Operation & Maintenance Plan- EDPR Moo Cow Solar

Coventry, RI 02816

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Prepared For:

EDPR NA Distributed Generation, LLC
100 Park Ave, Suite 2400
New York, New York 10017

Prepared By:

TRC Engineers, Inc.
10 Hemingway Drive, 2nd Floor
East Providence, RI 02915

OPERATION AND MAINTENANCE PLAN

The operation and maintenance (O&M) plan is part of the Stormwater Management Plan required by the Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8). Proper maintenance of the solar development and proposed BMP will help maintain an aesthetic quality compatible with the surrounding land uses while also ensuring functionality.

Owner

EDPR NA Distributed Generation, LLC
100 Park Ave, Suite 2400
New York, New York 10017

Prepared By:

TRC Engineers, Inc.
10 Hemingway Drive, 2nd Floor
East Providence, RI 02915
(781) 419-7749

Transfer of Ownership

This document shall be provided to the grantee upon transfer of ownership. The entity responsible for O&M activities as well as the funding source shall be transferred to the grantee.

Funding Source

Funding for the project will come strictly from EDPR NA Distributed Generation, LLC. EDPR NA Distributed Generation, LLC is responsible for all maintenance activities thereafter the project. An approximate annual operation and maintenance budget of $10,000 is estimated.

Scope of Work

1. **Vegetation Management.** Low maintenance grasses and ground cover that require little to no fertilization shall be used. Chemical pesticides, herbicides, insecticides, fungicides and rodenticides shall not be used. Ground cover shall be mowed two to three times per season, or on an as needed basis. Grass will be cut no shorter than four-inches and shall not be allowed to grow taller than 18 inches. Ride-on and self-propelled mowers and weed whackers will be used for mowing operations. Lime according to a soil test or at a minimum every two to three years using a rate of one ton per acre (50 lbs. per 1,000 square feet). Fertilize only if indicated by a soil test. At least 30% of the fertilizer's available nitrogen must be in a slow releasing form. Fertilizer used shall not contain phosphorus.

   The site shall be inspected for evidence of erosion and rilling in any slopes a minimum of two times per year. Immediately repair any observed areas of erosion or incipient erosion. Any such conditions shall be noted in the annual report for re-vegetating. Any erosion shall be repaired using similar methods to installation, with like equipment and materials.

   Vegetated areas, especially those used for maintenance access to the stormwater BMPs, shall be periodically inspected for compaction and aerated/scarified and revegetated as necessary to maintain the porosity of existing soils.

   Growth of trees or other vegetation growing within the grass channels shall be noted in the annual report, and vegetation growth shall be thinned appropriately. Vegetation growth (saplings, bush, large weeds, etc.) within the footprint of the conveyance swales shall be removed. In the event that weed control is required, use only non-persistent solutions approved for use by RIDEM. Some snow removal may be required to allow access during winter months. Removed snow shall be placed in pervious areas.

   Permanent vegetative cover shall not be considered established until ground cover (approximately 95% vegetative surface cover) controls soil erosion and withstands severe weather conditions.

Replace grass cover that fails to grow.

2. **Road.** The road shall be inspected for evidence of erosion, rilling and clogging a minimum of two times per year. The crushed stone surface shall be regraded as necessary to maintain a stable driving surface and prevent concentrated flows from eroding down-gradient areas. The crushed stone surface shall be regraded as necessary to maintain its pervious characteristics if ponding is observed after precipitation events of 1.2 inches or greater over a 24-hour period. These conditions shall be noted and supported with photographs and locations as part of the annual report. Any observed erosion, rilling, or clogging shall be mitigated by the Contractor. Other maintenance activities should be periodic rejuvenation of the crushed stone surface by removal of any subsurface sediments, replenishment of the gravel surface, replenishment of washed crushed stone, and surface scarification to ensure long-term maintenance of the driveway and acceptable infiltration rates are maintained for the crushed stone portions of the driveway.

3. **Debris and Litter.** Remove and properly dispose debris and litter observed during the inspections.

4. **Sediment Disposal.** All accumulated sediments to be removed from the site during O&M activities shall be properly disposed of off-site.

5. **BMP Maintenance**

Maintenance activities are adapted from the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM).

Maintenance responsibility for the Sand Filter, Stormwater Basins and accessory best management practices (e.g., forebays) shall be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.

Sand Filter

Sand filters should be inspected annually and after storm events greater than or equal to the 1-year, 24-hour Type III precipitation event. Make a visual inspection to determine the extents of maintenance necessary to rehabilitate the sand filter to its original design standards. Materials deposited on the surface of the sand filter (e.g., trash and litter) should be removed manually. All resulting waste including oil, sludge, sediment, and water should be disposed of in accordance with all applicable federal, state and local regulations.

If standing water is observed more than 48 hours after a storm event, then the top 6 inches of sand should be removed and replaced with new materials. If discolored or contaminated material is found below this removed surface, then that material should also be removed and replaced until all contaminated sand has been removed from the filter. The sand should be disposed of in accordance with all applicable federal, state and local regulations. All structural components should be inspected and any deficiencies should be reported.

Forebay

The sediment forebay(s) should be inspected annually and after storm events greater than or equal to the 1-year, 24-hour Type III precipitation event. Sediment shall be cleaned out of the sediment forebay every 5 years or after the forebay is reduced to 50% of its capacity, whichever occurs first. Trash and debris shall be removed as necessary.

Stormwater Basins

The basin should be inspected annually and after storm events greater than or equal to the 1-year, 24-hour Type III precipitation event. If sediment or organic debris build-up has limited the infiltration capabilities (infiltration basins) to below the design rate, the top 6 inches shall be removed and the surface roto-tilled to a depth of 12 inches. The basin bottom should be restored according to original design specifications. Trash and debris shall be removed as necessary.

Surface infiltration practices should be mowed at least 2 times/yr. Stabilize eroded banks and repair eroded areas at inflow and outflow structures as necessary.

BMP MAINTENANCE AND MANAGEMENT INSPECTION CHECKLIST

Project

Location:

Site Status:

Date:

Time:

Inspector:

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Access Road		
a. Evidence of Erosion, Rilling and Clogging		
b. Replenishment of aggregate surface necessary		
c. Subsurface scarification necessary		
2. Vegetative Cover		
a. Good ground cover established		
b. Grass height is between 4-18 inches		
c. Lime necessary (based on soil test)		
d. Fertilizer necessary (based on soil test)		
e. Erosion and/or rilling repair necessary		
f. Vegetation growth		
g. Old growth trimming necessary		
h. Thinning of shade trees necessary		
i. Landscape plantings are established		
j. Planting pruning is required		
2. Sand Filters (including forebay) (Annual, After Major Storms)		
a. Vegetation adequate		
b. Undesirable vegetative growth		

c. Undesirable woody vegetation		
d. Channels clear of obstructions		
e. Standing water or wet spots		
f. Sediment and/or trash accumulation		
g. No standing water or accumulated sediment observed in Sand Filter Cleanouts and Underdrain		
h. No standing water observed in 48 hours after storm event		
3. Embankment and emergency spillway (Annual, After Major Storms)		
a. Vegetation and ground cover adequate		
b. Embankment erosion		
c. Animal burrows		
d. Unauthorized planting		
e. Cracking, bulging, or sliding of berm		
f. Upstream face		
g. Downstream face		
h. At or beyond toe		
i. Emergency spillway		
j. Basin and swales clear and functioning		
k. Seeps/leaks on downstream face		
l. Slope protection or riprap failure		
m. Vertical/horizontal alignment of top of berm “As Built”		
n. Emergency spillway clear of obstructions and debris		
4. Infiltration Basins (Annual, After Major Storms)		
a. Vegetation adequate		
b. Undesirable vegetative growth		

c. Undesirable woody vegetation		
d. Channels clear of obstructions		
e. Standing water or wet spots		
f. Sediment and/or trash accumulation		
g. No standing water or accumulated sediment observed in Sand Filter		
h. No standing water observed in 48 hours after storm event		
i. Pea gravel diaphragm stone intact and clear of obstructions, debris, sediment, and vegetation		
5. Level Stone Trenches (Bi-Annual)		
a. Undesirable vegetative growth		
b. Erosion or low points on downhill level lip		
c. Sediment and/or trash accumulation		
d. Standing water or wet spots		
e. Displaced stone		
6. Other		

Comments:

Actions to be Taken: