



## **Construction Plan Report**

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

For the

## **Penn Energy – Hamilton\_Port Hope-4**

### **SOLAR ENERGY FACILITY**

FIT Contract No. F- 000687-SPV-130-505

FIT Application No. FIT- FQWKQZF



In the  
**Township of Hamilton**  
**Northumberland County**  
**ONTARIO, CANADA**

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*Printed on 100% recycled paper*

**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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**Notice:**

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## 1.0 INTRODUCTION

Penn Energy Renewables, Ltd. (Penn) has executed a Feed-In-Tariff (FIT) contract with the Ontario Power Authority (OPA) for the construction of a 10 megawatt (MW), ground-mounted, Class 3 solar energy facility near the Town of Baltimore, northeast of Cobourg, in Northumberland County, Ontario. The subject lands are located in Lot 3 Concession 2 of the Township of Hamilton. The proposed Renewable Energy Generation Facility (REGF or the Facility) 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 or the Act) 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 Bulletin #3: Guidance for preparing the Construction Plan Report as part of an application under O.Reg.359/09,"

*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 (**NHA/EIS**), the *Archaeological Assessment (Stages 1-3) Report* by Northeastern Archaeological Associates (**AA**) and the *Water Assessment and Water Bodies Report* by Bowfin Environmental Consulting (**WA/WB**).

## 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 Spring 2012. 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. No woody vegetation (trees or shrubs) to be removed 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.

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

A minimum 30m buffer is provided from the significant woodlands, the top of the significant valleylands' steep slopes and from all water features therein; additionally, all activities associated with construction of the REGF will occur within the land that is currently croplands. In fact, because of the greater than 30m setback, much of the active cropland will be left fallow, which – according to the NHA/EIS and WA/WB – will likely result in a long-term positive impact, provided that best management practices are properly implemented.

Stormwater Runoff Impacts: Minor grading will be done properly in conjunction with temporary erosion and sediment controls. Watering will only be implemented to the extent necessary for dust control and will not result in the excessive formation of puddles, rutting by equipment or vehicles or



siltation of watercourses. Removal of vegetation and topsoil, particularly in the areas of the roads and inverters/transformers, will lead to a minor increase in the site's impervious surfaces and increased surface water runoff. This will be largely attenuated by long flows over grassed/vegetated areas prior to reaching the various low points in elevation.

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. Water will be used sparingly as a dust suppressant during periods when visible, airborne dust is being generated and broadcast.

Destruction of Vegetation and Habitat: No forest patches will be removed. The only removal of woody vegetation would occur within the windrows, but (according to the NHA/EIS) loss of the windrows will not affect the woodlands in terms of the size, interior habitat, or ecological functions and no species of conservation value were located within the windrows. The potential indirect impacts to the woodland associated with this project are harm to trees not intended for removal via: clearing, grubbing, grading, installation of fencing and the perimeter lane.

Other than the windrows, the entire REGF project location is active croplands and therefore does not contain significant vegetation or habitat. Beyond the REGF are significant wildlife habitats such as foraging areas with abundant mast, seeps and springs and deer movement corridors. Due to the substantial buffers and setbacks, none of these habitats will be directly impacted by the proposed project according to the NHA/EIS.

Impacts on Water Bodies: No water bodies are located within the REGF project area. In fact, the large buffers (greater than 30m) created around the water bodies will result in a local, long term positive impact and will enhance the protection of their water quality and temperature (according to the NHA/EIS). It is noted that there will be no creation of any impermeable surface, no water taking and no removal of natural vegetation within said buffers/setbacks. No impacts to surface water quality are anticipated provided that typical best management practises such as those listed below are properly implemented.

Impacts Related to Water Taking: None. Several existing wells are located on this property. Penn anticipates using one or more of these wells to provide water to the REGF. Penn anticipates that the well located by the existing barn in the northern portion of the property will be the primary well that Penn will utilize. Several of the wells on this site appear to pre-date March 29, 1961. 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.



Fuel Spills: Spills from construction equipment/machinery are a potential threat to the environment, but this can be mitigated according to the MNR-confirmed NHA/EIS and the WA/WB (see below for specific recommendations).

Impacts on Archaeological Resources: None. Approximately 950 shovel tests as well as surface surveys of the ploughed fields, all at a high potential 5m interval, were conducted during the Stage 2 investigation. Because some archaeological materials were discovered, and as recommended in the AA (as confirmed by the Ministry of Tourism and Culture) the initial REGF project area was substantially revised to exclude those portions of the site along with a minimum 20m buffer. A Stage 3 excavation was conducted in order to document the recovered artifacts.

### 2.1.2 Proposed Mitigation/Monitoring Plan for Site Preparation

#### Modifications of Construction Activities:

- Establish a 30 m buffer between the woodlands/valleylands and the perimeter fence in order to protect the root structure, to minimize hazards from falling edge trees, and to avoid impacts due to fuel spills;
- Clearly delineate the limits/perimeter of the area to be cleared to prevent the loss of 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;
- Utilize small machinery (such as a small backhoe) within 25m of woodlands to minimize harm to the root system of trees not intended for removal;
- All stockpiling or infilling will occur inside or within 5m of the perimeter fence where adjacent to any woodland/valleylands/water bodies buffer areas in order to minimize potential damage to root systems of trees not intended for removal and to prevent sedimentation from entering the valleylands;
- All topsoil removal will be confined to within the fenced area and will not extend more than 5m outside of the fence to minimize potential to damage root systems of trees not intended for removal and to prevent sedimentation from entering the valleylands;
- The perimeter lanes will be left as a farm lane (i.e. unpaved, gravel or dirt road) to allow rainwater to infiltrate the soil;
- Water will be used sparingly as a dust suppressant during periods when visible, airborne dust is being generated and broadcast. Watering will only be implemented to the extent necessary for dust control and will not result in the excessive formation of puddles, rutting by equipment or vehicles or siltation of watercourses.
- Water body features will clearly be indicated on the construction plans and no activities will occur within 30 m of any of them.
- Impacts to turtles could be prevented by training contractors to make visual observations for these species and allowing them safe passage should they be observed. Note that no species of conservation value were observed within these water features. Also note that no fish habitat will be impacted by this project.
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts; and



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

In addition, the Contractor will employ Best Management Practices to ensure soil erosion and sediment control and any increased surface water runoff pursuant to the recommendations of the Natural Heritage Assessment and particularly, Section 5 of the Environmental Impact Statement.

The following controls and methods shall be employed during Site Preparation :

1. Removal and or/disturbance of existing vegetative ground cover will be limited to areas of proposed construction and regrading. Areas undisturbed will be delineated by sediment control fencing;
2. Straw bales and/or filter cloth barriers shall be installed in existing swales, drains and at critical downstream flow points where necessary to intercept suspended soils and to prevent runoff from directly entering watercourses;
3. Topsoil will only be removed in the areas necessary - i.e. roads and inverter/transformer pads.
4. Sediment control fencing will be installed around the 30m buffers in place for all significant valleylands, woodlands, intermittent and permanent streams;
5. Any soil stockpiles shall be surrounded by sediment control fencing, no soil stockpile shall be placed within 30m of significant valleylands, woodlands, intermittent and permanent streams;
6. Vegetative swales shall be employed where practical to ensure the rate of surface flow does not increase to the significant valleylands, woodlands, permanent and intermittent streams while the ground cover is re-established;
7. Where necessary, install vegetative strips to increase sediment filtering where runoff naturally drains to watercourses; and
8. Stormwater controls shall be monitored and maintained at all times during site preparation.

Treatment Technologies:

- All equipment working near the water features should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refuelling, oil changes or lubrication would only be permitted in designated areas located at a minimum 30 m from the watercourses, where sediment erosion control measures and all precautions would be made





to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow.

- Spill kits would be located on site. The crew would be fully trained on the use of clean-up materials in order to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the project manager would halt the activity and corrective measures would be implemented. Any spills would be immediately reported to the MOEE Spills Action Centre (1-800-268-6060).

Scheduling and Operational Changes:

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

**Environmental Effects Monitoring Plan:** Since the construction of the project could result in soil compaction which in turn could impact the presence of seeps and springs within the study area, monitoring of the seeps and springs are required. This monitoring would consist of a survey of the seeps and springs once, during the summer following construction. A summary report of the findings would be created and circulated to the OMNR Peterborough district office. Should any impacts be documented, they would be discussed with OMNR

According to the MNR-confirmed NHA/EIS, no other monitoring is required for this project unless removal of woody vegetation (trees and shrubs) will occur within the breeding bird timing window (between April 15th and July 31st). In that case, a biologist should walk the site no earlier than five days prior to the planned clearing to verify that no nesting activity is occurring within the area to be cleared.

## 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. The solar panels do not account for an increase in impervious surface coverage due to the fact they are elevated and there is a significant spacing in between the rows where infiltration will occur in a similar manner to pre-construction conditions. Removal of vegetation and topsoil, particularly in the areas of the roads and inverters/transformers, will lead to a minor increase in the site's impervious surfaces and increased surface water runoff. This will be largely attenuated by long flows over grassed/vegetated areas prior to reaching the various low points in elevation..

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.

Impacts Related to Water Taking: None. As referenced in Section 2.1.1 of this Report, several existing wells are located on this property and Penn anticipates using one or more of these wells to provide water to the REGF. During the Facility and Equipment Installation Phase of the Construction, water may be utilized primarily for dust control and, to a lesser extent, for other construction-related water needs. During this Phase, Penn anticipates that it would utilize not more than 7,600 liters of water per day on any day. Please see Section 2.1.1 of this Report for additional details on the existing wells.

Fuel Spills: Spills from construction equipment/machinery are a potential threat to the environment, but this can be mitigated according to the MNR-confirmed NHA/EIS (see below for specific recommendations). 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 than 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.

## 2.2.2 Proposed Mitigation/Monitoring Plan for Facility and Equipment Installation

Modifications of Construction Activities:

- Utilize small machinery outside of perimeter fence and within 25m of woodlands/valleylands during all activities to minimize harm to the root system of trees not intended for removal;
- All stockpiling or infilling will occur inside or within 5m of the perimeter fence where adjacent to any woodland/valleylands/water bodies buffer areas in order to minimize potential damage to root systems of trees not intended for removal and to prevent sedimentation from entering the valleylands;
- The perimeter lanes will be left as a farm lane (i.e. unpaved, gravel or dirt road) to allow rainwater to infiltrate the soil;
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts; and
- Conduct construction activities during daylight hours whenever possible to minimize light impacts to wildlife.

In addition, The Contractor will employ Best Management Practices to ensure soil erosion and sediment control and any increased surface water runoff pursuant to the recommendations of the Natural Heritage Assessment and particularly, Section 5 of the Environmental Impact Statement.

The following controls and methods shall be employed during Facility and Equipment Installation:

1. Removal and or/disturbance of existing vegetative ground cover will be limited to areas of proposed construction and regrading. Areas undisturbed will be delineated by sediment control fencing;
2. Straw bales and/or filter cloth barriers shall be installed in existing swales, drains and at critical downstream flow points where necessary to intercept suspended soils and to prevent runoff from directly entering watercourses;
3. Topsoil will only be removed in the areas necessary - i.e. roads and inverter/transformer pads;
4. Sediment control fencing will be installed around the 30m buffers in place for all significant valleylands, woodlands, intermittent and permanent streams;
5. Any soil stockpiles shall be surrounded by sediment control fencing, no soil stockpile shall be placed within 50m of significant valleylands, woodlands, intermittent and permanent streams;



6. Vegetative swales shall be employed where practical to ensure the rate of surface flow does not increase to the significant valleylands, woodlands, permanent and intermittent streams while the ground cover is re-established;
7. Where necessary, install vegetative strips to increase sediment filtering where runoff naturally drains to watercourses; and
8. Stormwater controls shall be monitored and maintained at all times during facility and equipment installation.

Treatment Technologies:

- All equipment working near the water features should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refuelling, oil changes or lubrication would only be permitted in designated areas located at a minimum 30 m from the watercourses, where sediment erosion control measures and all precautions would be made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow.
- Spill kits would be located on site. The crew would be fully trained on the use of clean-up materials in order to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the project manager would halt the activity and corrective measures would be implemented. Any spills would be immediately reported to the MOEE Spills Action Centre (1-800-268-6060).

Scheduling and Operational Changes:

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

**Environmental Effects Monitoring Plan:** None.

## 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: Areas of the roads and inverters/transformers, will lead to a permanent minor increase in the site's impervious surfaces and increased surface water runoff. This will be largely attenuated by long flows over grassed/.vegetated areas prior to reaching the various low points in elevation..

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

Destruction of Vegetation and Habitat: None.

Impacts on Water Bodies: None.

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.

Fuel Spills: Spills from construction equipment/machinery are a potential threat to the environment, but this can be mitigated according to the MNR-confirmed NHA/EIS (see below for specific recommendations). Penn anticipates selecting a primary transformer for the grid-tie substation that utilizes biodegradable transformer oil(s), such as vegetable-based FR-3. Such transformer oils are non-toxic and readily biodegradable. They are less volatile than 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.

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

Modifications of Construction Activities:

- Utilize small machinery outside of perimeter fence and within 25m of woodlands/valleylands during all activities to minimize harm to the root system of trees not intended for removal;
- All stockpiling or infilling will occur inside or within 5m of the perimeter fence where adjacent to any woodland/valleylands/water bodies buffer areas in order to minimize potential damage to root systems of trees not intended for removal and to prevent sedimentation from entering the valleylands;
- The perimeter lanes will be left as a farm lane (i.e. unpaved, gravel or dirt road) to allow rainwater to infiltrate the soil;
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts; and
- Conduct construction activities during daylight hours whenever possible to minimize light impacts to wildlife.

Treatment Technologies:

- All equipment working near the water features should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refuelling, oil changes or lubrication would only be permitted in designated areas located at a minimum 30 m from the watercourses, where sediment erosion control measures and all precautions would be made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow.
- Spill kits would be located on site. The crew would be fully trained on the use of clean-up materials in order to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the project manager would halt the activity and corrective measures would be implemented. Any spills would be immediately reported to the MOEE Spills Action Centre (1-800-268-6060).

Scheduling and Operational Changes:

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

**Environmental Effects Monitoring Plan:** None required.

## 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 utilizing stock mufflers will be utilized on construction equipment and machinery.

Destruction of Vegetation and Habitat: None.

Impacts on Water Bodies: None.

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 according to the MNR-confirmed NHA/EIS (see below for specific recommendations).

Impacts on Archaeological Resources: None.

#### **2.4.2 Proposed Mitigation/Monitoring Plan for Close-out**

Modifications of Construction Activities:

- Utilize small machinery (such as a small backhoe) within 25m of woodlands to minimize harm to the root system of trees not intended for removal;
- All stockpiling or infilling will occur inside or within 5m of the perimeter fence where adjacent to any woodland/valleylands/water bodies buffer areas in order to minimize potential damage to root systems of trees not intended for removal and to prevent sedimentation from entering the valleylands;



- All topsoil removal will be confined to within the fenced area and will not extend more than 5m outside of the fence to minimize potential to damage root systems of trees not intended for removal and to prevent sedimentation from entering the valleylands;
- The perimeter lanes will be left as a farm lane (i.e. unpaved, gravel or dirt road) to allow rainwater to infiltrate the soil;
- Impacts to turtles could be prevented by training contractors to make visual observations for these species and allowing them safe passage should they be observed.
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts; and
- Conduct construction activities during daylight hours whenever possible to minimize light impacts to wildlife.

In addition, The Contractor will employ Best Management Practices to ensure soil erosion and sediment control and any increased surface water runoff pursuant to the recommendations of the Natural Heritage Assessment and particularly, Section 5 of the Environmental Impact Statement.

The following controls and methods shall be employed during Closeout:

1. Upon the completion of construction activities, all disturbed areas shall be seeded and stabilized prior to the removal of sediment control fencing and straw bales;
2. All natural drainage channels will be inspected for sediment and stabilization. Any areas of free sediment or erosion shall be stabilized and seeded with a native vegetative grass mix prior to the removal of sediment fencing and other controls;
3. Where valleylands, woodlands, permanent and intermittent streams receive surface water flows and are not adequately surrounded by native vegetation, native vegetative grass seed mixes shall be installed. In particular the 30m buffer to the north of the southern valleyland as identified on the site plan shall be seeded as such to attenuate any potential increase in the velocity of surface water runoff as a result of the REGF.

Treatment Technologies:

- All equipment working near the water features should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refuelling, oil changes or lubrication would only be permitted in designated areas located at a minimum 30 m from the watercourses, where sediment erosion control measures and all precautions would be made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow.
- Spill kits would be located on site. The crew would be fully trained on the use of clean-up materials in order to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the project manager would halt the activity and corrective measures would be implemented. Any spills would be immediately reported to the MOEE Spills Action Centre (1-800-268-6060).





Scheduling and Operational Changes:

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

**Environmental Effects Monitoring Plan:** None required.

