Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

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January 29, 2016

Julian M. Suso, Town Manager
Town Hall
59 Town Hall Square
Falmouth, MA 02540

and

Mr. Michael Galasso
Falmouth Economic Development and Industrial Corporation
Town Hall
59 Town Hall Square
Falmouth, MA 02540

and

Ms. Emma Kosciak
Falmouth Landfill Solar, LLC.
88 Black Falcon Avenue, Suite 342
Boston, MA 02210

RE: Approval with Conditions
Application for: BWP SW 36 Post-Closure Use - Major
Ground Mounted Solar Photovoltaic (PV) Array
Transmittal #: X268565

AT: Falmouth Landfill
458 Thomas B. Landers Road
Falmouth, Massachusetts
Facility ID #: 39271 Regulated Object#: 172517

Dear Ms. Suso, Mr. Galasso and Ms. Kosciak

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 Falmouth 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 4.5 megawatt AC solar photovoltaic ("PV") array, constructed in two phases, subject to conditions as specified herein.

I. SUBMITTALS:

The Application consists of the following documents received by MassDEP on January 7, 2016:

A. A permit application transmittal form assigned No. X268565,
B. A completed for Post-Closure Use - Major (BWP SW 36) application form. The Application form Engineer's Supervision section is signed by Brian S. Huntley, Massachusetts Registered Professional Civil Engineer No. 46373. The Certification section is signed by Emma Kosciak, Manager of Solar Development, Falmouth landfill Solar, LLC and by Michael Galasso, Falmouth Economic Development and Industrial Corporation,
C. A narrative providing Landfill background information and describing the proposed post closure use;
D. A geotechnical evaluation including calculations signed and sealed by Brian S. Huntley;
E. Stormwater calculations evaluating up to the 100 year storm event;
F. A Site Locus Map, Priority Resource Map, and an Orthophotograph of the Landfill,
G. Three 11' x 17" Electrical Drawings, prepared by Power Engineering, LLC., and stamped by David J. Colombo, Massachusetts Registered Electrical Engineer No. 40426,
H. An operations and Maintenance Plan, and an Emergency response Plan, and
I. A set of eight 24' x 36" project drawings, prepared by Tighe &Bond, and signed and sealed by Brian S. Huntley, Massachusetts Registered Professional Civil Engineer No. 46373 and Frances J. Hoey, Massachusetts Registered Professional Civil Engineer No. 40111.

Supplemental Application information was submitted on January 28, 2016, consisting of GameChange PV array racking system design calculations and additional electrical drawings prepared by Power Engineers, LLC. (refer to Condition 2 for required Massachusetts Registered Professional Engineer seals and signatures).

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 Falmouth Landfill operated on a Town of Falmouth ("Town") owned land parcel encompassing approximately 40 acres of a 54 acre parcel. The Landfill site is bounded to the north by gravel removal operations by Cape Cod Aggregates Corps and Thomas B. Landers Road, to the west by Blacksmith Shop Road, Town-owned land to the south, and the Town transfer station and industrial uses along Langdon G. Burwell Drive to the west. Available records indicate landfilling operations began at the Landfill property in the mid 1950's and operation as a sanitary landfill commenced in 1973. The Landfill ceased solid waste disposal operations in 1998 and a final cover system was installed in 1999 in accordance with a Corrective Action Design approved by MassDEP on July 1, 1998 (Transmittal No. W000663).

Final Cover System Description

The approved final cover system was comprised of the following in accordance with 310 CMR 19.112 as approved in a Landfill Major Modification to the Final Closure design Approval dated December 13, 1999 (Transmittal No. W007431):

- a gas venting layer consisting of a minimum thickness of 6 inches of soil;
- an overlying low permeability layer consisting of a 40 mil high-density polyethylene (HDPE) textured geomembrane, flexible membrane liner ("FML");
- an overlying drainage layer consisting of soil with a minimum thickness of 12 inches; and
- an overlying vegetative support layer comprised of a minimum thickness of 8 inches of soil capable of maintaining a healthy vegetative growth on the final cover and seeded with vegetative cover seed mix.

Alternative final cover systems were approved for areas of the Landfill to be paved that lie outside the area of the proposed PV array.

The HDPE geomembrane was approved to be constructed at a minimum slope of three per cent on the Landfill top and a maximum slope of 1-foot vertical rise to 2.5-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 existing stormwater management system includes grass lined and rip rap drainage swales that convey stormwater off the Landfill final cover system. The northern swale system discharges stormwater runoff to the northeast through an existing culvert beneath the access road to the transfer station to an off-site detention basin. The southern swale system discharges stormwater runoff southeasterly to a sedimentation basin located outside the limits of the landfill cap.

Gases generated by waste decomposition within the Landfill are managed using a passive collection and venting system. Forty-four vertical vents were constructed consisting of 6-inch diameter, perforated, high-density polyethylene pipes, set in 24-inch diameter boreholes with a filter pack of pea stone.

IV. POST-CLOSURE USE SOLAR ARRAY PROPOSAL SUMMARY:

The Town is the owner of the Landfill and provided a July 27, 2015 document headed " Letter of Intent for the Lease of the Falmouth Capped Landfill to Site a Solar Power Generating System", setting forth the terms upon which the Town will lease the Landfill to the Falmouth Economic Development and Industrial Corporation ("EDIC") to develop a 4.5 MW AC solar photovoltaic ("PV") array installation. EDIC will utilize approximately 24.8 acres of the Landfill site in two phases (Phase 1 -16 acres, Phase 2 – 8 acres). EDIC intends to enter into a long term sub-lease with Citizens Falmouth Solar, LLC. Hereinafter, the Town, EDIC and Citizens Falmouth Landfill Solar, 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".

PV Array Design:

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

Phase 1 – 16 acres- 3.0 MW AC, 4.5 MW DC

- A total of approximately 12,692 – 315w Tier 1 Solar Modules or equivalent, installed on GameChange Pour-in-Place™ Ground Mounting Racks and Cast-in-Place forms;
- Four Solectria XTM-750 inverters, or equivalent;
- Two 1,500 kVA transformer, or equivalent;
- Two reinforced foot concrete pads located above the landfill final cover system for the transformers and inverters;
- One reinforced concrete pad located off the Landfill final cover system for switchgear;
- Three new utility poles located off the Landfill final cover system; and
- A new access road above the Landfill final cover system for post construction PV array maintenance;

Phase 2 – 8.8 acres- 1.5 MW AC, 2.0 MW DC

- A total of approximately 6,422 – 315w Tier 1 Solar Modules or equivalent, installed on GameChange Pour-in-Place™ Ground Mounting Racks and Cast-in-Place forms;
- Two Solectria XTM-750 inverters, or equivalent;
- One 1,500 kVA transformer, or equivalent;
- One reinforced foot concrete pad for the transformer and inverters; and
- Extension of the new access road above the Landfill final cover system.

The ground mounted PV array is to be constructed on top plateau area of the Landfill with a maximum slope of 10 percent. The PV array will utilize 315 watt Tier 1 Solar Modules (77 inches by 39 inches). Modules will be arranged in groups of 38 modules laid out in strings 2 modules high and 19 modules long (module layout 2x19) and be with oriented east-west rows and with the modules facing south with concrete ballasts at each end. The southern edge of the modules will be approximately 24 inches above the ground surface.

PV modules will be installed on GameChange Pour-in-Place™ Ground Mounting Racks and utilize GameChange, recycled, high molecular weight polyethylene plastic tubs placed either directly on the Landfill final cover system vegetative support soils or on a leveling pad of

crushed stone or crushed clean asphalt, brick and concrete. Panel support racks will have no penetrations of the low permeability layer of the Landfill final cover system.

The racking system will hold the panels at a fixed tilt of 20 degrees from horizontal. Rows of modules will be spaced approximately 11.7 feet apart to reduce shadow impacts and to allow for Landfill final cover system and solar facility maintenance. The racks will be placed to avoid interference with access roads, the passive landfill gas collection extraction vents and all storm water control features. The existing elevation and grade of the Landfill will not be altered. A ten foot separation will be maintained between the existing Landfill passive gas vents and the modules, which the Applicant states will provide for worker safety during construction and operation and maintenance activities and protection of the vents from damage.

Each module string will have an integrated combiner and disconnect switch into which the panel wires feed. For Phase 1, energy will be transmitted from the combiner boxes to one of four Selectria 759TXM inverters located on two equipment pads located on the west side of the Landfill on the north side of the access road. For Phase 2, energy will be transmitted from the combiner boxes to one of two Selectria 759TXM inverters located on one equipment pad located on the east side of the Landfill on the north side of the access road. For both Phases cable trays will be used to support conduits above the Landfill surface.

The equipment pads will be constructed of poor-in-place reinforced concrete and will support the inverters transformers, and switchgear. The Application included a an Electrical Site Plan, Drawing E-2.2, A 3000KW AC One-Line Diagram, Drawing E-1, and a 1500 KW AC One-Line Diagram, Drawing E-1.2, prepared by Power Engineers, Inc. and stamped and signed by a Massachusetts Registered Professional Electrical Engineer. As shown on the drawings prepared by Power Engineers, LLC., three concrete equipment pads will be constructed above the Landfill final cover system, two pads for Phase 1 transformers and inverters and one pad for the Phase 2 transformer and inverters. A third concrete pad will be located outside the limits of the Landfill final cover system at the North side of the Landfill to support a 25KV switchgear with protective relaying. Above-grade 25KV conduit (two-2" or 4" conduits) will be installed between the on-Landfill Phase 1 and Phase 2 pads and the Phase 1 pad and the off-Landfill pad to transmit power to the 25 KV switchgear. Above-grade cable (two 4" conduits) will then run to a new Applicant-supplied riser pole with a lockable disconnect switch. Overhead 25KV, 3 phase wire will run from the riser pole to two new poles to be supplied by Eversource and to an existing "tap pole". The first Eversource pole will support a primary meter and the second Eversource pole will support a recloser. An Interconnection Application has been submitted to Eversource for the Phase 1 and the Applicants anticipate that a second application for Phase 2 will be submitted in January 2016.

The Applicants state that the final grounding arrangement will be designed based on actual soil testing and ground testing on the site during construction. The Applicants anticipate that a grounding ring will be constructed beneath each concrete pad and additional unshielded wire will be buried in the area surrounding the pad as necessary. A tentative grounding detail was submitted on Drawing E-4. The Applicants stated that there are no proposed grounding rods that will be driven into or otherwise penetrate the Landfill final cover system.

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 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 based on assumed PV array and electrical equipment and equipment pad weights. The pressures calculated to be exerted on the Landfill final cover system drainage layer were 3.2 pounds per square inch (psi) for the array and ballast blocks and 2.7 psi for the electrical equipment pad. The Applicants stated that the calculated pressures exerted on the Landfill by the proposed solar system are below the 7 psi ground pressure exerted on the final cover system during final cover construction and that construction of the PV arrays will have little or no impact on the existing Landfill or final cover system.

The Application included an evaluation of three modes of settlement that could impact the proposed solar array: elastic settlement (immediate), consolidation settlement and decomposition settlement. The Applicants stated that, base on their assumptions and calculations, there will be minimal elastic settlement, on the order of less than one-half inch, and that this settlement would produce less than 0.1 percent deflection, which the Applicants state is below the industry standard allowable deflection of 5 percent. The Applicants considered the height of the Landfill and stated that the presence of the solar arrays will not raise the pressure of the midpoint of the Landfill and there will be no significant effects due to consolidation. The Applicants stated that installation of the array will not change the way the waste decomposes and decomposition related settlement. The Applicants did indicate that decomposition settlement could affect the solar array alignment, which could be addressed by adjustments to the adjustable mounting system. Pursuant to Condition 5 of this Permit Approval, the Applicants are required to inspect the Landfill for existing settlement and monitor the Landfill for future settlement and the repair the Landfill final cover system as necessary to prevent stormwater ponding on the final cover surface and on the low permeability layer.

Calculations completed by GameChange Racking based on a 120 mile per hour wind load and a 35 pound per square foot snow load indicated that safety factors for tipping and sliding were greater than 1.5 and ground pressures were less than 7 psi, which GameChange Racking determined is acceptable.

Access Road:

During Phase 1, the Landfill will be accessed via a new 16-foot wide, crushed stone access road that will connect to the existing paved access road in the transfer station area located west of the Landfill and run easterly across the Landfill surface to a proposed turn around area in the top center area of the Landfill. The access road will be extended further easterly to a second turn around area during Phase 2.

The Applicant states that only low ground pressure ("LGP") equipment with less than 7 pounds per square inch (PSI) ground pressure will be allowed to drive directly on the existing Landfill final cover system. Construction staging and stockpiling of materials will be limited to areas in

the paved transfer station area or areas not on the Landfill final cover system. Concrete will be placed into the ballast block forms from LGP equipment or will be pumped from a concrete truck that is located off the Landfill cover system.

Storm Water:

The existing stormwater management system includes grass-lined and rip-rap drainage swales that convey stormwater off the Landfill final cover system. The landfill site is currently divided into five drainage areas. The proposed project includes the installation of access roads over the landfill surface. The Applicants state that the crushed stone for the access roads has a void ratio larger than the impervious surface of the landfill final cover system, resulting in and overall lower Runoff Curve Number ("RCN") value under proposed conditions that, combined with an increased time of concentration, results in decreased in peak discharge rates from the project to areas off-site.

Access roads will be constructed crossing the existing rip-rap and grassed lined swales. Culverts have been designed using HydroCAD to allow stormwater within the drainage swales from the 100 year, 24-hour storm event to continue to flow unimpeded. As shown on the project drawings, pairs of 18 inch diameter culverts will be installed in two locations, a single 18 inch diameter culvert will be installed in two locations, and a single 12 inch diameter culvert will be installed in one location on the Landfill.

Site Security: The Applicants stated that there is existing fencing around the project site and signage indicating high voltages within the limits of the PV array will be provided outside the perimeter fencing. The Applicants stated that site security requirements of the National Electric Code are addressed through the use of wiring encased in conduit, locked combiner boxes, and locks on equipment located on pads. No additional site security is proposed at this time.

Post Closure and Post-Closure Use Operations and Maintenance: The Applicants state the Town will maintain responsibility for Landfill maintenance outside the limits of the PV array and Falmouth Solar will maintain responsibility for vegetation management within the solar array area. A 10 foot setback around the PV array was proposed in the Application as a reasonable boundary to define the limit of responsibility. The final limit of responsibility will be established on the record drawings following construction.

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 17)

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 9)

Decommissioning Plan: The Applicants state that EDIC and Falmouth Solar will enter into a long-term ground sub-lease agreement that will include a financial surety arrangement, and that, following the expiration of the sub-lease agreement with EDIC, Falmouth Solar will decommission and remove the PV system from the Landfill, including the solar panels, mounting substrates, system foundations, wiring and connections, power inverters, service and metering equipment, and the utility interconnection. Disturbed surfaces will be restored with loam and seed. The Applicants further state Landfill will be left in similar condition to pre-installation as well as be in compliance with applicable regulations and permit. (refer to Condition 2)

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 Falmouth 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 Town, 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: 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:

    a) A signed lease agreement between the Town and EDIC, or alternate correspondence prepared by the Town indicating that a lease agreement is in effect. The lease agreement must contain a commitment, with details, regarding decommissioning the PV array and all components.

    b) A signed sub-lease agreement between the EDIC and Falmouth Landfill Solar, LLC. prepared by the EDIC indicating that a sub- lease agreement is in effect. The sub-lease agreement must contain a commitment, with details, regarding decommissioning the PV array and all components;

    c) A "Final PV Module Layout Plan" depicting the number type and location of all PV modules and indicating the final rated capacity of the PV array. If any array ballast

blocks are proposed to be placed on slopes steeper than 10%, engineering calculations must be submitted demonstrating the stability of the PV system for these areas.

d) "Electrical Permits" issued by the local building official;

e) Electrical Plans E-3 and E-4, revised with the final equipment pad size and signed and sealed by a Registered Massachusetts Professional Electrical Engineer. The electrical design, including the complete grounding design, shall meet applicable NEC and local electrical code requirements.

The electrical pad detail on Drawing E-4 shall be revised to include a geomembrane barrier and geotextile fabric placed above the existing final cover system and the equipment pad gravel base designed to prevent landfill gas from migrating from the landfill final cover soils into the equipment pad gravel base.

f) a signed statement by a Registered Massachusetts Professional Engineer that the proposed PV array will not adversely impact the horizontal landfill gas collection piping installed as part of the landfill final cover system; and

g) one complete set of the GameChange racking plans and calculation submitted on January 28, 2016, signed and sealed by a Registered Massachusetts Professional Engineer.

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 vents, Landfill soil-gas monitoring wells, groundwater monitoring wells and other existing above ground structures on the Landfill cap and appurtenances shall be flagged for visibility, and protective barriers shall be placed around such structures, as needed, to prevent damage by vehicles accessing the area.

9. 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 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.

   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 operation. The Post Closure Operations and Maintenance Health and Safety Plan shall include as a minimum;

   - protocols for monitoring of landfill gas 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 maintenance activities at the Landfill regarding hazards associated with the landfill gas and the PV array, including electrical hazards.

10. 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.

11. 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.

12. Vehicles Operating on the Landfill Final Cover System: Vehicles operating on the any access road located above the final cover system shall be limited to the following ground pressures based on soil thicknesses confirmed to exist 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.

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.

Concrete trucks shall not operate in any area above the landfill final cover system, included the paved transfer station area, unless design calculations are submitted to and approved by MassDEP.

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.

13. 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.

14. 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.

15. 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.

16. Array Setbacks: The Applicant shall maintain a minimum 10 foot radius buffer between the closest edge of the PV array modules and all Landfill gas vents and a 10 foot radius buffer between the pad mounted electrical equipment and all Landfill gas vents.

17. 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.

18. Site Security: Pursuant to 310 CMR 19.130(23) the Town is required to provide sufficient fences or other barriers to prevent unauthorized access to the Landfill. The Town 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.

19. 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. If at any time, the Applicant for this project does not include a municipal entity, the Applicants shall (or *MassDEP will require the Applicants to*)

provide to MassDEP a financial assurance mechanism, in accordance with 310 CMR 19.051, for the costs of decommissioning and site restoration activities.

20. Decommissioning Plan – 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 a detailed 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.

21. 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.

22. 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. X268565 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,

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

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