Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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October 5, 2016

Mr. Lawrence Rowley, Commissioner
Brockton Department of Public Works
45 School Street
Brockton, MA 02401

and

Ms. Laura Bruce Klein
SunE Sunset Holdings3, LLC
7550 Wisconsin Ave.
Bethesda, MD 20814

RE: Approval with Conditions
Application for: BWP SW 36 Post-Closure Use - Major Ground Mounted Solar Photovoltaic (PV) Array
Transmittal #: X269336

AT: Brockton Sanitary Landfill
413 Thatcher Street
Brockton, Massachusetts 0.201
Facility ID #: 39126 Regulated Object#: 172380

Dear Mr. Rowley and Ms. Bruce Klein:

The Massachusetts Department of Environmental Protection, Solid Waste Management Section (the "MassDEP"), has completed its Administrative and Technical review of the referenced Post-Closure Use permit application (the "Application") for the Brockton Sanitary Landfill (the "Landfill").

MassDEP has determined the Application and supplemental submittals are administratively and technically complete and hereby **Approves** the Post-Closure Use of the Landfill for a 4.6 megawatt DC solar photovoltaic ("PV") array subject to conditions as specified herein.

I. SUBMITTALS:

The Application consists of the following:

1) A permit application transmittal form assigned No. X269336, a completed for Post-Closure Use - Major (BWP SW 36) application form, a narrative describing the proposed use, an 11" x 17" Site Location and Local Area Map, one 24" x 36" plot plan prepared by Vanasse Hangen Brustlin, Inc. ("VHB"), two 24" x 36" drawings prepared by SITEC Environmental related to the Landfill Final Cover System, and Appendices A through G.
2) Appendix A contained MassDEP's January 25, 2008, approval with Conditions of the Landfill closure certification report.
3) Appendix B contained MassDEP's March 21, 2008, Comprehensive Site Assessment Approval with Conditions.
4) Appendix C contained SITEC Environmental's Final Closure Construction Quality Assurance Report.
5) Appendix D contained a series of Landfill inspection reports prepared by various consultants.
6) Appendix E contains a "Geotechnical Engineering Report" prepared by McArdle Gannon Associates, Inc. ("MGA"), dated December 2015.
7) Appendix F contains a Zoning Board of Appeals variance approval,
8) Appendix G includes an "Owner's and Developer's Solar Power and Services Agreement" and a "Proposed Solar Farm" decommissioning agreement.
9) One set of XX 24" x 36" drawings consisting of:
   - A cover sheet and 5 PV array layout drawings prepared by VHB and stamped by Connor P. Nagle, Massachusetts registered Professional Civil Engineer, No. 46302,
   - 5 PV land plan drawings prepared by VHB and stamped by Russell Bousquet, Massachusetts registered Professional Land Surveyor, No. 35388,
   - 8 PV array layout drawings prepared by RBI Solar, labeled "not for construction" and not stamped by a Massachusetts registered professional engineer, and
   - 6 Electrical drawings prepared by Neo Virtus Engineering, Inc. and stamped by James S. Bing, Massachusetts Registered Electrical Engineer, No. 40988.

Supplemental Application documents were received via e-mail on August 5, 2016, with revisions consisting of the following:

1) A VHB cover letter dated August 5, 2016, enclosing a response to MassDEP comments e-mailed to Sun Edison on February 9, 2016;
2) One "Overall Site Plan" drawing, prepared by VHB, dated January 18, 2016, revised July 8, 2016;
3) One supplemental copy of the BWP SW 36 Post-Closure Major application form Part D, Certification, signed by Lawrence Rowley, Brockton Department of Public Works Commissioner.
4) PV array racking system structural calculations by RBI Solar, signed and stamped by Mohamed A. Aly, Massachusetts Professional Structural Engineer No. 50028; and
5) Settlement and bearing calculations prepared by MGA, signed and stamped by Wayne A. McArdle, Massachusetts Professional Civil Engineer No. 41835.

Supplemental Application documents were received via e-mail on August 19, 2016, consisting of responses to MassDEP issues raised in conference call held on August 17, 2016.

Supplemental Application documents were received via e-mail on September 14, 2016, consisting of revised drawings and responses to MassDEP issues raised in conference calls regarding the access to the active landfill gas collection system extraction wells.

The Application was signed on behalf of the City of Brockton ("City") by, Lawrence Rowley, Commissioner, Brockton Department of public Works, by Emily Mann for SunEdison, and by William S. Taber Massachusetts Registered Professional Engineer No. 38140. On October 4, 2016, MassDEP received a request from SunEdison Origination, LLC., and SunE Sunset Holdings3, LLC, to change one co-applicant from SunEdison Origination, LLC., to SunE Sunset Holdings3, LLC. The City remains a co-applicant and acknowledged the proposed co-applicant transfer in correspondence submitted to MassDEP on September 29, 2016.

Hereinafter, the City and SunE Sunset Holdings3, LLC shall be referred to as the "Applicants" and all construction and maintenance personnel associated with the proposed post closure use of Landfill shall be referred to as the "Applicants' Contractors".

II. APPLICATION REVIEW AND DECISION PROCESS:

The Application was submitted and reviewed pursuant to the provisions of 310 CMR 19.029(2): Applicable Permit Procedures and 310 CMR 19.033: *Permit Procedure for an Application for a Permit Modification or Other Approval*. According to these review procedures, MassDEP's decision regarding the proposed activities shall be either: a "Provisional Decision" pursuant to 310 CMR 19.033(4)(a); or a non-provisional decision pursuant to 310 CMR 19.033(4)(b). MassDEP has determined that non-provisional decision is appropriate for this Application.

MassDEP has reviewed the Application pursuant to 310 CMR 19.000: *Solid Waste Regulations,* 310 CMR 19.143: *Post-Closure Use of Landfills* and MassDEP's *Landfill Technical Guidance Manual, May 1997* (the "Manual").

III. SITE DESCRIPTION:

The Landfill site is owned by the City of Brockton ("City"). The main Landfill mound is comprised of approximately 69.7 acres of which the waste disposal area encompasses approximately 35 acres. A separate land parcel located to the south of the main Landfill, designated as the "ballpark area" on various historic plans, encompasses approximately 7.69 acres, of which approximately 5 acres were used for solid waste disposal, and is not proposed for post closure use within the current Application.

The Landfill site is bounded to the northeast by Thatcher Street, the east by property of Regal Auto Parts who conduct auto salvage operations, to the south and west by residential areas, and to the north by a power line easement and woods.

The City and area industries used the Landfill for the disposal of municipal solid waste and construction and demolition material commencing in 1947 and continuing through the 1980's. The City entered into an Administrative Consent Order (ACO-SE-01-2004) with MassDEP on November 21, 2001, and between 2001 and 2006 accepted grading and shaping materials pursuant to MassDEP's June 6, 2001, "Revised Guidelines for Determining Closure Activities at Inactive, Unlined Landfill Sites". Landfill closure was completed in phases between 2003 and 2006. On January 25, 2008, MassDEP approved the Landfill Closure Certification application (Transmittal No. W160230).

Final Cover System Description

The approved final cover system was constructed as follows in accordance with 310 CMR 19.112:

- placement and compaction of grading and shaping materials to establish uniform slopes,
- placement and compaction of subgrade soils for the protection of the geomembrane cap consisting of fine grained soils with a minimum thickness of six inches,
- installation of a low permeability layer consisting of a textured, 40- mil, high-density polyethylene ("HDPE") geomembrane,
- placement of a sand drainage layer with a minimum thickness of 12 inches,
- placement of vegetative support layer comprised of a minimum thickness of twelve (12) inches of soil capable of maintaining a healthy vegetative growth on the final cover, and
- the application of seed to develop vegetation.

The HDPE geomembrane was approved to be constructed at a minimum slope of five per cent on the Landfill top and a maximum slope of 1-foot vertical rise to 3-foot horizontal run on the Landfill side slopes

Stormwater runoff controls were implemented to maintain the integrity of the final cover, prevent ponding of water on the areas of final cover, and control stormwater runoff to prevent off-site impacts. The stormwater control system included earthen diversion berms on the side slopes, side slope let-down channels, perimeter swales, and retention basins.

Landfill gases generated during decomposition of materials within the Landfill are being managed using an active collection and control system. Landfill gas collection wells were installed at approximate 200 foot grid intervals. These wells were constructed by drilling 3-foot diameter borings into the Landfill and terminated at either the base of waste or the groundwater surface. Perforated high-density polyethylene piping was installed in the borehole followed by backfilling with crushed stone and a bentonite plug. Wells are topped with a connection to an active gas collection header pipe system leading to a gas flare system.

During closure activities neighbors experienced odors and MassDEP required an investigation. On November 20, 2004, a report entitled "Assessment of Potential Risk to Human Health and Welfare Associated with landfill Emissions from the Thatcher Street Landfill, Brockton, Massachusetts" was submitted to MassDEP. The report concluded hydrogen sulfide was found to be present at concentrations consistent with unpleasant odors reported. Based upon measured and inferred levels

of landfill related chemicals in the air, estimated risks were found to be within health based regulatory limits.

The City has been monitoring hydrogen sulfide concentration in raw landfill gas prior to combustion at the flare. Between January 2006 and January 2008, hydrogen sulfide concentrations measured at the inlet to the flare decreased from approximately 30,000 ppm to 13,000 ppm . These concentrations were further reduced to between 1,700 ppm to 4,700 ppm during 2014 to 2016, and remain a significant issue. The hydrogen sulfide levels at the fare inlets do not represent the maximum level at individual landfill gas extraction wells. Pursuant to Condition 10 of this permit, the Applicants must submit Health and Safety Plans for the construction and the operation phases of the project and the levels of hydrogen sulfide in the landfill gas must be specifically addressed in each plan.

The City has also been performing annual near surface monitoring for hydrogen sulfide on the main mound of the Landfill to verify the Landfill final cover system integrity and performance and to determine whether the landfill gas control system is working efficiently to control gas emissions. The most recent near surface monitoring was performed by Werner Environmental on November 14, 2015. All 191 emission measurements taken were reported as non-detect. As a Condition of this permit, the City shall submit the results of all future near surface monitoring results and all landfill gas probe monitoring results and all hydrogen sulfide concentrations of flare inlet landfill gas to SunEdison Origination, LLC.. The Applicants shall take all necessary actions to protect the health safety of personnel related to the construction, operation and maintenance of the PV array. (refer to Conditions 9 and 10)

A chain link fence was constructed around the perimeter of the Landfill to prevent un-authorized access. Issues with trespassers damaging the perimeter fence and entering the Landfill have occurred. On July 19, 2016, the City submitted to Mass DEP a list of actions taken and actions to be taken to prevent unauthorized access. As the Landfill owner, the City is required to provide sufficient fences or other barriers to prevent unauthorized access to the Landfill. (refer to Condition 20) MassDEP recommends that SunEdison coordinate these activities with the City and take whatever additional measures SunEdison deems necessary to protect public health and safety and the PV array. (refer to Condition #19)

IV. POST-CLOSURE USE SOLAR ARRAY PROPOSAL SUMMARY:

The City is the owner of the Landfill and entered into a Solar Power and Services Agreement ("Agreement") with SunEdison Origination, LLC., dated April 2015, signed by Brockton Mayor William G. Carpenter, III. Hereinafter, the City and SunE Sunset Holdings1, LLC. shall be referred to as the "Applicants". The Applicants and all construction and maintenance personnel associated with the solar photovoltaic installation on the Landfill shall be referred to as the "Applicants' Contractors".

The Applicants have proposed to develop a 4.6 MW DC solar photovoltaic ("PV") array installation on approximately 11 acres of the Landfill.

PV Array Design:

The PV array proposed to be constructed at the Landfill consists of the following components:

As shown on the Neo Virtus Engineering, Inc., drawing E-6:

- 14,004 Trina Solar PSM-PD14, 315 watt solar modules;
- Four 1100 kW inverters with DC recombiner mounted on two 2.2 MW skid assemblies;
- two 2200 kVA transformers;
- 15Kv, 600 amp, pad mounted switchgear;

As shown on VHB plan C-3:

- five new utility poles located off the Landfill final cover system.

As shown on VHB plans SS-101 and S-102:

- 215 9'-0" long by 2'-8" wide by 18" high Type A concrete ballast blocks;
- 221 9'-0" long by 2'-4" wide by 18" high Type B concrete ballast blocks;
- 1112 9'-0" long by 2'-0" wide by 18" high Type C concrete ballast blocks.

The ground mounted PV array is to be constructed on top plateau area of the Landfill covering a total area of approximately 11 acres. The PV array will utilize Trina Solar PSM-PD14, 315 watt solar modules (77 inches by 39 inches). The modules will be laid out in strings 2 modules high and 3 to 5 modules long (module layout 2x3, 2x4, and 2x5) and be oriented with east-west rows and with the modules facing south.

Modules will be mounted on RBI Solar, Inc. galvanized steel racking system mounted on reinforced concrete blocks. Block size and weight is dependent upon location within the array and will either be Type A: 9'-0" long by 2'-8" wide by 18" high, weighing approximately 5400 pounds used on the north rows, Type B: 9'-0" long by 2'-4" wide by 18" high, weighing approximately 4725 pounds used on the south rows, or Type C: 9'-0" long by 2'-0" wide by 18" high Type C, weighing approximately 4050 pounds, and used in the interior rows. The majority of the proposed solar arrays are located on the plateau of the Landfill where grades are relatively flat. Some of the proposed arrays will be located on the edges of the slopes of the landfill and will require placement of crushed stone in order to support the concrete blocks. The maximum landfill depth of stone will be 18 inches. As a Condition of this permit the Applicants are required to monitor the installation of the ballast blocks in the field and submit for MassDEP review and approval any proposal to place ballast blocks on any Landfill area with a slope steeper than that evaluated by the Applicants and deemed to be stable.

The racking system will hold the panels at a fixed tilt of 15 degrees from horizontal. The racks will be placed to avoid interference with access roads, the active landfill gas collection extraction wells and all storm water control features. The existing elevation and grade of the Landfill will not be altered.

Electrical cables will be supported above the landfill final cover system in cables trays mounted to a support structure connected to concrete blocks.

Underground conduits are proposed between the off-Landfill equipment pads and a new utility pole to be located outside the limits of the Landfill final cover system. All underground conduits

are required to be encased in concrete or otherwise designed to be explosion proof and prevent subsurface Landfill gas from entering the conduit. (refer to Conditions #2 and 3)

The PV array has been configured to maintain a minimum 20-foot radius around the landfill gas extraction wells to protect public health and to provide access for future maintenance and replacement. The PV array has also been designed to provide minimum 20-foot spacing between arrays where necessary to provide maintenance and repair equipment access to the active landfill gas extraction wells.

As a condition of this permit, all electrical work will be designed in accordance with the most recent versions of the Massachusetts Electrical Code and electrical permits will be secured from the appropriate local building official. (refer to Condition #2)

Bearing Capacity, Settlement, and Stability:
The Application included a geotechnical evaluation for the installation of the array and supporting structures.

The Application included an analysis of the foundations for the PV array that will bear directly on the final cover system and has considered the dead load, snow load and wind loading. The results of the geotechnical evaluation are as follows;

- The modules, ballasts, and footings do not exceed loading criteria for the Landfill.
- The solar array will not cause adverse landfill settlement.

The anticipated maximum loading scenario (ballasts, racking system and modules) on the Landfill surface considering wind and snow loading was calculated as approximately 700 psf (4.7 psi) per ballast block. Settlement analysis performed for the ballast blocks bearing on the final cover estimated the settlement as less than one-half inch. As a condition of this permit, the Applicants must monitor the Landfill for settlement and make appropriate repairs to the final cover system to prevent stormwater ponding on the landfill surface and the geomembrane. (refer to Condition #5)

Calculations completed by RBI Solar indicate the north rows of the array have an overturning safety factor of 1.11, an uplift safety factor of 1.21, and a sliding safety factor of 2.58, the south rows of the array have an overturning safety factor of 1.11, an uplift safety factor of 1.23, and a sliding safety factor of 2.43, and the interior arrays have an overturning safety factor of 1.10, an uplift safety factor of 1.17, and a sliding safety factor of 2.45.

Access Roads:

As described in the Application and as a condition of this permit, during construction of the PV array, low ground pressure vehicles (<7psi) will be permitted to travel over the Landfill final cover surface. Throughout all stages of construction, the Landfill final cover system must continually be monitored for any signs of damage or stress. A final inspection of the Landfill surface must also be performed at the conclusion of the PV array construction project and any areas of concern must be repaired.

An existing access road leads to the plateau area of the Landfill. In addition to this access road, the Applicant's propose construction of a vehicle turn around area for Brockton Fire Department equipment near the upper end of the access road to the Landfill plateau area that will lie over the existing Landfill final cover system. (refer to Drawings C-2 and C-4)

As stated in the Applicants' August 19, 2016, e-mailed response to comments, test pits will be conducted by the Geotechnical Engineer along the existing access road and at the location of the proposed vehicle turn around area to provide the information necessary to determine the maximum weight/vehicle load rating for the access road protective of the final cover system geomembrane and the necessary materials thickness of the proposed turn-around area. (refer to Conditions #2g and 2h)

Storm Water:
The Landfill's stormwater control system consists of rock-lined drainage swales underlain by a geotextile filter fabric, a perimeter swale lined with grass cover and/or rip rap erosion protection, and four detention basins. The Applicants stated that installation of the PV array will include no changes to the stormwater discharge system creating no effects on the existing conditions at the Landfill and the Applicants anticipate no effects on Public Health or the environment

Site Security: An existing security fence surrounds the existing Landfill final cover area. The fence has been recently inspected and repaired.

Post Closure and Post-Closure Use Operations and Maintenance: There are no proposed changes to the post closure operation and maintenance plan for the area to be maintained by the Town of and not used for the PV array.

As a condition of this permit, MassDEP is requiring that, during the first year of operation of the PV array, inspections of the Landfill final cover system be performed on a monthly basis and thereafter quarterly, at a minimum. MassDEP is also requiring that inspections include the condition of the security fencing. (refer to Condition #19)

Health and Safety:
As a condition of this permit, MassDEP is requiring that a Solar Array Construction Period Health and Safety Plan and a Post Closure Operations and Maintenance Health and Safety Plan be submitted and that personnel training be provided for employees who access the solar array areas of the Landfill. (Refer to Condition #10)

Decommissioning Plan: A decommissioning plan was included in Appendix G of the Application. As a condition of this permit, if the proposed Landfill Solar Photovoltaic Array project is abandoned, during or after completion of construction, the Applicants are required to submit to MassDEP for review and prior approval an updated decommissioning and site restoration plan, which includes, at a minimum: dismantling and removal of all panels and supporting equipment, transformers, overhead cables, foundations and buildings; and restoration of the roads to restore the Landfill to substantially the same physical condition that existed prior to post-closure use construction. The intent of the updated plan is to address any changes in

conditions at the Landfill between the current decommissioning plan assumptions and the Landfill conditions at the time of decommissioning. (refer to Condition #22)

Financial Assurance Mechamnism: The City of Brockton is a co-applicant for the proposed project and, accordingly, no financial assurance mechanism ("FAM") is being required for decommissioning and site restoration activities of the PV array. Be advise that if, at any time, this permit is transferred and the City is not a permittee for the PV array, a FAM will be required. (refer to Condition #21)

V. PERMIT DECISION WITH CONDITIONS:

MassDEP, having determined the information in the Application is satisfactory and in accordance with its authority granted pursuant to M.G.L. c.111, s. 150A, and 310 CMR 19.000, hereby **APPROVES** the Post-Closure Use of the Brockton Thatcher Street Landfill for a Solar Photovoltaic Array subject to the conditions identified herein.

1. Permit Limitations: The issuance of this approval is limited to the proposed Solar Photovoltaic Array at the Landfill as detailed in the Application and does not relieve the Applicants from the responsibility to comply with all other regulatory or permitting requirements. Post-Closure Use construction shall proceed in complete compliance with the approved plans, MassDEP's regulations and requirements, the Manual or as required by this Approval. This approval does not relieve the City, as the owner of the Landfill, from its responsibility to comply with all post closure monitoring and maintenance requirements for the entire Landfill. There shall be no deviation from this Approval without prior consent from MassDEP. MassDEP shall be consulted prior to any deviation from the approved design. MassDEP may require a permit modification application for significant design modifications.

2. Pre-Construction Submittals: Prior to construction, the Applicants shall submit the following to MassDEP for its review and approval at least 60 days prior to commencing construction activities, unless otherwise approved by MassDEP. All electrical work must be designed in accordance with the most recent versions of the Massachusetts Electrical Code and electrical permits will be secured from the local building official:

    a) All drawings prepared by RBI Solar, and designated "not for construction", shall be finalized and signed and sealed by a Massachusetts Registered Professional Engineer. All electrical drawings shall be signed and sealed Massachusetts Registered Professional Electrical Engineer.

    b) Neo Virtus Engineering, Inc. Drawing E-4 provides two options for mounting electrical equipment. The Applicants' August 15, 2016, emailed response to MassDEP comments stated that the Option 1 - skid mounted detail will be used and the conduits between the PV array and the electrical pad will be above grade. A revised drawing shall reflect this change and eliminate Option 2 and shall be submitted to MassDEP.

c) Neo Virtus Engineering, Inc. Drawing E-4 Option 1 and the Applicants' August 15, 2916, e-mailed response to MassDEP comments indicates the conduit between the skid mounted electrical equipment and power poles will be installed below grade. The conduit shall be designed to be explosion proof and prevent the intrusion of subsurface landfill gas into the conduit. Revised drawings shall be prepared, signed and sealed by a Massachusetts Registered Professional Electrical Engineer and submitted to MassDEP for review and approval.

d) Neo Virtus Engineering, Inc. Drawing E-3 depicts a "Conduit Road Crossing". The Applicants stated in the August 15, 2016, e-mailed response to comments that the site does not require a road crossing. Drawing E-3 shall be revised to eliminate the Conduit Road Crossing detail and resubmitted to MassDEP. Should the project design be modified such that a conduit road crossing is proposed, the conduit must be designed to be explosion proof and a final detail shall be prepared, signed and sealed by a Massachusetts Registered Professional Electrical Engineer and submitted to MassDEP for review and approval.

e) All versions of the Application drawings shall be revised to indicate a minimum 20-foot clear path to each existing landfill gas extraction well and a minimum clear radius of 20 feet around each landfill gas extraction well. (Note: The "S" series drawings prepared by RBI Solar must be revised to match the Drawings C-3 and C-4 prepared by VHB, revised September 13, 2016).

f) All electrical permits issued by the appropriate local building official shall be submitted for MassDEP's records.

g) The results of all access road test pit analysis, design calculations demonstrating the adequacy of the access road to protect the final cover system geomembrane considering the proposed construction equipment, maintenance equipment and fire department equipment that may use the access road, and design details for any proposed enhancements to the access road shall be submitted to MassDEP for review and approval. All test pit results, calculations and design details must be prepared, signed and sealed by a Massachusetts Registered Professional Engineer. In addition to material depths, the test pit analysis should visually determine the maximum particle size of the materials lying above the flexible membrane liner for use in the design calculations.

h) Final design details for the proposed fire department turn–around area (refer to Drawings C-2 and C-4) including test pit results of the final cover system in the area of the fire department access road, design calculations demonstrating the adequacy of the proposed design to protect the final cover system geomembrane considering the proposed construction equipment, maintenance equipment and fire department equipment that may use the turn-around, and design details, shall be submitted to MassDEP for review and approval. All test pit results, calculations and design details must be prepared, signed and sealed by a Massachusetts Registered Professional Engineer.

i) Drawing C-5 provides a chain link fence detail and light pole foundation detail. The proposed locations of these items are not indicated on the drawings. Should chain link fence or light poles be proposed to be installed as part of the project, a plan must be submitted indicating the proposed location(s). No chain link fence posts or light pole foundations as shown on the details on Drawing C-5 shall be constructed on the Landfill final cover system. All underground conduits must be designed to be explosion proof and a final detail shall be prepared, signed and sealed by a Massachusetts Registered Professional Electrical Engineer and submitted to MassDEP for review and approval.

j) The Neo-Virtus electrical drawings do not provide details for grounding of the PV system. Should any grounding methods be proposed to be installed into the final cover system soils, final details shall be prepared, signed and sealed by a Massachusetts Registered Professional Electrical Engineer and submitted to MassDEP for review and approval. No grounding systems may penetrate the flexible membrane liner of the final cover system.

3. Enclosures and Combustible Gas Alarms: Any enclosures that that allow human entry shall have a landfill gas monitor that is fully operational at all times. The monitor shall be calibrated to a methane standard; have an audible and a lighted beacon. At a minimum, the alarm shall be set to sound when the concentration of explosive gases exceeds 10% of the Lower Explosive Limit (LEL).

4. Regulatory Compliance: The Applicants, Engineer and Applicants' Contractors shall fully comply with all applicable local, state and federal laws, regulations and policies, by-laws, ordinances and agreements. This includes but is not limited to, 310 CMR 19.142: *Post-Closure Requirements*, 310 CMR 19.143: *Post-Closure Use of Landfills*, and 310 CMR 19.043: *Standard Conditions*. Applicable federal regulations include, but are not limited to, 29 CFR Part 1910, OSHA standards governing employee health and safety in the workplace and all applicable local, state and federal electrical codes and permits, including National Electrical Code (NEC), 2011 Edition, Article 690-"Solar Photovoltaic (PV) Systems", as amended.

5. Inspection and Repair of Settlement Areas: Prior to construction of the PV array, any suspect settlement areas on the Landfill project area shall be surveyed to determine the lowest spot. The surrounding area should be then surveyed to find the "relief point" defined as the lowest surrounding area where ponded water would flow off the cap. The elevation difference is defined as the "pond value". Minor settlement shall be defined as less than a 12 inch pond value. Any Landfill project area that has undergone minor settlement shall be corrected by the placement of additional vegetative support soil to promote runoff and the area shall be reseeded. Any area repaired should be surveyed and the location marked on a plan with the pond value. Any future settlement should be recorded cumulatively. If/when the total settlement reaches 12-inches, the area will be considered to have suffered "major settlement" as defined below and appropriate repairs to eliminate ponding shall be performed.

Major settlement is defined as a pond value of 12 inches or more. When this occurs, the final cover system must be repaired to prevent water from ponding above the low permeability layer. The Applicants may either:

1. Strip off the final cover soils above the low permeability layer, inspect and repair the low permeability layer if/as necessary, place low permeability soil as necessary to promote runoff, replace final cover soils; or

2. Expose the low permeability soil or geomembrane in a trench around the perimeter of the settled area. Fill the area with soil to form slopes promoting runoff. Cap the area with a new low permeability membrane, geosynthetic clay liner (GCL), or low permeability soil layer that ties into the existing low permeability layer at the identified perimeter. Place new drainage sand and vegetative support material over the new cap area.

Any proposal to repair minor settlement may be done as routine maintenance, provided that the Applicants' report the settlement to MassDEP and state their intent to perform repairs and provides MassDEP with final survey results and a summary write up.

Any proposal to do major settlement repair must be submitted within a Corrective Action Design (BWP SW 25) permit application, since disruption of the final cover system will take place and repair details must be submitted and approved.

6. Notification of Construction: The Applicants shall notify MassDEP, Southeast Regional Office solid waste section chief, in writing (e-mail is acceptable) when the post-closure use construction commences and is completed.

7. Certification Report: Within ninety (90) days of completing the installation of the solar photovoltaic array, MassDEP shall be provided with a certification report for MassDEP's records. All construction work shall be completed under the supervision of a Massachusetts Registered Professional Engineer who shall have sufficient staff on-site to provide quality assurance/quality control (QA/QC) oversight for all construction work at the Landfill. The report shall be signed and stamped by a Massachusetts-registered professional engineer and include, at a minimum, written certification from the supervising engineer that the project was performed in accordance with MassDEP regulations, requirements and the approved Post Closure Use permit application. The report shall include a project narrative, as-built drawings depicting all pertinent site features and photographs representative of the construction processes and completed work. A list of equipment used on the Landfill, the Landfill area accessed by the vehicle, and the pressure rating of each vehicle shall be indicated in the certification report. Should the Applicants desire a formal review and written approval of the certification report, the Applicants must submit a formal BWP SW 43, landfill Closure Completion permit application.

8. Preconstruction Work: Prior to commencement of construction activities, all Landfill gas extraction wells, wellheads, control valves and piping exposed above the Landfill final system, Landfill soil-gas monitoring wells, groundwater monitoring wells and other existing

above ground structures on the Landfill cap, and any other appurtenances potentially damaged by construction activities shall be flagged for visibility. Protective barriers shall be placed around all Landfill gas extraction wells, wellheads, control valves and piping exposed above the Landfill final system and other structures, as needed, to prevent damage by vehicles accessing the area.

9. Landfill Gas Monitoring: Pursuant to MassDEP's March 21, 2008, Approval with Conditions of the Landfill Comprehensive Site Assessment, the City performs annual near surface monitoring of the Landfill for methane emissions and monitors subsurface landfill gas probes on a quarterly basis and reports the results to MassDEP. The City shall submit the results of all future near surface monitoring, all landfill gas probe monitoring results and all hydrogen sulfide concentrations of flare inlet landfill gas to SunEdison Origination, LLC. The Applicants shall take all necessary actions to protect the health safety of personnel related to the construction, operation and maintenance of the PV array

10. Health and Safety: The Applicants, Engineers and Applicants' Contractors are responsible to ensure all necessary precautions are taken to protect the health and safety of workers and the general public during both the construction phase and during the operation and maintenance phase of the post-closure use.

    A site specific Solar Array Construction Period Health and Safety Plan shall be developed and submitted to MassDEP (for its files) prior to the beginning of any construction work. The Solar Array Construction Period Health and Safety Plan shall include as a minimum;

    - protocols for monitoring of landfill gas (i.e. methane, hydrogen sulfide, etc.) as needed,
    - protocols for modifying work practices if landfill gas is detected at levels deemed unsuitable, and
    - training for all workers including town workers conducting construction activities at the Landfill regarding hazards associated with the landfill gas and the PV array, including electrical hazards, and
    - A site specific narrative advising construction workers of the presence, concentrations, and dangers associated with the hydrogen sulfide gas within the Landfill, the landfill gas collection and control system.

    A site specific Post Closure Operations and Maintenance Health and Safety Plan for the post-closure use period, shall be developed and submitted to MassDEP (for its files) prior to the beginning of any construction work. The Post Closure Operations and Maintenance Health and Safety Plan shall include as a minimum;

    - protocols for monitoring of landfill gas (i.e. methane, hydrogen sulfide, etc.) as needed,
    - protocols for modifying work practices if landfill gas is detected at levels deemed unsuitable,
    - training for all workers including town workers conducting maintenance activities at the Landfill regarding hazards associated with the landfill gas and the PV array, including electrical hazards, and.

- A site specific narrative advising operations and maintenance workers of the presence, concentrations, and dangers associated with the hydrogen sulfide gas within the Landfill, the landfill gas collection and control system.

Each Health and Safety Plan must address the levels of hydrogen sulfide within the landfill gas, and specify the site specific precautions that must be taken to protect public health and safety.

11. Personnel Training: The Applicants, Engineers and Applicants' Contractors shall instruct all construction and maintenance personnel regarding the potential hazards associated with landfill gas and shall give on-the-job training involving in any activity authorized by this permit. Such instruction and on-the-job training shall teach personnel how to comply with the conditions of the permit to carry out the authorized activity in a manner that is not hazardous to public health, safety, welfare or the environment.

12. Landfill Gas Notification Requirements:
    a. As specified in solid waste management regulations at 310 CMR 19.132 (4) (g),

    "When, at any time, the concentration of explosive gases exceeds 10% of the lower explosive limit (LEL) in any building, structure, or underground utility conduits, excluding gas control, gas recovery and leachate collection system components, the owner/operator shall:

    1. *Take immediate action to protect human health and safety;*
    2. *Notify the Department within two hours of the findings; and*
    3. *undertake the actions specified under 310 CMR 19.150, Landfill Assessment and 310 CMR 19.151: Corrective Action, as required by the Department."*

    b. If at any time monitoring detects the presence of any combustible gases at or in excess of 10% of the lower explosive limit at any location within a building or within any utility conduits on site or off-site, the Town shall notify MassDEP's Bureau of Waste Site Cleanup-Emergency Response Section (508) 946-2850 within two (2) hours of the exceedance as per 310 CMR 40.0321(1) (a) of the regulations.

13. Vehicles Operating on the Landfill Final Cover System: Vehicles operating on the any access road located above the final cover system, where the maximum particle size of the materials above the flexible membrane liner is 3/8 inch or less, shall be limited to the following ground pressures based on soil thicknesses confirmed to exist thickness above the geomembrane liner:

Soil < 24 inches	no vehicles
Soil >/= 24 inches	<10 psi
Soil 24 to 36 inches	<20 psi

Vehicles operating on the Landfill final cover system shall be low-pressure construction equipment, with fully loaded ground pressures of **7 psi** or less. Site specific engineering calculation must be submitted prior to operation of any equipment with a bearing pressure of

greater than 20 psi on the access roads above the Landfill final cover system, or where the maximum particle size of the materials above the flexible membrane liner is greater than 3/8 inch.

Construction equipment operating off the access road shall limit turning on the vegetative support layer as much as possible. If MassDEP determines the use of any equipment is creating the potential for damage to the final cover system, the usage of such equipment shall immediately cease upon notification by MassDEP. All operators of the vehicles entering the final cover system area shall be clearly instructed by the on-site engineer and/or the contractor of the requirements of this permit prior to arrival, to avoid damage to the Landfill final cover system components.

A list of equipment used on the Landfill, the Landfill area accessed by the vehicle, and the pressure rating of each vehicle shall be indicated in the certification report.

14. Permanent and Temporary Roads: Equipment shall not access the final cover system from permanent and temporary roads where the transition will result in excessive pressure and wear on the Landfill vegetative service. The on-site engineer may allow the construction of temporary ramps as necessary.

15. Integrity of the Final Cover System: All disturbances of the Landfill shall be limited to the proposed excavations and installations as depicted and described within the Application and approved plans. Excavations shall be limited to the topsoil layer. No excavations shall penetrate the sand drainage layer without written approval by MassDEP. The Engineer and Applicants' Contractors shall ensure that vehicles operating on the Landfill surface do not compromise the integrity of the Landfill final cover system.

16. Construction Precautions: All excavations and construction shall be supervised by a Massachusetts Registered Professional Engineer engaged by the Engineer. All necessary precautions shall be taken to protect the Landfill storm water control system, environmental monitoring network and the Landfill gas vents and other on-site structures. All operators of vehicles entering the construction area should be clearly instructed by the on-site engineer and/or the Applicants' Contractor of the permit requirements to avoid damage to the Landfill components. The on-site engineer shall observe the extent of each excavation performed on the Landfill capping system. If any damage occurs to any Landfill components, the Engineer shall notify MassDEP within 24 hours and provide a written plan with a schedule for repairs.

17. Array Setbacks: The Applicants shall maintain a minimum 20-foot radius buffer between the closest edge of the PV array modules and all Landfill gas vents and a 20-foot radius buffer between the pad mounted electrical equipment and all Landfill gas vents. The Applicants shall maintain a 20-foot clear pathway between PV arrays for access to each landfill gas extraction well suitable for necessary equipment to repair or replace each extraction well.

18. PV array installation: The Applicants shall monitor the installation of the ballast blocks in the field and submit for MassDEP review and approval any proposal to place ballast blocks on any Landfill area with a slope steeper than that evaluated by the Applicants and deemed to be

stable. Any such submittal shall include a project narrative, design plans and design calculations with appropriate backup references, and shall be signed and sealed by a Massachusetts Registered Professional Engineer. MassDEP may require a permit modification application should the proposed modifications be deemed major modifications by MassDEP.

19. Post-closure Use Operation and Maintenance Plan: During the first year of operation of the PV array, inspections of the Landfill final cover system shall be performed on a monthly basis. Monthly inspection reports shall be submitted to MassDEP within fourteen (14) days of completion. Following the first year of operation of the PV array, inspections of the Landfill shall be performed on a quarterly basis and shall be submitted to MassDEP within fourteen (14) days of completion. The Applicants, Engineer and Applicants' Contractors shall monitor the effectiveness of the site security system and the storm water management system which should include; swales, structures and any and all conveyance systems. MassDEP shall be consulted prior to any deviation from the approved storm water design. MassDEP may require a permit modification application for significant design modifications. Any erosion problems, settlement problems, security or other issues observed at the Landfill shall be reported to MassDEP and repaired immediately.

20. Site Security: Pursuant to 310 CMR 19.130(23) the City is required to provide sufficient fences or other barriers to prevent unauthorized access to the Landfill. The City must continually monitor and evaluate the potential for unauthorized access and institute all appropriate measures to prevent unauthorized access during the closure and post-closure period.

21. Transfer – No transfer of this permit shall be permitted except in accordance with the requirements of 310 CMR 19.044. The form established by MassDEP for permit transfers is the BWP SW 49 application form. Any application to transfer this PV array permit shall clearly indicate on the application form that the PV array only and not the Landfill itself are the subject of the proposed transfer. If at any time, the Applicant(s) for this project does not include a municipal entity, the Applicant(s) shall (or *MassDEP will require the Applicant(s) to*) provide to MassDEP a financial assurance mechanism, in accordance with 310 CMR 19.051, for the costs of decommissioning and site restoration activities.

22. Decommissioning Plan – A decommissioning plan was included in Appendix G of the Application. If the proposed Landfill Solar Photovoltaic Array project is abandoned, during or after completion of construction, the Applicants shall submit to MassDEP for review and prior approval an updated decommissioning and site restoration plan, which includes, at a minimum: dismantling and removal of all panels and supporting equipment, transformers, overhead cables, foundations and buildings; and restoration of the roads to restore the Landfill to substantially the same physical condition that existed prior to post-closure use construction. The intent of the updated plan is to address any changes in conditions at the Landfill between the curent decommissioning plan assumptions and the Landfill conditions at the time of decommissioning.

23. Entries and Inspections: In accordance with *310 CMR 19.043: Standard Conditions*, MassDEP and its agents and employees shall have the right to inspect the Landfill and any equipment,

structure or land located thereon, take samples, recover materials or discharges, have access to and photocopy records, to perform tests and to otherwise monitor compliance with this permit and all environmental laws and regulations.

24. Reservation of Rights: MassDEP reserves the right to require additional assessment or action, as deemed necessary to protect and maintain an environment free from objectionable nuisance conditions, dangers or threats to public health, safety and the environment. MassDEP reserves all rights to suspend, modify or rescind this permit if it determines the solar array compromises the integrity of the final cover system and/or results in a threat to public health, safety or the environment.

    This approval pertains only to the Solid Waste Management aspects of the proposal does not negate the responsibility of the owners or operators to comply with any other local, state or federal laws, statutes and regulations or enforcement actions, including orders issued by another agency now or in the future. Nor does this approval limit the liability of the owners or otherwise legally responsible parties from any other applicable laws, statutes or regulations now or in the future.

VI. REVIEW OF DECISION

Pursuant to 310 CMR 19.033(4)(b), if the Applicants are aggrieved by MassDEP's decision to issue this decision, they may within twenty-one days of the date of issuance file a written request that the decision be deemed provisional, and a written statement of the basis on which the Applicants believe they are aggrieved, together with any supporting materials. Upon timely filing of such a request, the decision shall be deemed a provisional decision with an effective date twenty-one days after MassDEP's receipt of the request. Such a request shall reopen the administrative record, and MassDEP may rescind, supplement, modify, or reaffirm its decision. If MassDEP reaffirms its decision, the decision shall become final decision on the effective date. Failure by the Applicants to exercise the right provided in 310 CMR 19.033(4)(b) shall constitute waiver of the Applicants' right to appeal.

VII. RIGHT TO APPEAL

Right to Appeal: This approval has been issued pursuant to M.G.L. Chapter 111, Section 150A, and 310 CMR 19.033: Permit Procedure for an Application for a Permit Modification or Other Approval, of the "*Solid Waste Management Regulations*". Pursuant to 310 CMR 19.033(5), any person aggrieved by the final permit decision, except as provided for under 310 CMR 19.033(4)(b), may file an appeal for judicial review of said decision in accordance with the provisions of M.G.L. Chapter 111, Section 150A and M.G.L. Chapter 30A no later than thirty days of issuance of the final permit decision to the Applicant. The standing of a person to file an appeal and the procedures for filing such an appeal shall be governed by the provisions of M.G.L. c. 30A. Unless the person requesting an appeal requests and is granted a stay of the terms and conditions of the permit by a court of competent jurisdiction, the permit decision shall be effective in accordance with the terms of 310 CMR 19.033(3).

Notice of Appeal: Any aggrieved person intending to appeal a final permit decision to the Superior Court shall first provide notice of intention to commence such action. Said notices of intention shall include MassDEP Transmittal No. X269336 and shall identify with particularity the issues and reason why it is believed the final permit decision was not proper. Such notice

shall be provided to the Office of General Counsel of MassDEP and the Regional Director for the regional office which processed the permit application, if applicable at least five days prior to filing of an appeal. The appropriate addresses to send such notices are:

Office of General Counsel
Department of Environmental Protection
One Winter Street
Boston, MA 02108

Regional Director
Department of Environmental Protection
20 Riverside Drive
Lakeville, MA 02347

No allegation shall be made in any judicial appeal of a final permit decision unless the matter complained of was raised at the appropriate point in the administrative review procedures established in 310 CMR 19.000, provided that a matter may be raised upon showing that it is material and that it was not reasonably possible with due diligence to have been raised during such procedures or that matter sought to be raised is of critical importance to the environmental impact of the permitted activity.

Please direct any questions regarding this matter to me at (508) 946-2847 or Dan Connick (508) 946-2884 or write to the letterhead address.

Very truly yours,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

Mark Dakers, Chief
Solid Waste Management Section
Bureau of Air and Waste

D/DC/

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