NU-E Corp Lethbridge 1 Solar Power Project

ENVIRONMENTAL PROTECTION PLAN (EPP)

Operated by:

NU-E Corp.

2022

1 INTRODUCTION

The purpose of this Environmental Protection Plan ('EPP') is to provide regulatory bodies and landowner(s) and/or occupants with a commitment to reduce, mitigate, and where possible eliminate the environmental impacts of construction and operations on the natural systems encountered. The EPP will serve as a field guide to ensure successful conservation and reclamation of valued ecosystem components in the area and ensure regulatory compliance during construction, operations, and reclamation at the NU-E Corp Lethbridge 1 Solar Power Project (referred herein to as the "Project").

The operating procedures contained in this document are intended as a guide in conducting operations with consideration for environmental protection. The procedures are partially based on regulatory requirements but are not intended to be used in substitution to regulations, nor are they intended to be an exhaustive review or interpretation of applicable legislation. When used in conjunction with other manuals, such as those which may be provided by Engineering, Procurement, and Construction (EPC) contractors, the procedures contained herein are a valuable tool in guiding construction and operations.

Environmental legislation is designed to protect the environment. All employees and contractors at the Project work site must comply with applicable regulatory requirements. These requirements include acts, regulations, policies, practices and procedures that are administered by governments and their agencies.

In general, the proposed Project will not significantly alter the existing grades. The solar panels will be aligned in table rows approximately 7 m apart, and will be mounted on single-axis tracking racking structures. It is expected that the use of a racking system with pounded piles will have little effect on the imperviousness of the Project location, both above and below ground, as the area of the piles compared to the area of the Project location is minimal. Re-vegetated ground cover will be located in and around the base of the solar panel racking.

The lands proposed for development are agricultural. Although the solar panels themselves are impervious, rain water will land on the solar collector panels and runoff directly onto the ground below the individual panels. Minimal erosion is anticipated beneath each solar panel, once the ground cover vegetation is re-established after construction. The overall effects of runoff generated from the solar panels will be minimal, as the majority of the anticipated ground cover during the operations phase (i.e., a low-growing grassland species) will improve hydrologic conditions relative to existing conditions (i.e., longer duration flow paths and reduced runoff potential).

The facility will include solar panel areas (including combiner boxes, solar panels, racking and piles), electrical conduit, inverters, control house, access roads, collector lines, and a perimeter fence. Foundations for infrastructure are anticipated to be pounded piles (for solar panel areas) and concrete pads (for inverters and control house). Permanent gravel access roadways will be constructed using a suitable depth of granular material. Once completed, any foundation excavations will be backfilled and leveled to match the proposed grading. The entire Project, with the exception of new access roads is anticipated to be covered with low growing perennial vegetation.

2 General Operational Guidelines

NU-E Corp is committed to operating in the following manner:

- Ensure approvals are in place prior to beginning operations;
- Follow approval conditions;
- Conduct reporting as required by approval conditions;
- Practice good housekeeping;
- Understand the emergency response plans in place;
- Conduct inspections as required;
- Maintain equipment;
- Report incidents;
- Participate in inspections whether internal, external or regulatory;
- Be a good neighbour;
- Keep abreast of changing regulations;
- Manage waste appropriately;
- Maintain vegetative cover and control weeds;
- Prevent erosion;
- Control surface water releases;
- Minimize impact to and effectively care for top soil;
- Communicate and share knowledge; and,
- Maintain records.

3 ACCOUNTABILITY

The EPC Contractor (the "Contractor"), who will be competitively selected prior to construction, will be accountable for ensuring environmental compliance during the construction of the Project. All incidents that qualify as being in non-compliance of applicable laws, commitments made by NU-E Corp and/or specific approval conditions by regulators, shall be reported by the Contractor to NU-E Corp. NU-E Corp shall take necessary steps to rectify the situation through appropriate notification of regulators, implementation of suitable mitigation measures and record keeping of the circumstances that resulted in the non-compliance, any remedial measures taken and any recommendations for future monitoring.

4 CONSERVATION & RECLAMATION PLANNING

The Project commissioning is anticipated to be after July 1, 2021. Therefore, as per Table 2 of the Conservation & Reclamation (C&R) Plan, reporting and assessment requirements for Renewable Energy Operations (REO) commissioned: Before September 14, 2018; Between September 14, 2018 and July 1, 2021; and, on/after July 1, 2021 in the *Conservation and Reclamation Directive for Renewable Energy Operations, 2018* (Government of Alberta – Alberta Environment and Parks), the Project will complete a Pre-Disturbance Site Assessment (PDSA) – Shallow Soil Inpsections (PDSA-S) and Deep Soil Inspections (PDSA-D) prior to construction.

5 CONSTRUCTION/OPERATIONS MANAGEMENT

To ensure that procedures are followed to reduce environmental impacts, reduce liability and promote compliance with applicable regulatory requirements, the following may be implemented.

5.1 Material Handling & Storage

The following material handling and storage procedures or other measures as authorized by the Contractor should be followed:

1. Potentially hazardous materials (eg. fuel for vehicles) will be stored and handled at dedicated areas in accordance with all regulatory requirements;
2. All hazardous materials will be labeled and stored in accordance with applicable regulatory requirements;
3. Any hazardous materials will be transported in accordance with the *Dangerous Goods Handling and Transportation Act.*

5.2 Spill Response

Solar PV panels use crystalized silicon to generate electricity; there are no liquids in solar PV panels. Similarly, no liquids are included in the solar PV racking or piles which are typically aluminum and galvanized stee, respectively. There is minimal risk for a potential hazardous spill through the construction and operations of a solar PV facility.

Sources of contaminants at solar projects are few and generally limited to:

1. **Transformer Oil:** Routine maintenance helps avoid transformer leakage. A transformer leak can cause land contamination and other safety risks. Knowing if a leak is present and planning for maintenance to repair or replace it can be key in keeping energy generation at a maximum. There are several ways to carry out preventive maintenance in transformers; however, monitoring transformer oil temperature, pressure and level to prevent a transformer from leaking are part of the routine maintenance schedule.

2. **Oil spills associated with maintenance vehicles:** Routine maintenance and travel associated with normal vehicle operation can result in incidental surface soil contamination from leaking service vehicles. Unless a vehicle has a catastrophic failure resulting in release of motor oil or hydraulic fluid, incidental spills associated with normal equipment operations are not expected to be significant. In the event of catastrophic failure, spill response as outlined in Section 5.2.1 would be initiated.

As solar PV panels are solid state, there is no risk of leakage from solar panel (there are no liquids contained within a solar panel that would leak). The following summary of potential affects is provided from a 2012 report issued by Environment Canada, titled "*Assessment of the Environmental Performance of Solar Photovoltaic Technologies. A report funded under the Clean Energy Fund (*Environment Canada, in partnership with Natural Resources Canada's CanmetENERGY; Cat. No.: En84-88/2012E-PDF ISBN 978-1-100-21269-2, page 45).

There are no emissions associated with the operational or use phase of PV modules. The modules are enclosed and sealed within two glass modules, and therefore there are no expected emissions while the modules are in use.

The cadmium found in a CdTe PV module poses no threat during the normal use of the PV module since cadmium is present as CdTe and CdS, which are chemically stable compounds. The vapour pressure and water solubility of CdTe is essentially zero and therefore there is essentially no potential for human exposure to CdTe during the normal use and lifetime of a CdTe solar module.

There is a possibility that a CdTe PV module could break during operation and maintenance, exposing CdTe to the environment. In the case of such a limited release, CdTe would be dispersed in ambient air at concentrations well below acute exposure guidelines and subsequently diluted. This scenario is unlikely because of the laminate bonding with the semiconductor material. In addition to limited atmospheric releases, potential exposure to Cd from rainwater leaching of broken modules is highly unlikely to pose a potential health risk.

5.2.1 Basic Spill Response Procedure

1. Assess for safety hazards.
2. Eliminate the spill source and contain if possible.
3. Notify the appropriate NU-E Corp personnel.
4. Regulatory Agencies will be notified if required.
5. Recover any spill material.
6. Initiate waste management procedure if necessary.
7. File an incident report as per regulatory requirements.
8. Identify remediation options and requirements and implement as approved.
9. Waste materials that are generated from a spill will be minimized and managed so that there are no concerns with disposal.

5.3 Waste Management

All domestic and construction waste will be disposed of at an approved landfill. All hazardous waste will be disposed of to an approved hazardous waste disposal facility.

6 SOILS HANDLING

Any soil stripping and leveling (if required) is anticipated to use a two-lift soil stripping method:

1. The first lift will remove the A-horizon to the color change (B-horizon);
2. The second lift will remove the B-horizon until the underlying clay (C material) is found. Both A and B-horizons will be stockpiled with a 1m separation between horizons. Care will be taken to avoid mixing while handling and stockpiling soils. The soils will be preserved and used for production and final reclamation. The remaining C-horizon will be used as cut and fill to level each lease to accommodate the necessary equipment.
3. All stripped soils will be stored separately.

4. Erosion control for stripped soils will be provided as required.

6.1 Time of Construction

Construction procedures which involve surface disturbance such as stripping, grading or travelling on un-stripped sod will be limited to an as needed basis, and ideally performed only one time if possible. When surface disturbance is required it will be conducted under suitably dry and/or frozen ground conditions as much as possible. This helps to minimize the disturbance to un-stripped sod/top soil and allows construction to take place unimpeded by most adverse weather. Once construction is complete, the soil will be reseeded with a seed mix to preserve the soil and reduce erosion.

6.2 General Soils Management

Activity / Concern	Mitigation
Wet/Thawed Conditions	1. Minimize use of heavy machinery in the event of wet or thawed soil conditions to reduce terrain disturbance and soil structure damage. 2. Initiate contingency measures once one of the following indicators occurs: excessive rutting; wheel slip, build-up of mud on tires and cleats, formation of puddles, and/or tracking of mud down the road as vehicles leave the site. 3. Employ the following contingency measures progressively or individually as warranted if the above indicators occur: • limit equipment traffic to the late afternoon or early morning when ground conditions are frozen or delay construction until soils dry or frozen; • prevent rubber-tired traffic from driving on the site; • salvage excess snow from the right-of-way and spread, as well as pack, the snow on the travel lane to avoid premature thawing of the upper soils; • restrict construction vehicle traffic to equipment with low-ground-pressure tires or wide pad tracks.
Topsoil Salvage-Non-Frozen Conditions	Full Topsoil Stripping Scenario • Salvage topsoil on all lands from the travel lane and all areas that will be subject to grading; • Restrict the extent of topsoil salvage wherever possible; • Store excavated subsoil on unstripped topsoil adjacent to the excavation. Ensure sufficient space (approximately 0.5 m) is left between the edge of the storage pile and the excavation to ensure material does not slough back into the excavation. • If topsoil is being degraded, consider installing matting (or equivalent) to protect topsoil degradation.
Topsoil Salvage - Frozen Conditions	• Reduce the area of land subject to topsoil salvage during frozen conditions to areas that will be subject to grading.

Activity / Concern	Mitigation
	• Limit topsoil stripping activities to specialized equipment capable of accurately separating variable depths of topsoil from subsoil (*e.g.*, frozen topsoil cutter, if available). If a frozen topsoil cutter/mulcher is not available, rip frozen topsoil to the same depth as the salvage requirements. • Do not salvage topsoil from the travel lane during frozen conditions unless the right-of-way will be graded. Implement the Wet/Thawed Soils Contingency Plan if thawed conditions are encountered during winter construction.
Stripping Depth	• Salvage all available soils to color change or as indicated in the PDSA (to be determined).
Wind Erosion of Topsoil Windrow	• Drought erosion-prone soils require wind erosion protection. Tackify or apply water or pack the topsoil windrow with approved equipment. Application of a tackifier following topsoil removal can be more cost effective than repeated watering of topsoil windrows and piles. • If blade width or double blade width stripping has been implemented, other options include: flattening the windrows to reduce the erosion-prone surface and reducing the time between stripping and replacement.
Grading	• Salvage topsoil from areas to be graded and store in a location that will not allow for mixing of topsoil with excavated subsoil and graded material. • The area stripped is to correspond to the area to be graded. • There will be no grading adjacent to the wetland as closest infrastructure is 34 m away.
Spoil Storage	• Place excavated soil material on the stripped area adjacent to the excavation. Ensure enough workspace is available to allow for a sufficient distance to be left in place between the soil and the excavation to reduce the risk of soil material sloughing into the excavation. • During non-frozen conditions on cultivated lands (where a vegetation layer is relatively constant), place excavated soil material directly on the unstripped topsoil (*i.e.*, the sod layer) adjacent to the excavation. Ensure enough workspace is available to allow for a sufficient distance (approximately 0.5 m) to be left in place between the soil and excavation to reduce the risk of soil material sloughing into the excavation. • During frozen conditions, place excavated soil material on a buffer of snow, if available. Otherwise place excavated material on the unstripped topsoil adjacent to the excavation. Ensure enough workspace is available to allow for a sufficient distance to be left in place between the soil and the excavation to reduce the risk of soil material sloughing into the excavation.

Activity / Concern	Mitigation
Dewatering	• Pump water onto stable and well-vegetated areas, tarpaulins or sheeting in a manner that does not cause erosion or any unfiltered or silted water to directly re-enter a watercourse. Place pumps on polyethylene sheeting above the high-water mark of the watercourse or wetland. • Ensure all erosion control measures are in place to direct run off and reduce the potential for erosion.
Backfilling	• To the extent feasible, attempt to schedule delivery of imported fill so it can be installed directly into the excavation upon arrival at the site rather than being temporarily stored prior to being backfilled. • Avoid mixing snow into backfill material. • Feather out excess spoil material across the area that has been stripped of topsoil. Avoid mixing topsoil and feathered subsoil material. Blend feathered material into the natural grade of the area to not change local surface drainage patterns.
Excess Spoil	Dispose of excess spoil material on site.

7 WEED MANAGEMENT

NU-E Corp recognizes that each operational region is unique and that weed management that is effective in one area, may not be effective in another. However, NU-E Corp's policy to control vegetation on private lands will be based upon the species identified, discussions with seed mix professionals and what seed mix has been successfully grown to choke out potential weeds on other operating solar PV facilities

NU-E Corp will take the following approach to vegetation management:

1. Identification
2. Prevention
3. Procedures for Vegetation Control
4. Monitoring

7.1 Identification

Species identified during site assessments will be compared with those listed in the *Weed Act.*

7.2 Prevention

Prevention is paramount to an effective weed management program.

NU-E Corp will attempt to minimize the potential for weed introduction/invasion by seeding all disturbed areas with seed mixes.

7.3 Procedures for Vegetation Control

As no one method of vegetation control may be effective, the following procedures may be implemented in a synergistic manner for all operations on Project lands.

7.3.1 Chemical Controls

If required, permits will be obtained from regulatory bodies for the application of herbicides on the Project lands. All applicable regulations and requirements will be adhered to.

7.3.2 Mowing

Mowing may be required to alleviate problems as they occur or until weeds are controlled and vegetation established as appropriate.

7.3.1 Sheep

Sheep may be allowed to graze the lands during operations. This determination will be made following consultation with the landowner and other potential suppliers in the area. Sheep are considered to be an excellent means for control of herbaceous weeds (Frost & Launchbaugh, 2003).[1] Should weeds become problematic, adaptive management of sheep grazing can be used to target specific problem weeds; this can be accomplished through modifying stocking density and/or seasonality of grazing based on the particular features of the weedy species (Frost & Launchbaugh, 2003).

8 SEDIMENT & EROSION CONTROL

The lands proposed for development are agricultural. Although the solar panels themselves are impervious, rain water will land on the solar collector panels and run off directly onto the ground below, and immediately surrounding, the individual panels. Minimal erosion is expected beneath each solar panel, particularly once the ground cover vegetation is re-established following construction. The overall effects of the run off generated from the solar panels is anticipated to be minimal, as the majority of the ground cover during the operations phase will improve hydrologic conditions relative to existing conditions (i.e. longer duration flow paths and reduced runoff potential).

Guidelines, measures and best management practices for erosion and sediment control include, but are not limited to:

- Develop and implement Erosion and Sediment Control (ESC) measures.
- Install, monitor, and maintain ESC measures (i.e. erosion fencing) around the Project footprint, where there is a reasonable risk of erosion impacts (e.g. proximity to tree stands, moderate to steep slopes, etc.) for the duration of the construction or decommissioning activities.
- Clearly delineate work area using erosion fencing or other suitable barrier to avoid accidental damage or removal of retained species.

[1] Frost, Rachel and Karen Launchbaugh. 2003. Prescription Grazing for Rangeland Weed Management. A new look at an old tool. Rangelands. 25(6).

- An on-site environmental monitor, with experience providing environmental recommendations on a large-scale construction site, will provide regular supervision and monitoring of the construction activitie if required.
- Place the erosion fencing, or other barrier, as far away as practicable from any tree stands, and no closer than the dripline.
- Stabilize all disturbed areas, by:
    - Immediately installing temporary erosion control measures; and,
    - Allow measures to remain in place until vegetation or other long-term erosion control methods are fully established and functioning.
- Construction may be halted when adverse conditions caused by heavy rains or other weather exist;
- Temporary erosion controls will be installed prior to any disturbance in an erosion prone area; and,
- Erosion controls will be properly maintained and reinstalled as necessary until replaced by permanent erosion controls (where necessary) or soils and vegetation restoration is complete.

8.1 Seeding

A diverse seed blend of perennial grass will be used. Species composition will be determined at a later date in consultation with the landowner.

9 WATERCOURSE PROTECTION

No infilling of any watercourses are expected as part of the Project.

All standard watercourse mitigation strategies will be integrated into adjacent and crossing road design and thus effects resulting from Project development should be expected to be limited in duration and scope.

Erosion control will be placed between construction areas and the watercourses during construction (and during operations as required), and may include silt fencing or other methods, to prevent the movement of surface material into the watercourse.

A stormwater management plan will be developed to adequately manage surface runoff associated with the project to ensure that existing drainage patterns within the project boundaries are not overwhelmed.

10 WETLAND PROTECTION

At the time of this application, wetland disturbance that requires application under the *Water Act* will be occurring.

Because of the characteristics of this wetland type in the Project, it receives a great deal of surface impact as a result of cultivation. As a result of the solar project, cultivation will be eliminated, which is expected to reduce soil disturbance within the wetland. As such, the expectation is that the wetland will trend back towards a more natural state.

For a marsh wetland (Class III) a setback will be used. This wetland is sensitive to disturbance and the setback distance will reduce the potential for soil erosion/sedimentation, protect nesting habitat for waterfowl, and protect breeding habitat for amphibians. Silt fencing will be placed around the boundary of the wetland. This will ensure the boundaries are clearly visible during construction. Furthermore, silt fencing would reduce the potential for soils to be transported into the wetlands during construction. Silt fencing will remain in place until surrounding soils are stabilized and erosion is controlled.

11 DECOMMISSIONING PLAN

The requirements for environmental protection outlined in this document would be maintained and followed during decommissioning activities. Most, if not all, activities during decommissioning would be comparable to the construction phase.

All decommissioning and reclamation activities will be completed as per the regulatory requirements in place at the time of such activities.

11.1 Pre-dismantling Activities

At the end of the life of the Project, the Project would be de-energized and isolated from external electrical lines and interconnection points. Staging areas for equipment placement prior to final removal from the Project lands will be determined and constructed as per this document or construction requirements in place at the time.

11.2 Equipment Dismantling and Removal

11.2.1 Solar Panels and Rack Supports

Each solar panel will be mounted on a galvanized steel rack system. Each panel will be disconnected from the electrical system and the mounting rack. Following removal, the panels will be removed to the staging area, and loaded for transport to either an approved recycling and/or disposal facility.

All rack system surface components and subsurface components, including those related to foundations, will be removed to a minimum of 1.5m depth below ground surface. This may involve either complete removal of support posts, or cutting posts/foundations to a depth of 1.5m. A depth of 1.5m has been included as it is a standard burial depth for oil and gas pipelines; telecommunications lines, etc., and once removed, allows for future agricultural land use without risk of striking infrastructure below this depth.

11.2.2 Panel Recycling

Panels removed will be recycled by third party vendors using processes in place at the time of panel decommissioning.

11.2.3 Electrical Equipment and Collector Lines

Inverters and inverter step-up transformer skids, including the associated pilings or supports, will be removed from the location, sent to the staging area and loaded for transport to an approved recycling and/or disposal facility.

Underground lines that are buried less than 1.5m below grade will be removed.

All work to decommission the overhead/underground connection lines would be conducted within the boundaries of the Project to the Point of Common Coupling, after which point the infrastructure is owned by Fortis.

11.2.4 Access Roads

All access roads will be removed unless they are requested by the Lethbridge Electric Utility (LEU) to remain in place. The exception to removal of the access roads and associated culverts or their related material would be upon written request from the landowner to leave all or a portion of these facilities in place for future use by the landowner.

Road restoration includes removal of any geotextile material beneath the roads, including granular material. All granular and geotextile materials would be removed from the site by dump truck. Topsoil would be redistributed to provide substantially similar ground cover as was present within the areas prior to site disturbance.

11.2.5 Storage Areas and Perimeter Fence

Storage areas will be restored unless they are requested by the landowner to remain in place. The exception to removal of the storage areas or their related material would be upon written request from the landowner to leave all or a portion of these facilities in place for future use by the landowner.

Storage area restoration includes removal of any geotextile material beneath the area, including granular material. All granular and geotextile materials would be removed from the site by dump truck. Topsoil would be redistributed to provide substantially similar ground cover as was present within the areas prior to site disturbance.

Any foundations associated with these facilities would be removed to a depth of at least 1.5m below original grade or to the depth originally installed, if less than 1.5m below original grade.

Perimeter fencing would be removed and recycled or re-used. Where the landowner prefers to retain the fencing, these portions of fence would be left in place.

12 RECLAMATION PLAN

The objective of the reclamation plan is to remove all garbage from site, control erosion as necessary, restore soil capability, and reclaim the disturbed areas to pre-disturbance characteristics.

Reclamation will take place once construction equipment has left the location or as soon as soil and weather conditions permit. The landowner will be notified prior to the initiation of the reclamation

activities and again upon completion. Reclamation success is dependent upon landowner communication and favourable conditions in the root zone for optimum crop growth. The key soil factors that determine root zone quality include the water holding capacity, organic content, structure and consistency, salinity, nutrient balance and soil regime.

12.1 Interim Reclamation

NU-E Corp shall attempt to reclaim all disturbed land surfaces within 3 growing seasons. Interim reclamation will include:

- site debris clean-up;
- slope stabilizations;
- re-contouring with subsoil;
- spreading of topsoil;
- determination of suitable vegetation species (i.e., hay mixture) for revegetation between solar array rows and under solar panels and around other infrastructure locations; and,
- Development and implementation of a co-operative weed control plan with the landowner(s).

12.2 Final Project Reclamation

Reclamation of the Project will be completed to typical reclamation practice at the time. The following would be considered a generic plan in line with current practice.

12.2.1 Typical Timing

Decommissioning	Activity	Typical Timeline
Solar Site/ Access Roads	Removal of panels and infrastructure	May – August
	Removal of transformers	May – August
	Partial excavation and removal of concrete base to approximate depth of 1.5 meters	June – August
	Removal of gravel pads and gravel from access	July – August
	Recontouring of pad and access roads	July – August
	Reclamation of surface soils	August – September
	Re-seeding	September - October
Power infrastructure	Removal of any above ground poles and lines	May – July
	Below ground collector lines will remain in place if depth greater than 1.5 metres	N/A
	Removal of inverters and associated infrastructure	May – July
	Removal of gravel pads	June – July
	Removal of access roads	July – August
	Recontouring of pad and access roads	August – September
	Reclamation of surface soils	September - October

12.3 Soils

1. Upon removal of equipment, all disturbed areas are to be re-contoured to pre-construction conditions. Loading of slopes with unconsolidated material will be avoided during slope re-contouring;
2. All grades and drainages will be restored by removing any culverts and fills;
3. Topsoil replacement should not be started until all subsoil levelling, decompaction and cleanup has been completed, to prevent mixing by levelling after topsoil replacement;
4. Surface diversion berms will be installed, as required. Run-off will be diverted to stable and vegetated off-right-of-way areas;
5. Remove all foreign materials including geotextile;
6. Fences and culverts are to be restored to meet or exceed pre-construction conditions;
7. Any areas with rutting or erosion gullies will be re-contoured and all strippings will be replaced evenly over all portions of disturbed areas. Replacement of soils during wet weather or high winds will be avoided. This will prevent damage to soil structure and reduce the potential for erosion of topsoil;
8. Once sub-soil has been adequately reclaimed, topsoil will be replaced. Replaced topsoil will be disced to alleviate compaction and break up aggregates then harrowed to create an adequate seed bed;
9. Complete re-contouring and stabilization of disturbed areas. Smooth water channelling ruts and outside berms. Ensure that all erosion control and water management measures (e.g. water bars, drainage dips, culverts and ditches) are functioning per design.
10. If grading or other earthwork is required to facilitate vehicle/equipment on areas, strip and salvage topsoil and organic material for replacement during clean-up procedures.
11. Where soils have been disturbed, implement appropriate reclamation procedures (i.e. seeding, erosion blankets, slash rollback, straw crimping, etc.) to promote stability of the site, soil preservation, and plant re-establishment. Ensure the natural drainage is restored.
12. Spread mulch, wood chips, straw/hay, or other organic material over areas where the soil is susceptible to erosion, pulverization, or compaction;
13. Rocks/stones exposed on the surface due to construction activity will be removed prior to and after topsoil/surface material replacement. The concentration of surface and profile rocks will be equivalent to, or better than the surrounding fields. Rocks/stones will be disposed of at a site approved by the landowner.

12.4 Vegetation – Cultivated

1. Seeding will be completed by landowners as part of normal farming operations.
2. Fertilizer may be needed in some cases but will not be applied unless approved by landowners.
3. If cattle may be frequently grazing through the area, reclaimed areas will require access restrictions (fencing) to ensure newly seeded/fertilized areas are not disturbed. Fencing may be electrical, temporary and/or permanent depending upon the requirements and grazing practices of landowners.
4. Locations should be monitored monthly during growing seasons. Typical monitoring should occur in June, July and August. Monitoring will consist of visually inspecting the areas to ensure vegetation has been established and is healthy, erosion has been mitigated, and landowner concerns have been addressed.

13 Post Construction Monitoring

Post-construction wildlife monitoring and adaptive management will be incorporated into the Project. Commitments have been included as part of this submission to align with the expectations cited in the recently released *Wildlife Directive for Alberta Solar Energy Projects*, AEP, October 4, 2017. These include mortality surveys for 3 years and will include the standards as outlined in *Section 100.4 – Standards* of the above referenced document.

14 Adaptive Management

As per Standard 100.4.9, in the event that post-construction surveys reveal wildlife mortalities exceed acceptable levels (as determined by AEP-FWS), adaptive management may be implemented in consultation with AEP-FWS. Adaptive management may include, but may not be limited to:

1. Determination of reason for mortality (i.e., electrocution, impacts)
2. Once mortality is determined, where possible, mitigation may include:
    a. Installation of bird deterrents or markers;
    b. Addition of white edges to solar reflectors;
    c. Installation of nest spikes on areas to prevent raptor nesting, and/or;
    d. Installation of poles with flagging. The poles will be at least 25% taller than the panel tops and spaced at regular throughout the project infrastructure. The intent would be to provide contrast to bird species to prevent further mortality.

14.1 Injured Wildlife

In the event that injured wildlife is found within the Project boundaries during operations, AEP will be notified and injured wildlife will be handled in accordance with regulatory direction and requirements.