necessary;
- Utilize small machinery outside of perimeter fence during all activities to avoid accidental damage to the root system of trees (drip lines) not intended for removal and minimize soil compaction; and
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts.

Additional Modifications of Construction Activities – Reptile Hibernacula

If Reptile Hibernacula is confirmed is confirmed by Spring 2013 surveys as scheduled in the NHA/EIS, the following shall also be implemented:

- 30 m area will be maintained around the hibernacula. No work would take place within this area;
- The 30 m area will remain flagged and demarcated (in field and on construction drawings);
- Construction crew would be educated about the location and significance of these features and will be trained to avoid snakes by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming snakes. Workers will be provided with an ID manual of snakes and protocol of what to do if snakes are present (i.e. wait for snakes to pass, avoid snakes). The contact information of a SAR biologist who will be responsible for safely transporting snakes will be provided. Construction crew will record the number and species of any snakes observed;
- The access road use and vehicular speeds will be minimized during September and October (when snakes are moving towards the hibernacula) and between March 15 and May 15, when snakes are leaving the hibernacula. During these same periods a thorough sweep of the work areas within 100m of the hibernacula will be performed daily prior to any work commencing within this area; and
- The 100m buffer area will be flagged and demarcated in field.

Additional Modifications of Construction Activities - Turtle Wintering and Nesting Area

If Turtle Wintering and Nesting Area is confirmed by Spring 2013 surveys, the following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be trained to avoid turtles by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming turtles. Workers will be provided with an ID manual of turtles and protocol of what to do if s are present (i.e. wait for turtles to pass, avoid turtles). The contact

information of a SAR biologist who will be responsible for safely transporting turtles will be provided. Construction crew will record the number and species of any turtles observed.

- The access road use and vehicular speeds will be minimized during mid-October to November (when turtles are moving towards the wintering area) and early spring (i.e. after ice melt till mid-end of June, when turtles leave the wintering area for nesting sites). During these same periods a thorough sweep of the work areas within 100m of the wintering area will be performed daily prior to any work commencing within this area.

Additional Modifications of Construction Activities – Amphibian Breeding Habitat (Woodland)

If Amphibian Breeding Habitat (Woodland) is confirmed by Spring 2013 surveys, mitigation measures will follow the above measures that protect the Wetlands within 120m of the project location. The following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be made aware that they need to avoid harming frogs.
- The access road use and vehicular speeds will be minimized between April and June (when frogs are moving towards the breeding area).

Additional Modifications of Construction Activities – Generalized Significant Wildlife Habitat

Pursuant to the NHA, mitigation for this feature is included in the above mitigation for wetlands ad woodlands. For reinforcement the following specific mitigation measures are to be implemented:

- No natural vegetation other than the fencerows will be removed
- No work will occur within the drip line of Woodland 1 as identified in the NHA.
- Sediment fence will be installed around the perimeter of the project location.

Treatment Technologies:

- Fueling and maintenance activities would occur within an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow. Such activities will be a minimum of 30 m from any significant natural feature as identified in the NHA;
- Develop a spill response plan as part of final engineering and train staff;
- Keep emergency spill kits onsite;
- Disposal of waste shall be in accordance with governmental regulation;
- Monitor area for leakage, in the unlikely event of spillage halt all construction activities and corrective measures must be implemented. Any spills must be immediately reported to the MOE Spills Action Centre (1.800. 268.6060).

Scheduling and Operational Changes:

- Conduct construction activities during daylight hours whenever possible to minimize light and noise impacts to wildlife.

Environmental Effects Monitoring Plan: Required construction and post-construction monitoring are addressed in the Design and Operations Report.

2.4 Close-out

Removal of temporary services and facilities (e.g. portable toilets, office trailer and refuse/recycling dumpsters); topsoil replacement and final grading; landscaping and re-seeding;

Materials Brought On Site: Sod/seed mix for turf grass and various plants for the perimeter landscaping.

Construction Equipment Utilized: Medium and/or large trucks, fork lift, etc. to remove temporary facilities; small- to medium-sized landscaping equipment; bucket truck; concrete truck; typical light-duty construction equipment; small crane; hand tools.

Timing and Operational Plans: approximately two weeks

Temporary Land Uses: none

Materials Generated at/Transported from Project Location: Portable toilets, an office trailer and refuse/recycling dumpster(s)

2.4.1 Potential Negative Environmental Effects of Close-out

Stormwater Runoff Impacts: None.

Dust and Noise Emissions: Dust and noise emissions due to typical construction activities are unavoidable, but no negative environmental effects are anticipated – especially since stock mufflers will be utilized on construction equipment and machinery.

Destruction of Vegetation and Habitat: None.

Impacts on Water Bodies: None. A water assessment has been prepared by Bowfin Environmental. There are no features meeting the definition of water bodies located on or within 120m of the project location. There are no lake trout lakes on or within 300m of the project location.

Impacts Related to Water Taking: None. During the Close-out phase of the Construction, Penn will utilize water to help establish the landscaping and seeded areas of the site. Penn anticipates that it would utilize not more than 37,800 liters per day of water during the period in which it is establishing the seeded and landscaped areas. After the seeded and landscaped areas are established, the primary use of water will be for module cleaning. Averaged over the course of a year, this usage is expected to be less than 1,000 liters per day.

Fuel Spills: Spills from construction equipment/machinery are a potential threat to the environment, but this can be mitigated by following the Treatment Technologies listed below.

Impacts on Archaeological Resources: None. The AA survey resulted in the recovery of a single groundstone tool. Concentrated survey did not locate any associated cultural material. Consequently, the consultant, Northeastern Archaeological Associates Limited, recommended that the development

property be cleared for development. This recommendation was concurred with by the Ministry of Tourism and Culture.

2.4.2 Proposed Mitigation/Monitoring Plan for Close-out

- Monitor and maintain silt fence around the project location boundary (excluding site accesses) to prevent sediment from traveling to neighboring properties;
- Instruct personnel onsite to respect the project location boundaries and any additional setbacks;
- Dust suppression to be utilized when necessary;
- Utilize small machinery outside of perimeter fence during all activities to avoid accidental damage to the root system of trees (drip lines) not intended for removal and minimize soil compaction; and
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts.

Additional Modifications of Construction Activities – Reptile Hibernacula

If Reptile Hibernacula is confirmed is confirmed by Spring 2013 surveys as scheduled in the NHA/EIS, the following shall also be implemented:

- 30 m area will be maintained around the hibernacula. No work would take place within this area;
- The 30 m area will remain flagged and demarcated (in field and on construction drawings);
- Construction crew would be educated about the location and significance of these features and will be trained to avoid snakes by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming snakes. Workers will be provided with an ID manual of snakes and protocol of what to do if snakes are present (i.e. wait for snakes to pass, avoid snakes). The contact information of a SAR biologist who will be responsible for safely transporting snakes will be provided. Construction crew will record the number and species of any snakes observed;
- The access road use and vehicular speeds will be minimized during September and October (when snakes are moving towards the hibernacula) and between March 15 and May 15, when snakes are leaving the hibernacula. During these same periods a thorough sweep of the work areas within 100m of the hibernacula will be performed daily prior to any work commencing within this area; and
- The 100m buffer area will be flagged and demarcated in field.

Additional Modifications of Construction Activities - Turtle Wintering and Nesting Area

If Turtle Wintering and Nesting Area is confirmed by Spring 2013 surveys, the following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be trained to avoid turtles by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming turtles. Workers will be provided with an ID manual of turtles and protocol of what to do if s are present (i.e. wait for turtles to pass, avoid turtles). The contact

information of a SAR biologist who will be responsible for safely transporting turtles will be provided. Construction crew will record the number and species of any turtles observed.

- The access road use and vehicular speeds will be minimized during mid-October to November (when turtles are moving towards the wintering area) and early spring (i.e. after ice melt till mid-end of June, when turtles leave the wintering area for nesting sites). During these same periods a thorough sweep of the work areas within 100m of the wintering area will be performed daily prior to any work commencing within this area.

Additional Modifications of Construction Activities – Amphibian Breeding Habitat (Woodland)

If Amphibian Breeding Habitat (Woodland) is confirmed by Spring 2013 surveys, mitigation measures will follow the above measures that protect the Wetlands within 120m of the project location. The following shall also be implemented:

- Construction crew would be educated about the location and significance of this feature and will be made aware that they need to avoid harming frogs.
- The access road use and vehicular speeds will be minimized between April and June (when frogs are moving towards the breeding area).

Additional Modifications of Construction Activities – Generalized Significant Wildlife Habitat

Pursuant to the NHA, mitigation for this feature is included in the above mitigation for wetlands ad woodlands. For reinforcement the following specific mitigation measures are to be implemented:

- No natural vegetation other than the fencerows will be removed
- No work will occur within the drip line of Woodland 1 as identified in the NHA.
- Sediment fence will be installed around the perimeter of the project location.

Treatment Technologies:

- Fueling and maintenance activities would occur within an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow. Such activities will be a minimum of 30 m from any significant natural feature as identified in the NHA;
- Develop a spill response plan as part of final engineering and train staff;
- Keep emergency spill kits onsite;
- Disposal of waste shall be in accordance with governmental regulation;
- Monitor area for leakage, in the unlikely event of spillage halt all construction activities and corrective measures must be implemented. Any spills must be immediately reported to the MOE Spills Action Centre (1.800. 268.6060).

Scheduling and Operational Changes:

- Conduct construction activities during daylight hours whenever possible to minimize light and noise impacts to wildlife.

Environmental Effects Monitoring Plan: Required construction and post-construction monitoring are addressed in the Design and Operations Report.