The Central Development Corporation (CDC, the Proponent) proposes to commission a seed processing facility to be operated by Natures Crops International (NCI), in Kensington, Prince County, Prince Edward Island (PEI) for the purpose of producing crop oils and other plant extracts. The Central Development Corporation (CDC) is a stakeholder in the Project, acting as lesor of the proposed property and building. The Project requires a provincial environmental impact assessment (EIA) because the construction and operation of the facility is classed as an undertaking under the PEI Environmental Protection Act. The Project also requires a federal screening level environmental assessment under the Canadian Environmental Assessment Act (CEAA) since the various federal agencies are providing Project funding, thereby enabling the Project.

This document has been developed with a focus on the environmental and social issues of greatest concern, known as Valued Environmental Components (VECs). A scoping process was undertaken to identify VECs most appropriate to this Project. The following VECs were selected for the assessment:

- Atmospheric Environment;
- Terrestrial Environment;
- Groundwater; and,
- Land Use

Each of the VECs selected for the assessment was evaluated for potential interactions between the VEC and Project activities during all Project phases (i.e., construction, operation, and decommissioning), including malfunctions and accidents that may occur. These interactions were evaluated for potential significance. The potential for cumulative environmental effects between the Project and other likely or reasonably foreseeable Projects and activities was also evaluated.

Potential project interactions, assessment boundaries, evaluation criteria, environmental effects analysis, and proposed monitoring are presented for each VEC in section 5.0. In general, any potential adverse environmental effects from routine Project activities will be short term, localized, and/or low magnitude. These effects can be effectively managed to acceptable levels through standard industry procedures, and adherence to applicable standards and regulatory guidelines. Therefore, the effects from routine Project construction, operations, and
decommissioning activities are predicted to be not significant for all VECs. Environmental monitoring and follow-up measures are not warranted for this Project.

In conclusion, the Project is not likely to have significant adverse effects on the environment.
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1.0 INTRODUCTION

The Central Development Corporation (CDC, the Proponent) proposes to commission a seed processing facility to be operated by Natures Crops International (NCI). The Central Development Corporation (CDC) is a stakeholder in the Project, acting as lesor of the proposed property and building. The construction and operation of the facility is collectively referred to as “the Project.” Under the Prince Edward Island (PEI) Environmental Protection Act an Environmental Impact Assessment (EIA) is required for the Project. Under the Canadian Environmental Assessment Act (CEAA), a federal screening level environmental assessment (EA) is required.

1.1 Objective of the Report

This document has been prepared by Jacques Whitford Stantec Limited (Stantec) on behalf of the Proponent in support of an EIA under the Environmental Protection Act and a screening level EA under CEAA.

The report predicts and analyzes the potential environmental and social effects of the proposed Project during construction and operation. The evaluation includes proposed mitigation measures, if required, to eliminate or minimize potential significant adverse environmental and social effects arising from Project-related activities. The report is based on background research, interviews with knowledgeable personnel, and professional judgment of the Study Team.

1.2 Project Overview

The Project consists of the construction and operation of a seed processing facility in Kensington, Prince County, PEI. The facility will serve as a year round processing plant for seed oils and other valuable plant extracts. All applicable regulations will be followed for all phases of the Project.

1.3 Description of the Proponent

For the purpose of the proposed Project and associated permitting, CDC is the Proponent. The primary contact information for the Project is provided below:

Mr. Steve Howatt
General Manager, NCI
85 Watts Avenue
Charlottetown PE  C1E 2B7
phone: (902) 894-5490
fax: (902) 894-9594
showatt@naturescrops.com
1.4 Regulatory Review

The Prince Edward Island Environmental Protection Act requires that provincial EIA be conducted for Projects defined as “undertakings”. The PEI Department of Environment, Energy, and Forestry (PEIDEEF) considers this Project to be an undertaking due to the type of facility (i.e., Seed/oil processing) and the amount of seed proposed to be processed.

The Project is subject to a screening level EA under CEAA as various federal agencies (i.e., Atlantic Canada Opportunities Agency (ACOA); Agriculture and Agri-food Canada (AAFC)) are providing funding for the facility. Because the Project does not meet the criteria for exemption described in Schedule 1 of the Exclusion List Regulations, 2007, it is not exempt from the requirements of CEAA. ACOA is the lead Regulatory Authority (RA) on the file, tasked with ensuring that an EA is completed. Public Works and Government Services Canada (PWGSC) is acting as the Federal Environmental Assessment Coordinator (FEAC) on behalf of the Canadian Environmental Assessment (CEA) Agency, for the federal assessment.
2.0 PROJECT DESCRIPTION

2.1 Project Location

The Project will be located on Victoria Street East (Route 6) on Parcel No. 651695 in the Community of Kensington. The property is currently a commercial lot with two vacant buildings and is adjacent to agricultural land, several residences, and a school. The location of the Project is shown on Figure 1, Figure 2 and Drawing 1, Appendix A.

2.2 Project Overview

The conceptual design of the Project is depicted in Drawing 2 in Appendix A. The Project will include the following components:

- Construction of a state-of-the-art seed/plant processing facility;
- Renovations to the existing office and warehouse facility on the property; and,
- Operation of an oil seed processing facility, including:
  - Extraction of oil from seeds using mechanical separation
  - Physical and chemical refining of oil
  - Shipping oil products and seed meal to customers

Crop production and transportation of crops is not being considered in this assessment. The proponent has submitted permit applications to the Canadian Food Inspection Agency (CFIA) for approval to use imported seeds. The PEI Department of Agriculture has been informed of the crops intended for processing at the facility. An assessment of the environmental effects of growing new crops on PEI is beyond the scope of this document.

2.3 Construction

The proposed facility will include the existing building on site, as well as an expansion to the existing building. The expansion of the building will measure approximately 11,500 ft² (approximately 1,068 m²). The building will be steel framed and steel-walled with a concrete slab-on-grade floor. To supply the facility with adequate water and waste water disposal, the Town of Kensington has agreed to connect the municipal water and sewage systems to the property.

At this time the proposed construction activities of the new facility are only at a conceptual stage. However, for the purposes of this assessment the following construction activities may occur:

- Grading;
- Excavation;
- Concrete Pouring;
2.2

- Building Construction;
- Paving; and
- Landscaping.

A Phase I Environmental Site Assessment (ESA) was conducted in 2004 and 2009 on the subject property and found potential for asbestos and lead paint in the existing facility. Any construction activities conducted in these areas will be carried out by certified contractors trained in the safe handling and disposal of hazardous materials.

2.4 Operations

The facility is being designed as a seed processing facility for the extraction of oils and other non-oil components from non-traditional crops to be grown on PEI. These final products will be distributed to clients in the pharmaceutical, cosmetic, and healthcare sectors.

The process flow diagram for oil production is presented in Diagram 1, below.

Generally, oil seed is harvested and brought to site for cleaning and preliminary tempering. Seed is then crushed in an expeller unit, which separates the raw oil and the seed shell (meal). Due to friction in the expeller unit, a small amount of water vapour is released from the seed at this stage (approximately 2% mass loss). The raw oil is sent through a pressurized filtration system where solids are separated and removed. Filtered raw oil is then further processed or shipped; separated solids are packaged for sale or disposal.

The expeller unit is depicted in Diagram 2, below.

Seed meal is a valuable byproduct of the operation. Seed meal will be stored on site in moisture controlled storage units, and finally sold, likely for livestock feed or soil additives, as permitted by CFIA.

Depending on customer requirements, raw oil may be bleached using bentonite clay to absorb colours and other contaminants such as soap, trace metals, sulfur compounds, peroxides, aldehydes, ketones, phosphatides, oxidative trace metals, pesticides, and polycyclic aromatic hydrocarbons. Spent clay is reused or sold as a commodity. Activated carbon, alumina, silicic acid, aluminum and magnesium-silicate, silica gel, and synthetic silicates may also used at this stage to adsorb impurities from the refined oil.

Following the addition of bleaching agents (and depending on customer requirements), the oil/bleach blend is thoroughly mixed, agitated, and heated to approximately 60oC. The mixture is then passed through a pressurized filtration system, which retains bleaching clays and pigments but allows oil to pass. Oil passing through this stage of the process may either be further refined or shipped as final product. Solids (bleach clays) retained from this stage of the process may be packaged for sale or disposal.
Diagram 1. Process Flow Diagram
Diagram 2. Expeller Unit

Following bleaching, most of the oil products will be deodorized using a steam distillation process, in which volatile and odoriferous compounds are removed. The deodorization process removes aldehydes, ketones, peroxides, and free fatty acids (FFAs). Steam is condensed and disposed in the municipal waste water system.

Finished product oil will be stored in tanks with nitrogen gas added to the headspace to prevent oxidation of the oil. The facility will use approximately 15,000 L of liquid nitrogen per week to stabilize the oil product. Liquid nitrogen will be transferred to the facility by a licensed supplier and stored and used according to applicable regulations.

Depending on customer demands and specifications, the facility will be washed between production runs using water, a caustic agent, and hydrochloric acid. The proponent estimates that the facility will require approximately 6,000 USG (22,680 L) of water per week, with 300 USG (1,134 L) of diluted caustic and acid solution each, per week. Caustic and acid solutions will be purchased and applied according to applicable regulations. Wastewater, as well as caustic and acid solution, will be discharged to the municipal sewer system as required. The Town of Kensington, which operates the sewer system, is aware of the waste water requirements of the facility.
At maximum capacity, the facility will process approximately 140 tonnes (t) of crop seed per week. This quantity of oil seed will be transported to the facility via truck. The facility will require five truck loads of seed stock per week to operate at this capacity. At this production rate, the facility will use (weekly) 4,800 lbs of steam, 300 USG (1,135 L) of caustics, 300 USG (1,135 L) of hydrochloric acid, and 6,000 USG (22,680 L) of water, as well as electricity and fuel oil as a source of energy.

The facility will be operated primarily through the use of electric motors to provide power to augers and processing equipment. The proponent estimates that the facility will require 18 (eighteen) 3 kW electric motors, which each produce approximately 90 dB of noise, and one air compressor, which produces approximately 105 dB of noise.

A small volume of petroleum products will be kept on site for machinery maintenance. No other petroleum products are expected to be required by the facility during normal operations. As well, acid and caustic products will be used on site. All hazardous materials will be stored, used, and disposed of according to applicable regulations. A WHMIS program will be implemented by the proponent.

The proponent anticipates that approximately 50% of the feed stock will be produced within 25 km of the site, with another 25% (approximately) of the feed stock produced within 10 km of the site. The remaining 25% of the required feed stock will be produced across the province. Occasionally, seed will be brought into the facility from out of province or out of country, as permitted by CFIA.

At maximum capacity production, the facility will produce approximately 28 t of specialty oil, 6,600 USG (25,000 L) of waste water, 112 t of seed meal, 150 lbs (68 kg) of waste oil, and off gasses, including 15,000 L of liquid nitrogen and 5,236 lbs (2,380 kg) of vapor, per week.

Finished product will be shipped off site via transfer trucks. The facility will ship approximately five tanker truck loads out as finished product each week.

The facility will use fuel oil for facility heating as required. One existing underground fuel storage tank is currently on site to service the facility. Pending expansion plans, a second fuel storage tank may be installed on site, by a licensed operator according to applicable regulations.

2.5 Decommissioning

It is anticipated that the venue will be operational for at least the next 25 years. Decommissioning activities will be conducted in accordance with the legislation, standards, and guidelines applicable at that time. Because decommissioning is not anticipated in the near future, this phase of the Project is not being assessed at this time.
2.6 Project Schedule

Following regulatory approval, the Proponent will commence retrofitting and expanding the existing warehouse and office space to accommodate the oil extraction facility as early as late fall 2009. Construction activities are expected to last on the order of six (6) months. It is expected that the first commercial processing of oil seed will take place in the summer of 2010. The volume of product will increase as the facility becomes efficient at producing oil from a variety of seed crops and as regional economics dictates demand for high quality oil products.

2.7 Agricultural Crop Overview

2.7.1 Crambe

Crambe is an erect, annual broadleaf that is closely related to other brassicas and believed to be a native of the Mediterranean area. It has been grown throughout parts of North America over the past 20 years. Plant height generally varies between 0.5 m and 1.5 m, depending on the season and the plant density.

Crambe is well suited to all soil types, but prefers well-drained soils (or good surface drainage on soils with poor internal drainage), and fertile soils of moderately coarse to fine texture with a pH of 5.5 to 7.0 or slightly higher. It is suited to well-drained heavy clays where in some cases it has been seen to improve soil structure due to its deep taproot that can reach depths of 15 – 20 cm. It is also very well suited to light soils as it is exceptionally drought tolerant, particularly later in the season.

Crambe can be sown using conventional sowing equipment and usually takes approximately seven days to emerge. Crambe does not require significant fertilizer applications. Recommendations are generally around 55 to 70 kg/ha of nitrogen, and on many fields, crambe will respond to applications of as low as 16-22 kg/ha P2O5 and 5-11 kg/ha K2O.

Crambe should not follow on from other closely related crops such as canola in the crop rotation. Crambe after cereals, legumes, or fallow, provides a break in pest cycles and allows optimum use of the soil. Cereals have performed well following crambe and the crop has been shown to improve the soil structure, particularly on heavy clays, a benefit to all following crops. Crambe stubble provides cover for controlling erosion and establishing autumn-sown crops in minimum tillage systems. Volunteer Crambe is easily managed in succeeding crops using tillage and/or herbicides.

As with most crops, weed control is a critical management factor. Crambe is a good competitor, and can be grown without herbicides, however one application of herbicide is often used in weedy fields. Trifluralin is an option for pre-emergent weed control. Crambe is related to mustard and as such it tolerates insect pests more than most crops – therefore insecticide applications are not required. Few disease problems have been observed in crambe. Alternaria
is seen as black speckling on the hull and can infect the seed causing a subsequent reduction in germination and vigor, and may affect yield. The disease is most common during warm, wet weather from flowering to pod set. *Sclerotinia* has occasionally been seen in Crambe. Generally, fungicide applications are not required.

Harvesting crambe is straightforward; the early harvest enables crops to be cut when moistures are relatively low. Method of harvest (swathing – pickup head, or direct combine) depends on area, available harvest equipment, weather conditions, uniformity of maturity, and crop cleanliness.

### 2.7.2 Industrial Hemp

*Industrial hemp* (*Cannabis sativa*) is a tall (1.5 - 4 m) annual plant grown for grain and fibre. In well-structured soils, the plant can produce a 15 to 30 cm tap root. In compacted or poorly drained soils, the plant produces more lateral fibrous roots. The outer portion of the industrial hemp stem contains strong and long fibres which provide the strength and quality attributed to the crop. The inner portion of the stem contains the hurd, which is used for paper and building materials. The grain contains an edible oil used for cosmetics and cooking. The oil is low in saturated fats and contains a mixture of omega-6 and omega-3 fatty acids, as well as gamma linolenic acid (GLA), a nutraceutical compound.

In Canada, hemp was outlawed in 1937 under the Narcotics Control Act. However, industrial hemp varieties with low levels of delta-9 tetrahydrocannabinol (THC) have since been developed, and in March of 1998 the ban was lifted, permitting the production of industrial hemp under license. Industrial hemp regulations are administered by Health Canada. Persons carrying out any activity involving industrial hemp must be licensed. Approximately 9,700 ha of industrial hemp were grown in Canada in 2005. Almost all of the industrial hemp produced in Canada is for the seed market. NCI currently has all required permits and licenses for production and processing of industrial hemp.

Industrial hemp does well in a variety of soil types, but does not tolerate drought, flooding or saturated soils. It is tolerant of light spring frosts. In general, industrial hemp is best suited to areas with moderate rainfall and good soil fertility. Maturity varies from 80 to 120 days depending on variety and date of seeding. Industrial hemp should be seeded between May 1 and May 31, with May 15 being the optimum seeding date.

Research data on soil fertility is limited. Results indicate that industrial hemp may require total nutrient levels (field plus fertilizer nutrients) similar to a high yielding wheat crop. There are no herbicides registered for use in industrial hemp in Canada, although weed control is generally not necessary.
There are no fungicides registered for use in industrial hemp. Common seedling root rots and leaf spot diseases are likely to kill some industrial hemp seedlings, especially in years with excess precipitation. Experience with industrial hemp production indicates Sclerotinia (Sclerotinia sclerotiorum) stem and root rot can be a significant problem. Producers should avoid a close crop rotation of industrial hemp with other crops susceptible to sclerotinia, such as canola, and soybean. Botrytis (Botrytis cinerea) grey mold can infect industrial hemp flowers and seed development if high moisture conditions persist during flowering.

There are no insecticides registered for use in industrial hemp. Cutworms and European corn borer have been reported on industrial hemp. Sucking insects such as aphids, stink bugs and lygus plant bugs have been known to feed on industrial hemp. They can cause yield reduction and can be disease vectors. However, no serious infestations of sucking insects on industrial hemp have been reported in Eastern Canada.

2.7.3 Sunflower

The sunflower (Helianthus annuus) is an annual plant native to the Americas in the family Asteraceae. The crop originated in subtropical and temperate zones of the Americas, but through selective breeding has been made highly adaptable, especially to warm, temperate regions. Sunflowers have deep tap roots that can obtain water and nutrients 5 to 6 feet (1.5 to 1.8 metres) deep in the soil. Commercially-grown hybrids are generally about 6.5 feet (2 m) tall with a flower head of approximately 12 inches (30 cm) in diameter. A strong taproot makes sunflowers more drought tolerant than other crops.

Sunflower is adapted to a variety of soil conditions, but grows best on well-drained, high water-holding capacity soils with a near neutral pH (pH 6.5-7.5). Sunflower seeds are planted in the spring when soil temperatures are at least 50°F (10°C). Sunflower seeding should begin anytime after May 1 and ideally be finished by June 1. Oil-type sunflower populations range from 20,000 - 22,000 plants per acre (0.6 plants per ft²) but confection-type sunflowers should not exceed 18,000 plants per acre (0.4 plants per ft²) to ensure large seed size. The crop grows very rapidly and some hybrids are ready for harvest after only 90 days.

Fertilizers containing nitrogen, phosphate and potassium should be side-banded to the sunflower row at planting. If soil analysis is not available, a general recommendation is as follows: nitrogen – 75 kg/ha; P2O5 – 40 kg/ha; K2O – 30 kg/ha. In sunflowers, weeds can be controlled by using pre-emergent herbicides, harrowing before crop emergence, inter-row cultivation when the crop is in the 5 to 6 leaf stage and post-emergent herbicides.

Insect control is seldom required. Many disease-causing fungi and bacteria have co-evolved with sunflower. So far, at least 30 diseases have been identified on sunflower, but only a few are of economic significance. Therefore, crop rotation when growing sunflowers is very important. Sunflowers are very susceptible to Sclerotinia as are canola and beans. Rotation
length away from sunflower is influenced by the occurrence and severity of diseases noted in the current year.

2.7.4 Borage

Borage (Borago officinalis) is a member of the Boraginaceae family. There are some 41 genera in this family which includes other well-known species such as Comfrey and Forget-me-not. Borage originated in the Mediterranean/Middle East region of the world. It has since been grown in most areas of Europe and in North America. It is an annual plant that grows to about 0.75 to 1.0 m high.

Borage is a spring sown annual plant. It takes approximately 85 days from planting to reach maturity, depending on the season. Borage will grow under a wide range of climates, soil types and soil acidity but the best oil quality comes from those crops grown in the more temperate climatic regions of the world. Commercial crops of Borage perform best on free draining, well structured, medium loam soil types.

Borage is planted in mid-May in flat beds with a soil pH between 6.0 and 8.0. Fertilizers may be required if soils are deficient and may include nitrogen, phosphate, potassium, sulphur and magnesium and trace elements. Borage is easily killed in most other crops by herbicides.

Borage can be susceptible to several diseases, which are powdery mildew, sclerotinia, botrytis, ramularia, stemphylium. The likelihood of infection and the severity will depend of local climatic conditions. Sclerotinia, Botrytis and mildew are all common plant diseases which can infect a wide range of crops and other plants. They are all present in the region already. The only pest known to cause economic damage to a Borage crop is the caterpillar of the Painted Lady Butterfly.

2.7.5 Calendula

Calendula (Calendula officinalis) is a biennial, although generally cultivated as an annual plant. Calendula is believed to have originated in the Mediterranean, but is well adapted to temperate climatic zones.

Calendula is a temperate climate zone crop with a restricted water and nutrient requirement. It is best grown in soil that is relatively free of weeds, has good soil moisture properties, is sufficiently fertile and comprises sandy-loam to heavy clay. In a four year rotation, calendula would be best suited to grow before a cereal to replace another broad leaved crop. Calendula is sown in spring, usually early to mid-April. Harvest varies from early to mid-August.

The need for fertilisation depends on the nutrient status of the soil and the fields previous cropping history. General advice for fertilisation, which can be adjusted for local conditions, is as
follows: nitrogen (N): 50-100 kg/ha; phosphate (P2O5): 25-75 kg/ha; and potassium (K2O): 50-100 kg/ha.

There are few pests known to affect Calendula. Aphids have been reported occasionally. Diseases known to affect Calendula include *Sclerotinia* and *Botrytis* which occurs under wet and humid conditions. Mildew could possibly develop at the end of the growing season, depending on weather conditions. Although some Calendula seeds may be shed before or during harvest there is no evidence to suggest that Calendula will become a weed crop in other commercial crops.

### 2.7.6 Field Gromwell

Field Gromwell (*Buglossoides arvensis*) is a hardy annual or biennial herb, native to southern and western Europe and introduced into other countries around the world. In nature, this species is widely distributed in northern climates and it is being developed as a crop.

Relatively little is known about the optimum agronomic practices for production of Field Gromwell. Field Gromwell has a tap root and is therefore quite tolerant of drought. For best yields good well structured soils would be necessary to achieve high yields. Field Gromwell performs best when grown on a well-structured light to medium loams. Lighter sands or heavy clays will significantly reduce output and should be avoided. The wide distribution of this plant suggests that it can be grown on most arable farm soils.

Temperature is a very important factor in germination. Seeding date should be as early as possible in the spring, well before soil temperatures have reached 10°C - when sown in soils above 7 degrees C germination is poor. Field Gromwell seed is a slow germinator and can take several weeks to emerge.

Given the relatively low biomass to seed yield of the crop, Nitrogen levels of around 80 kg/ha would be expected to be about optimum. If soil fertility levels are low, then the crop should get maintenance applications of P205 and K20 of approximately 60 kg/ha.

No herbicides, insecticides or fungicides are registered for use in Field Gromwell. Diseases that could possibly infect Field Gromwell include powdery mildew, Botrytis and Sclerotinia. All three are common plant diseases which can infect a wide range of crops and other plants. They are all present in the region already. The crop will mature naturally and can be harvested by direct cutting with a combine approximately 100 days after planting. Seed takes quite a bit of threshing to remove it from the plant.

### 2.7.7 Rapeseed

Rapeseed (*Brassica napus*) — also known as, rape, oilseed rape, and in some cultivars, Canola—is a bright yellow flowering member of the Brassicaceae family (mustard or cabbage
family). Canola and rapeseed are oilseed crops which have been grown for hundreds of years in Europe and Asia. Rapeseed is grown primarily for its seed which yields about forty percent oil and a high-protein animal feed.

Rapeseed also can be a beneficial rotational or winter cover crop. It produces a large amount of biomass and its deep taproot system can help alleviate soil compaction and improve soil tilth. Often rapeseed will follow a winter or spring cereal in rotation.

Rapeseed can be grown on most soil types. Rapeseed has similar moisture requirements as those of cereal grains and can be grown on a wide range of soil types. It is best suited to clay-loam soils that do not crust. Rapeseed is less tolerant of drought than small grain crops.

Rapeseed can be planted with a variety of seeding equipment. Using a drill that is able to seed shallowly is important. The optimum depth to seed rapeseed is 1-2cm. Seeding depth should not exceed an inch with small-seeded rapeseed varieties Nitrogen (N), phosphorus (P) and potassium (K) requirements of rapeseed and mustard are similar to those of small grains.

A uniform stand of a competitive rapeseed variety is the best weed control tool. Rapeseed is not very competitive early, but becomes more competitive as it approaches the late rosette and bolting stage. The competitive ability of many rapeseed varieties may allow a grower to reduce costs by spraying only once or in some cases not at all. In general, insect pests have not been a major problem on rapeseed in Pennsylvania. Insects that are attracted to other crucifers are sometimes pests, but usually do not affect yield. A healthy stand of rapeseed generally has good disease resistance. Black leg disease and white mold caused by Sclerotinia cause the most problems. These two fungal diseases are the primary reasons for allowing three to four years to elapse before replanting rapeseed in the same field.

2.7.8 Meadowfoam

Meadowfoam (Limnanthes alba), a low growing winter annual native to northern California and Southern Oregon, was domesticated at Oregon State University. Currently, most of North America’s meadowfoam is produced in the Willamette valley of Oregon. However, this production is insufficient to meet the demands of chemical and cosmetic industry.

Meadowfoam is an erect annual herb with one or more branches arising from the base and grows to a height of 10 to 18 in. It has a shallow fibrous root system that allows for easy transplanting at any stage of growth. Meadowfoam requires insect pollination to set seed. Cool, wet, or windy weather during flowering limits the activity of pollinators and therefore reduces the number of fertilized flowers.

Meadowfoam is known to grow well in many types of soil including poorly drained areas. Meadowfoam grows well on most soil types, however sandy soils with low water holding capacity are less favorable under dry conditions. Meadowfoam has a very low tolerance to
water stress and therefore is well adapted to the cool wet climates. Soil pH should range between 5.5 and 6.0, with fertilizer requirements of 40 to 60 kg N/ha, 20 kg P2O5 / ha, and 30 kg K2O/ha. Excess fertilization which promotes lush vegetative growth may create conditions favorable for diseases.

Meadowfoam is very susceptible to *Botrytis cinerea* which is encouraged by high nitrogen application and dense plant populations. Presence of *Sclerotinia* has also been reported to reduce yield. There are no known insect pests of Meadowfoam.

Harvesting presents a problem in Meadowfoam agriculture due to the shortness of the crop and potential for excessive seed shatter. Time of harvest is also critical, best yields being obtained by harvesting one week before maturity. Normal commercial technique is to swathe when 90% of seeds are mature and plant stems are greenish-yellow in colour and still pliable. Swathing in the early morning helps to reduce shatter. The windrow is combined 7 to 10 days later when the moisture content of seed is 12 to 16%.

### 2.7.9 Cuphea

At this time, the CFIA is reviewing the status of Cuphea as a crop in Canada. The crop is currently being evaluated under the Pest Risk Assessment and Invasiveness programs. NCI is not producing any commercial cuphea, and will not until full approval to produce the crop in Canada is granted by CFIA. NCI is proposing to grow a hybrid of *Cuphea viscosissima Jacq.* x *C. lanceolata* W.T. Aiton accession name of PSR 23. Many species from the genus *Cuphea* (Lythraceae) have potential as sources of medium chain triglycerides. These plants are native to the New World, from Southern U.S. to Northern South America. Most are herbaceous annuals that will grow in many locations.

Cuphea should be grown on medium textured soils with moderate to good drainage and a pH range of about 6 to 7.9. Recommended planting time is early-May. Soils that are too wet and cold can lead to poor stand establishment. Soil temperature at planting should be 10 degrees Celsius or greater. The recommended harvest time for Cuphea is mid-September through early-October. Cuphea continues growing until killed by a hard frost, although physiological maturity is about 100 to 110 days.

Cuphea seed is rich in sulfur and potassium. Therefore, it is recommended for most soils that 40 lbs/acre of potassium sulfate or 0-0-20-7 be applied, preferably by banding, along with 200 lbs/acre di-ammonium phosphate or 39-92-0, and 100 lbs/acre of urea or 46-0-0.

Broadleaf weed control is a problem in Cuphea. There has been a report that this species has been infected by *Sclerotinia* in Western Illinois, USA. No other diseases have been reported to date.
2.7.10 Other Future Crops

The proponent is not excluding the possibility for crop production and processing of other crops, subject to CFIA regulations as required.

The acreage of any potential crops would be on a relatively small scale (100s of acres), depending on final product demand.
3.0 EXISTING ENVIRONMENT

3.1 Atmospheric Environment

Local road traffic and agricultural emissions are the predominant sources of air pollution in the Kensington area. The region surrounding the site includes residential dwellings and agricultural fields. Nearby areas (i.e., within 5 km of site) include residential and commercial developments, and agricultural areas. In general, the air quality in the area of the proposed Project is expected to meet the desired criteria (i.e., Air Quality Health Index, as administered by PEIDEEF and Environment Canada) most of the time as steady wind patterns tend to disperse most pollutants released into the region at most times of the year. In most cases, climate conditions provide good dispersion of contaminants in the air while frequent rainfall further scavenges contaminants from the air. Occasionally, air masses from central Canada or the eastern seaboard to the south may transport contaminants into the area, causing poorer air quality. At other times, the weather is dominated by high-pressure air masses that produce low wind speed and poor dispersion of local emissions, which can lead to elevated concentrations of air contaminants and reduced air quality. The most recent (2005-2006) National Air Pollution Summary (NAPS) administered by Environment Canada, has no data for Wellington, Charlottetown, or Cardigan PEI.

The weather station with a historical record that is located closest to the Project site is Summerside. Annual climate normals for the site include a mean annual temperature of 5.6°C (standard deviation of 2.3°C) and mean annual precipitation of 1,078 mm (Environment Canada, 2009).

To the knowledge of the Study Team, noise monitoring has not been conducted at the site. Ambient noise levels at the site are the result of road traffic and agricultural activities.

The term atmospheric environment also includes airborne odours. Odour can result from a variety of natural and unnatural processes, including watercourse fouling, agricultural activities, and industrial facilities. Near the site, there is potential for unpleasant odours originating from intensive livestock operations in the area, and from nearby potato processing operations in New Annan; however no ongoing odour problems exist. The duration and frequency of objectionable odour events in the area are limited.

3.2 Terrestrial Environment

At present, the proposed location of the Project is a paved and gravel lot with two commercial buildings and no significant natural features on site. The property of the proposed Project is adjacent to several residences, agricultural land, and a school. An aerial photo of the site is presented in Figure 2.
Based on available geological maps the overburden soils at the site consist of glacial till deposits, principally comprised of coarse loamy soil (sand, silt and clay). These soils are moderately permeable.

Based on available bedrock geology maps, bedrock in the area consists of Lower Permian red beds (conglomerate, sandstone, and siltstone) of the Pictou Group.

Approximately 20% of the site is covered in impermeable surfaces (i.e. asphalt), with the remainder of the site covered in gravel. A septic system is located on site to the northeast of the garage structure.

Considering the previous use of the site (i.e., commercial truck facility) it is highly unlikely that any rare species would be present on site, or that critical or even suitable habitat would be present on the site.

Considering the neighbouring properties at the site (i.e., agricultural, institutional, and residential), it is also highly unlikely that any rare species would be present, or that critical or suitable habitat would be present on neighbouring properties.

PEI offers a variety of staging and nesting areas for migratory birds. However, the nature of the existing site is such that the majority of migratory birds would not likely stage or nest on the site.

There are no wetlands or watercourses on the property. The nearest watercourse is a small stream located on PID 72789, approximately 330 m east of the Project site.

Most agricultural land in PEI is used in a three or four year crop rotation, consisting of a potato-grain-forage cycle (occasionally including one year of fallow land). Most grain crops grown on PEI offer relatively poor returns (e.g., $140/tonne for wheat) and require substantial fertilizer, herbicide, and fungicide applications. Most grain crops planted on PEI are planted in spring after potato fields have been plowed in the previous fall.

3.3 Groundwater

The Project site is currently serviced by an on-site well. Surrounding properties are serviced by private wells and the Town of Kensington municipal water supply. There is one groundwater well on-site. It is expected (based on site topography) that groundwater flows northeast at an average gradient of approximately four percent. There are five groundwater monitoring wells on the property.

The subject property is located on the draw-down cone of groundwater for a portion of the Town of Kensington’s public water supply.
The new facility will be connected to the municipal water supply as a condition of the Project being situated in Kensington.

Groundwater in PEI is affected by nitrate loading due in part to agricultural fertilizer application. Groundwater in the Kensington-Summerside-Borden area of PEI has been shown to contain elevated nitrate concentrations. This area is also associated with high percentages of potato agriculture. Nitrate levels in groundwater analyzed for the Commission on Nitrates in Groundwater in 2007 and 2008 indicate nitrate impacted groundwater in these areas of PEI, with nitrate levels averaging over 5 mg/L in water samples (Commission on Nitrates in Groundwater, 2008).

3.4 Land Use

Prior to 1958, the site was vacant or used as farmland. From at least 1974 through 2004, the site was classed as a commercial site, used by various trucking companies. The site has been vacant since 2004.

Neighbouring properties include residential dwellings to the south and southwest, commercial property (a commercial barn) to the east, vacant or agricultural land to the north, and recreational facilities (ball diamond, tennis courts) associated with an intermediate/high school to the west of the site. Although not directly attached to the site, Kensington Intermediate High School is located within 500 m of the subject Property.

A portion of the Town of Kensington’s water supply is pumped from two production wells located approximately 100 m northwest of the subject site (Jacques Whitford, 2005). The production wells have a draw-down zone radius of approximately 140 m, meaning the subject site is situated on the draw-down zone for a portion of the town water supply.

There is a grain elevator (Grain Elevator No. 1) located within 5 km of the proposed site. The elevator is operated by the PEI Grain Elevators Corporation. The elevator handles the following crops: barley, milling wheat, feed wheat, oats, corn, livestock minerals, 48% meal, and soybeans (PEI Grain Elevators Corporation, 2009).

The Town of Kensington, situated between Summerside and Charlottetown, has historically acted as an important hub for agriculture for residents of central PEI (Town of Kensington, 2009). Generally, agriculture in the area is focused on potatoes using a three-year crop rotation cycle. Following a season of potatoes (i.e., year one) in a given field, potato fields are plowed in the fall and left exposed during the winter and spring. Grain crops are sown with a mix of forage crops in the spring of year two. Grain out-competes forage and is harvested during year two of the cycle. The underseeded forage crop is left to be harvested in year three of the cycle. This three-year crop rotation is generally followed by farms on PEI with exceptions. Exceptions may include the following practices: delaying fall plowing until spring; overseeding potato fields with
rye prior to harvest to promote ground cover following harvest; two years of forage crop instead of one; legume crops in place of grain. Market and pest conditions may determine the select rotation in any given field.
4.0 ENVIRONMENTAL ASSESSMENT METHODOLOGY

The assessment of potential environmental effects resulting from Project-related activities has been carried out in accordance with CEAA, using a methodology framework developed on the basis of current accepted practice, and the professional experience of the Study Team. This assessment considers the potential environmental effects of physical works and activities, including environmental changes that may result from the proposed undertaking. This approach has satisfied requirements for environmental impact assessment under the provincial Environmental Protection Act in the past, so long as public consultation is also conducted as part of the assessment.

The methodology for the assessment of the Project has been developed to satisfy regulatory requirements of a screening level assessment under CEAA.

The steps followed for the assessment include:

- Identifying the issues through scoping and select Valued Environmental Components (VECs) on which to focus the assessment;
- Identifying environmental effects of Project activities, by Project phase, including those resulting from the interaction of the Project with the environmental effects identified for past, present, and future Projects that will be carried out, and also the changes to the Project caused by the environment;
- Evaluating environmental effects, including cumulative environmental effects, using the significance criteria identified in the Canadian Environmental Assessment Agency (“the Agency”) guidance documentation (CEAA, 1994) in light of proposed mitigation;
- Identifying positive effects, analyze adverse environmental effects and determining their significance; and,
- Outlining monitoring and follow-up measures, as required.

As a requirement of the provincial EIA process, planning for a public consultation program has commenced.

The screening methodology for this Project includes an evaluation of the potential environmental effects, including cumulative environmental effects, with regard to VECs. VECs are components of the environment that are valued by society, and upon which the assessment is focused. Project-related effects are assessed within the context of temporal and spatial boundaries established for the assessment. The evaluation of potential cumulative environmental effects with regards to other Projects and activities generally include past, present, and future activities that will be carried out and will interact temporarily or spatially with the proposed Project.
4.1 Issues Scoping

Issues scoping is a critical step in the assessment process that ensures all existing conditions, potential Project-environment interactions and potential environmental effects, including cumulative environmental effects, are taken into consideration. This scoping process included:

- Consultation with the Proponent;
- Overview of environmental context and potential interaction with the Project;
- Review of existing available information;
- Consultation with the PEIDEEF, PEI Dept. of Agriculture, Agriculture Canada, ACOA and PWGSC;
- Professional judgment of the Study Team.

4.2 Valued Environmental Components (VECs)

The selection of VECs was based on input received and the professional judgment of the Study Team, and was designed to reflect the nature of the issues and concerns raised during scoping. The following VECs were screened for potential interaction with Project Activities:

- Atmospheric Environment;
- Terrestrial Environment;
- Groundwater; and,
- Land Use.

The nearest seasonal aquatic receptor is a season drainage area located in a completely plowed and un-buffered agricultural field approximately 60 m west of the subject property and the nearest permanent aquatic receptor is approximately 400 m to the west. Therefore, considering the location of the seasonal (i.e., un-buffered agricultural field) and permanent aquatic receptors to the property boundaries and construction and operational activities associated with the Project will be confined to the property the aquatic environment has not been included in this assessment.

CFIA and PEI Department of Agriculture have been involved in the assessment of the crops proposed to be grown on an agricultural scale on PEI. Between the CFIA and PEI Department of Agriculture, the risks associated with pests and volunteers have been assessed. A letter from the Department of Agriculture is included in Appendix C. The proponent is committed and bound to governance of CFIA regarding the importing of seed for agricultural scale production. Since CFIA and PEI Department of Agriculture have conducted agricultural assessments on crops to be grown for processing at the facility, the agricultural component of the project has not been included in this environmental assessment; however, a consideration of cumulative effects associated with agricultural production of the proposed crops is presented in Section 5.7.
In order to focus the EA, the potential for interaction between each VEC and key Project activities were evaluated (see Section 5.0). The rationale for each ranking is provided in Section 5.0. VECs that were deemed to have potential for a significant interaction with one or more Project activities are carried forward in the assessment for identification of mitigation measures and analysis of residual environmental effects, as required.

4.3 Environmental Assessment Methods

The potential environmental effects, as defined under Section 2(1) of CEAA, of physical works and activities, including cumulative environmental effects, on the chosen VECs, are assessed in Section 5.0. This definition is being used in this assessment to meet the needs of the federal and provincial assessment processes. The objective is to determine the significance of potential residual adverse environmental effects. The term “residual” is used to describe environmental effects that remain after specific mitigation.

Cumulative environmental effects recognize that the environmental effects of individual human activities and natural processes can combine and interact with each other to cause aggregate effects that may be different in nature or extent from the effects of individual activities. These can occur when environmental effects of the Project on natural and economic environments take place so frequently that the effects cannot be assimilated. As noted above, the cumulative environmental effects associated with the agricultural component of the project are being assessed and presented in this document.

In making the assessments, a rigorous sequence of steps is followed that ensures a logical and comprehensive evaluation of potential environmental effects. The sequence of steps followed for the assessment of each VEC in Section 5.0 involves:

- Identifying the existing environment (Section 3.0);
- Outlining the rationale for the selection of the VEC and defining what it encompasses (Section 4.0);
- Determining relevant assessment boundaries (Section 4.0);
- Describing residual environmental effects rating criteria used to determine the significance of environmental effects, as required;
- Analyzing and predicting potential residual environmental effects, including cumulative environmental effects, and determining significance if required; and,
- Summarizing the environmental effects analysis (Section 6.0).

VEC selection for this Project included atmospheric, and terrestrial environments, as well as groundwater, due to the intrinsic value of these components in the health of humans, wildlife (flora and fauna) and other biota, and potential pathways for environmental effects on these VECs. Species at risk are included in consideration of potential effects on terrestrial environments.
The spatial boundary for the assessment of the atmospheric environment is the distance over which Project-related emissions might match or exceed regular air quality levels in the region. Spatial boundaries for the assessment of Project environmental effects on terrestrial and groundwater resources include the Project site and the geographical extent of the influence of the Project on those environments. Temporal boundaries for the assessment include the times over which Project-related activities have the potential to degrade air, soil, and water quality.

Socio-economic VECs were also included in this assessment. Land use was selected as VECs due to its intrinsic value in preservation of culture, economics, and traditional ways of life.
5.0 ENVIRONMENTAL ASSESSMENT

To assist in identifying the VECs of importance in this assessment, the key potential interactions between the Project and the receiving environment were considered. Interactions between key Project activities and the environment were ranked according to the potential of an activity to interact with one or more of the VECs (Table 5.1). Project activities at each phase (construction and operation), as well as malfunction, accidents, and unplanned events, were considered. Ranking was assigned as follows:

- 0 = not significant;
- 1 = interaction occurs; however based on past experience and professional judgment, the interaction would not result in a significant environmental effect, even without mitigation; or interaction would not be significant due to application of codified practices; and
- 2 = interaction could result in an environmental effect of concern; the potential environmental effects are considered further in the assessment.

The rationale for each ranking and the discussion of potential Project-related effects is discussed further in this section.

5.1 Boundaries

Temporal and spatial boundaries are defined by the characteristics of the Project and the VECs. These boundaries encompass those periods and areas within which the VECs are likely to interact with or be influenced by the Project. These boundaries may extend beyond the physical limits of the Project.

The boundaries have been categorized as described below.

- Project Development Area (Processing Facility Site): the area in which the Project will occur. The northern and eastern boundaries are agricultural fields; the western boundary is a combination of residences and a softball diamond; and the southern boundary is Route 6 (refer to Drawing 1).

- Local Assessment Area: the area within which project-specific environmental effects can be predicted or measured with a reasonable degree of accuracy; this boundary is generally defined by a 1 km radius surrounding the Project area for most VECs.

- Regional Assessment Area: the area within which cumulative environmental effects are assessed. For the assessment of cumulative environmental effects, which assesses potential interaction with agriculture, the boundary is the provincial boundary.
5.2 Residual Environmental Effects Rating Criteria

A significant residual adverse environmental effect on the atmospheric environment is one that results in an exceedance of the regulated limits of the PEIDEEF on a sustained or frequent basis; or frequent or prolonged noise levels resulting in disturbance to nearby sensitive receptors (i.e., neighbouring residences).

A significant residual adverse environmental effect on the terrestrial environment is one that affects plants or wildlife (e.g., direct mortality, change in migratory patterns, habitat avoidance, etc.) or plant or wildlife habitat (loss or change) in such a way as to cause a decline in abundance or change in distribution such that the likelihood of the long-term survival of these species may be reduced within the assessment area and natural recruitment may not re-establish the population(s) to its original level.

A significant residual adverse environmental effect on groundwater resources is defined as a Project-related environmental effect that degrades the quality of groundwater resources by exceeding the maximum acceptable concentrations of one or more parameters as specified in the Guidelines for Canadian Drinking Water Quality (GCDWQ) for potable domestic water supplies (Health Canada, 2008) for a period of more than 30 consecutive days. In the event that concentrations of a parameter currently exceed the GCDWQ, any Project-related increase in the parameter concentration is considered significant. A Project-related environmental effect that reduces the quantity of groundwater that is recoverable from the aquifer on a sustainable basis to meet present and future needs of current users is also considered significant.

A significant residual adverse environmental effect on land use is one where Project activities will result in environmental effects on the land such that the existing land use activities cannot continue at current levels for extended periods of time and cannot be compensated for.
### Table 5.1 Interaction of the Project with the Environment

<table>
<thead>
<tr>
<th>Project Phase/Activity</th>
<th>Activity Description</th>
<th>Atmospheric Environment</th>
<th>Terrestrial Environment</th>
<th>Groundwater Resources</th>
<th>Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation of Facilities (Terrestrial)</td>
<td>• Building retrofit&lt;br&gt; • Building expansion&lt;br&gt; • Seed Container/Silo construction</td>
<td>1 1 1 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Oil seed delivery + storage&lt;br&gt; • Oil seed processing + storage&lt;br&gt; • Meal storage&lt;br&gt; • Finished goods shipping</td>
<td>1 1 0 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accidents, Malfunctions and Unplanned Events</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spills or machinery-related accidents</td>
<td>• Hazardous materials release&lt;br&gt; • Equipment loss or malfunction</td>
<td>1 1 1 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Potential for Cumulative Environmental Effects with Likely or Foreseeable Projects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>• Agricultural activities in the area including three-year crop rotation (potato-grain-forage).</td>
<td>x ✓  x ✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- 0 = interaction not significant
- 1 = interaction occurs; however based on past experience and professional judgment, the interaction would not result in a significant environmental effect even without mitigation; or interaction would not be significant due to the application of codified practices.
- 2 = interaction could result in an environmental effect of concern; the potential environmental effects are considered further in the assessment.
- ✓ = potential interaction between probable future projects or events and project.
- x = no interaction between probable future projects or events and project.
5.3 Atmospheric Environment

Potential environmental effects on the atmospheric environment stem primarily from construction activities and facility emissions during operation.

Emission of particulate matter, combustion gases, and greenhouse gases will be generated through normal operation of construction vehicles (i.e., delivery trucks, dump trucks, excavators, paving equipment, rollers). Emissions will also result from workers traveling to and from site in personal vehicles. Vehicular emissions are expected to be nominal compared with the previous enterprise associated with the facility (i.e., a truck repair shop).

Renovations to the existing facility, and construction of the expansion, may result in intermittent, short-term increases in ambient noise levels surrounding the property, due to operation of heavy equipment and noise generated directly from construction activities. Noise generated by Project construction may temporarily exceed ambient levels. To mitigate against this potential effect, all construction activities will abide by the Town of Kensington bylaws regarding nuisances (Town of Kensington, 2009).

Emissions created due to the operation of the facility are only associated with the burning of fossil fuels for heating the building and therefore would be considered standard emissions. In addition, emission of particulate matter, combustion gases, and greenhouse gases will be generated through the normal operation of the facility due to the import/export of the seed/oils. Vehicular emissions are expected to be nominal compared with the previous enterprise associated with the facility (i.e., a truck repair shop).

During operation, noise will be generated from trucks entering and exiting the facility, and from motors and compressors inside the facility. Compared to the previous operation at this property, project related truck traffic will be reduced. Project engineers estimate that the noise generated from inside the facility will be on the order of 80-90 dB, and will be significantly damped at neighbouring locations. If operational noise is deemed to be a nuisance, the proponent is committed to installing the necessary sound insulation at the facility.

The Project is not scheduled for decommissioning, but will follow all applicable regulations, guidelines, and by-laws regarding the atmospheric environment, if decommissioning is required in the future. It is anticipated that decommissioning of the facility would generate impacts on the atmospheric environment that are of similar magnitude and duration as those effects generated during construction.

The environmental effects of accidents, malfunctions, and unplanned events on the atmospheric environment would include fires and accidental releases of hazardous materials (such as fuel spills) from construction equipment and vehicles, which may occur during any phase of the Project. Proper training of construction and operational personnel will minimize the potential for
adverse effects on the atmospheric environment due to accidents, malfunctions, and unplanned events.

Table 5.2 summarizes the environmental assessment for atmospheric environment.

<table>
<thead>
<tr>
<th>Potential Interactions</th>
<th>Mitigation</th>
<th>Residual Environmental Effects Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle emissions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>Construction activities to be conducted only between 7:00 am and 9:00 pm</td>
<td></td>
</tr>
</tbody>
</table>

### Residual Environmental Effects Characteristics

<table>
<thead>
<tr>
<th>Direction</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnitude</td>
<td>Low</td>
</tr>
<tr>
<td>Geographic Extent</td>
<td>Within 1 km of Project area</td>
</tr>
<tr>
<td>Duration/Frequency</td>
<td>Construction – medium term (six months)/once Operation – long term (undetermined)/forty hours per week</td>
</tr>
<tr>
<td>Reversibility</td>
<td>Reversible</td>
</tr>
<tr>
<td>Ecological Context</td>
<td>Human activity present in area</td>
</tr>
<tr>
<td>Significance</td>
<td>Not significant</td>
</tr>
<tr>
<td>Prediction Confidence</td>
<td>High level of confidence</td>
</tr>
<tr>
<td>Likelihood</td>
<td>Low probability of occurrence</td>
</tr>
</tbody>
</table>

### 5.4 Terrestrial Environment

Project related activities will be limited to the proposed Project Development Area. It is unlikely that construction on the previously disturbed site will have any significant adverse environmental effects on local flora or fauna. It is highly unlikely that any rare or endangered species of plant would be present in this highly disturbed habitat. The proposed Project area is unlikely to provide important habitat for rare or endangered animal species.

Migratory birds are protected under the *Migratory Birds Convention Act (MBCA)*. There is very low potential for the Project to affect species protected under the MBCA given the existing facilities at this site, surrounding development, and the higher quality habitats within surrounding natural areas. Although some species may nest on gravel sites or on buildings, migratory birds are most sensitive to disturbance during breeding season. Construction activities will be scheduled to commence in the fall, outside of the peak period for breeding birds.

Currently, a Phase I ESA is being conducted on the site to determine the potential for contamination on the property. Excavation (for renovations) may be required to remove fill...
materials from site. All excavated material will be removed by the contractor and will be
disposed of in a provincially approved manner. If the material to be removed is found to be
contaminated, additional mitigation measures will be required.

Accidents, malfunctions, and unplanned events represent potential for soil contamination on the
site. Proper training of construction personnel and adherence to applicable regulations will
minimize the risk of accidental events.

During operation, the facility will be used to process oil seed. All activities will be confined to the
property. As previously noted, there is very low potential for rare or uncommon species to
inhabit this site; therefore there is very low potential to disturb rare or uncommon species during
operations.

Table 5.3 summarizes the environmental assessment for terrestrial environment.

<table>
<thead>
<tr>
<th>Potential Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Disturbance to migratory birds</td>
</tr>
<tr>
<td>▪ Hazardous material spill</td>
</tr>
<tr>
<td>▪ Excavation of impacted soils</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Construction scheduled to commence outside breeding season</td>
</tr>
<tr>
<td>▪ Adherence to applicable regulations regarding hazardous materials</td>
</tr>
<tr>
<td>▪ Contingency plan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Residual Environmental Effects Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction</td>
</tr>
<tr>
<td>Magnitude</td>
</tr>
<tr>
<td>Geographic Extent</td>
</tr>
<tr>
<td>Duration/Frequency</td>
</tr>
<tr>
<td>Reversibility</td>
</tr>
<tr>
<td>Ecological Context</td>
</tr>
<tr>
<td>Significance</td>
</tr>
<tr>
<td>Prediction Confidence</td>
</tr>
<tr>
<td>Likelihood</td>
</tr>
</tbody>
</table>

5.5 Groundwater

The greatest threat to groundwater is the potential for accidents, malfunctions, and unplanned
events, such as the release of hazardous materials (i.e., fuel or lubricants from construction
machinery), during the construction phase. The property lies above the zone of draw-down for
a portion of the Town of Kensington’s water supply. The Proponent will ensure that standard contingency planning (i.e., spill response plan and spill kits on site) will be implemented prior to mobilization of construction machinery. In addition, one location on site will designated as a re-fueling area and one location will be designated as hazardous material storage. Both areas will be located on a paved surface with a berm area constructed around the re-fueling site. All construction and operational personnel will be trained to handle all the hazardous materials that will be used on site. Under these conditions, it is unlikely that the construction phase of the Project will have any significant adverse environmental effect on groundwater.

Because the site is located in relatively close proximity to the water supply for the Town of Kensington, vehicle and equipment will not be refueled on site, unless in a pre-designated contained area for the construction of the facility only. The proponent is committed to training of all personnel that will be involved with the handling of hazardous materials during construction and operation. All hazardous materials used as part of the construction or operational phase of the Project will be stored according to applicable regulations.

As noted, only a minimal volume of petroleum products will be required under normal operating conditions. The current storage of the petroleum hydrocarbons is an on-site underground storage tank (UST). Considering that the site has an existing UST, the property owner will be required to have regular inspections and conduct all the necessary maintenance. In addition, all the necessary regulatory compliance will be adhered to for the operation of the UST. Therefore no significant adverse environmental effects on groundwater are expected from the operations phase.

Table 5.5 summarizes the environmental assessment for groundwater.

<table>
<thead>
<tr>
<th>Potential Interactions</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous material spill</td>
<td>Adherence to applicable regulations regarding hazardous materials</td>
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<td>Contingency plan</td>
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<thead>
<tr>
<th>Residual Environmental Effects Characteristics</th>
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</thead>
<tbody>
<tr>
<td><strong>Direction</strong></td>
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<tr>
<td><strong>Magnitude</strong></td>
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<tr>
<td><strong>Geographic Extent</strong></td>
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<tr>
<td><strong>Duration/Frequency</strong></td>
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<tr>
<td><strong>Reversibility</strong></td>
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<tr>
<td><strong>Ecological Context</strong></td>
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<tr>
<td><strong>Significance</strong></td>
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<tr>
<td><strong>Prediction Confidence</strong></td>
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<td><strong>Likelihood</strong></td>
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5.6 Land Use

The Project Development Area is currently a vacant commercial lot with a building formerly used as truck shop. The Project Development Area also includes the parking lot which is covered in pavement and gravel.

Currently, a Phase I ESA is being conducted on the property to identify any potential for contamination on site. If necessary, construction activities will abide by regulations applicable to working with hazardous materials. A certified hazardous material construction team will be employed to remove any hazardous materials from the building and property. Hazardous materials will be disposed of according to provincial regulations.

There is a school to the west and residences to the south of the property. Since construction and operational activities will be confined to the property, the Project is not expected to affect land use at the school or at nearby residences.

In the operational phase, the facility will be used as a year round production facility, receiving truck loads of raw oil seed, as well as packaging and processing materials, and shipping out finished product including oil and oil seed meal. Considering the former use of the property, residents and businesses in the area will be accustomed to any project related truck traffic.

Accidents, malfunctions, and unplanned events during construction and operation represent potential for temporary loss of useable space at the site. Spills or fires may render nearby areas (i.e., the adjacent school and residences) unsuitable for typical activity levels. To minimize the risk to adjacent land users, mitigation will include preparation of contingency plans for spills and large fires. The Proponent will ensure that standard contingency planning (i.e., spill response plan and spill kits to be available on site) will be implemented so that the potential for spills and fires is minimized to the fullest extent possible during all phases of the Project.

Considering construction and operational activities, the Project will have no new or foreign effects on neighbouring land use.

Table 5.6 summarizes the environmental assessment for land use.
Table 5.6  Summary of Environmental Assessment for Land Use

<table>
<thead>
<tr>
<th>Potential Interactions</th>
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<td>▪ Accidental spill or fire on site could make nearby land temporarily unavailable.</td>
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**Mitigation**

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5.7  Cumulative Environmental Effects

The assessment of cumulative environmental effects examines the potential for project-related environmental effects to combine with environmental effects associated with likely or foreseeable projects in the area. The boundary for the assessment of cumulative environmental effects is the Regional Assessment Area.

As agriculture is a predominant industry in the Kensington and East Prince County area, and since the project requires that up to 15,000 acres (approximately 6,000 Ha) be farmed for oil seed production, there is potential for cumulative environmental effects resulting from the Project and ongoing agriculture in the area.

All crops to be grown under contract with the proponent have been assessed by CFIA for pest risk and for invasive qualities. Crops that pose an unacceptable risk for pest management or invasiveness are not permitted for import by CFIA and will therefore not be grown.

Given the relatively high fertilizer and pesticide demands of potato agriculture, it is possible that a change in the current crop rotation may affect soil, surface water, and groundwater quality in the area. All oil seed crops require ground tilling and most species require some application of pesticide. Compared to potatoes, oil seed crops typically require approximately 10% of the fertilizer load required by potato crops, and approximately 1/10 to 1/15 the amount of pesticide per season (Howatt, pers. comm.). Compared to traditional grain and bean crops, oil seeds
require approximately 50 to 100% of fertilizer and a comparable quantity of pesticide. Since oil seeds will replace grain in a three-year crop rotation, or add a season to create a four-year crop rotation, oil seed agriculture will not increase the overall amount of pesticides and fertilizer applied to island fields. Therefore, cumulative environmental effects related to fertilizer or pesticide use are expected to be positive.

Potato harvest in PEI typically leaves soils exposed to winter and spring meteorological conditions, resulting in soil erosion and sedimentation of water courses and wetlands. In the current crop rotation, grain crops are planted in the second year of the rotation with an understeeding of forage (clover, timothy, alfalfa) so that fields are bare at least one winter every three years, but stabilized with grain or forage for one or two winters out of three. Incorporating new oil seed crops into the traditional PEI crop rotation may impact soil erosion and sedimentation rates depending on management practices of individual farms. If the oil seed crops replace a grain crop in a three year rotation, then understeeding with forage species will not be possible, and fields may be susceptible to erosion following oil seed harvest. If, instead, oil seed crops are followed by a fall planting of grain then soils will be stabilized for three out of every four winter seasons. While it will be impractical to apply regulations on the individual farm level, the best management practice for oil seed producers will be to move to a four year crop rotation to minimize the duration of exposed soils over the long term.

Since the proposed crops represent a reduced nutrient and pesticide load to the area, and an opportunity to reduce erosion over a four year cycle, cumulative environmental effects relating to the agricultural requirements of the project are not significant.

5.8 Environmental Monitoring and Follow-up Measures

With the application of codified practices and accepted standards and mitigation proposed in this assessment, along with adherence to applicable permits and regulations, the Project will not interact significantly with any VECs. This assessment has identified no significant residual environmental effects. A requirement for monitoring programs or follow-up measures has not been identified for any phase of this Project.

5.9 Public Consultation

In line with the Guidelines to Environmental Impact Assessment (PEIDEEF, 2005), the project will require a “Level I Public Consultation Program.”

Public consultation programs will be administered by the proponent as required by PEIDEEF, and as outlined in the Guide to Environmental Impact Assessment (PEIDEEF, 2005). Any issues of concern raised by the public at that time will be added to this document to fulfill the requirements of the PEIDEEF.
A Building permit application will be required for the expansion of the facility. The permit application must be approved by the Town of Kensington prior to construction.
6.0 SUMMARY AND CONCLUSIONS

In general, any potential adverse environmental effects resulting from the project will be temporary, of short duration, and of low magnitude. Through application of industry standards and recommended mitigation measures, and adherence to applicable permit conditions and regulations, any adverse effects will be effectively minimized for all phases of the project. The project is not likely to have significant residual adverse environmental effects.

The results of this assessment are based on our current understanding of potential environmental effects of the Project. Should the project change materially, the potential for environmental effects could also change.

Environmental monitoring and/or follow-up is not warranted for this project.
7.0 CLOSURE

We trust this report meets your requirements. Please do not hesitate to contact us should you require further assistance or have additional questions about any facet of this report.

Yours truly,

JACQUES WHITFORD STANTEC LIMITED

_____________________________   ________________________________
Dale Conroy, M.Sc.     Loretta Hardwick, M.Sc
Group Leader – Environmental Services  Senior Reviewer

DC/lk
8.0 REFERENCES


PERSONAL COMMUNICATION:

Mr. Steve Howatt
APPENDIX B

Letter from PEI Department of Agriculture
September 3, 2009

Mr. Dale Conroy
Project Manager
Jacques Whitford Stantec Ltd.
165 Maple Hills Avenue
Charlottetown PE C1C 1N9

re: Natures Crops International (NCI) Crops

Dear Mr. Conroy:

The Department of Agriculture is fully informed of the work that NCI is doing to develop their proposed suite of crops. In this regard the Department of Agriculture has financially supported the work that Agriculture and Agri-Food Canada is conducting during the 2009 crop year at their Harrington Research Farm with the NCI crops.

The Department has also been informed by the Canadian Food Inspection Agency and supports the restrictions, that the Agency, has placed on the cultivation of the Cuphea hybrid.

Development of all or even some of the proposed NCI crops has potential to increase the rotational options that are available to Island farmers. Information, being developed on the proposed suite of crops has not indicated to the Department any agronomic concerns or practices inherent to the cultivation of these crops that are out of line similar crops currently being successfully grown in the Province.

Sincerely,

Peter Boswall
Trade and Marketing Analyst

cc: Brian Douglas, Deputy Minister of Agriculture
    Steve Howatt, General Manager, Nature Crops International