



Department of Environmental Protection

Central Regional Office • 8 New Bond Street, Worcester MA 01606 • 508-792-7650

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BWP SW 36 POST-CLOSURE USE – MAJOR

Bellingham Sanitary Landfill, Maple Street
Ground Mounted Solar PV Facility

Permit Issuance Date: December 21, 2015

Name of Permittee(s): Town of Bellingham (“Town” or “Permittee”)
10 Mechanic Street
Bellingham, MA 02019

Kearsarge Bellingham, LLC (“Permittee”, “Applicant” or “Operator”)
480 Pleasant Street, STE B110
Watertown, MA 02472

Name of Facility: Bellingham Sanitary Landfill (“Facility” or “Landfill”)
Facility Address: 119 South Maple Street
Bellingham, MA 02019

MassDEP Region: Central Regional Office (CERO), Worcester (“MassDEP” or
“Department”) Solid Waste Management Program

Permit Number: X266754 (Transmittal No.)

Facility Number: 39067

MassDEP Classification: CLF

I. FACILITY DESCRIPTION AND OUTSTANDING APPROVAL STATUS

A. Facility

1. Owner: Town of Bellingham
10 Mechanic Street
Bellingham, MA 02019

2. Operator: Kearsarge Bellingham, LLC

480 Pleasant Street, STE B110
Watertown, MA 02472

3. Description: The Landfill occupies approximately 13.5 acres within a 68.5-acre area of site assigned area of land in Bellingham, Massachusetts. The Landfill was capped in 1994. The areal limit of the proposed solar panel installation will encompass a majority of the Landfill and some adjacent site-assigned land.

B. Title of Approved Plans/Permits Affecting Proposed Operation.

MassDEP Final Closure Plan Approval Permit
Issued by MassDEP: February 23, 1995

MassDEP Landfill Closure Completion Report SW 43 Permit Approval
Issued by MassDEP: October 1, 2014

C. Permit Application Information for BWP SW 36 Post-Closure Use – Major

1. Applicant Name:

Town of Bellingham
10 Mechanic Street
Bellingham, MA 02019

2. Transmittal Number: X266754 (Permit No.)

3. Start Date of Application: September 9, 2015

4. Consulting Registered Professional Engineer:

Kleinfelder, Inc.
251 First Street, Suite 320
Cambridge, MA 02142
Contact: Stephen Wright, P.E.
Tel.: 617-497-7800

5. Title of Plans & Reports, Submission and Date of Receipt at MassDEP-CERO:

“Major Post-Closure Use Permit Application, Maple Street Landfill,
Bellingham, Massachusetts”
Prepared by: Kleinfelder, Inc.
Dated: July 7, 2015
Received by MassDEP-CERO: July 14, 2015

Supplemental Information Titled:

“Additional Information Transmittal No. X266754 BWP SW 36, Major Post-Closure Use Permit Town of Bellingham Landfill Solar Project 119 South Maple Street Bellingham, MA”

Dated: November 11, 2015

Submitted by: Kleinfelder, Inc.

Received by MassDEP-CERO: November 11, 2015

6. Project Description:

The post-closure use request is for the installation of a 4,290 kW DC solar photovoltaic (PV) array on and adjacent to the capped Bellingham Sanitary Landfill owned by the town of Bellingham. The Applicant proposes the installation of approximately 4,290 kW of PV modules that will comprise three individual area arrays: the Northwest Array, the Southwest Array, and the Landfill Array (collectively, the “solar arrays”), all sited on two parcels that make up the former Bellingham Landfill. The Landfill Array (569 kW DC) will consist of approximately 1,850 PV modules located on the plateau of the capped Landfill, installed on racking held in position with ballast blocks. A permanent access road will be constructed from the bottom of the slope at the northwest corner of the Landfill in a southeasterly direction to the top of the cap system for construction access and maintenance of the solar arrays. The Southwest Array (2,650 kW DC) and the Northwest Array (1,071 kW DC) PV modules will be located outside of the Landfill footprint and will utilize ground-mounted racks in rows. Each row of PV modules in the Southwest Array and the Northwest Array will be mounted on posts (I-Beams) that are driven in the ground.

II. POST-CLOSURE USE – MAJOR, APPLICATION REVIEW AND APPROVAL

The post-closure use application complies with the application requirements set forth at 310 CMR 19.030: Application for a Solid Waste Management Facility Permit and 310 CMR 19.033: Permit Procedure for an Application for a Permit Modification or Other Approval, and was reviewed in accordance with 310 CMR 19.038: Review Criteria for a New or Expanded Facility Permit or Permit Modification, 310 CMR 19.143: Post-closure Use of Landfills, and MassDEP’s Landfill Technical Guidance Manual (May 1997). Based on the information presented in the plans and reports referenced in Section I. C. 5. above, MassDEP approves the Applicant’s request for a post-closure use permit at the Facility.

This document is a Permit, issued pursuant to M.G.L. c. 111, Section 150A, and 310 CMR 19.000 et seq., the “Solid Waste Management Facility Regulations”, and it is

subject to the conditions set forth below. In the event this Permit conflicts with all or parts of prior approvals or permits issued pursuant to M.G.L. c. 111, Section 150A, the terms and conditions of this Permit shall supersede the conflicting provisions of the prior permits and/or approvals. This Permit does not convey property rights of any sort or any exclusive privilege.

III. GENERAL PERMIT CONDITIONS

- A. **Compliance with Plans** - The Permittees shall conduct operations in accordance with approved plans, reports, and other submissions described in Section I.C. above, except as may be modified by the conditions set forth in Section IV. No material changes in the design or activities described in the approved documents shall be performed without prior written Department approval.
- B. **Compliance with Other Laws and Regulations** - The construction, operation, maintenance, closure, and post-closure use of this Facility shall be performed in compliance with other applicable local, state and federal laws, regulations, and bylaws.
- C. **Standard Conditions** - The Permittees shall maintain the Facility in accordance with the conditions set forth at 310 CMR 19.007-19.011 and 19.043(5).
- D. **Joint Liability** - This Permit is issued subject to the conditions of joint liability of the Facility owner and operator in accordance with 310 CMR 19.043(3).
- E. **Right of Access** - MassDEP and its agents and employees shall have the right to enter upon the Facility site at all reasonable times and without notice, to inspect the Facility and any equipment, structure or land located thereon, take samples, recover materials or discharges, have access to and copy records, to perform tests and to otherwise monitor compliance with this approval, or any and all permits relative to the operation of the Facility, and all environmental laws and regulations. This right of entry and inspection shall be in addition to MassDEP's access authorities and rights under applicable federal and state laws and regulations, as well as any permits or other agreements between the Permittee and MassDEP.
- F. **Transfer** - No transfer of this permit shall be permitted except in accordance with the requirements of 310 CMR 19.044.
- G. **Permit Modification** - The Department reserves the right to rescind, suspend or modify this Permit by the imposition of additional conditions based upon a determination of actual or the threat of adverse impacts from the construction, operation, maintenance, closure, or post-closure use of the Facility.

- H. Other MassDEP Permits or Approvals** - In the event this Permit conflicts with all or parts of prior plan approvals or permits issued pursuant to Chapter 111, Section 150A, the terms and conditions of this Permit shall supersede the conflicting provisions of the prior permits and/or approvals. This Permit does not convey property rights of any sort or any exclusive privilege.

IV. SPECIFIC PERMIT CONDITIONS

- A. Criteria for Post-Closure Use** - This approval for post-closure use of the Bellingham Sanitary Landfill shall be accomplished such that the Permittees ensure that all activity associated with the Facility, and with the solar arrays and appurtenances thereto as described in the Application, shall not in any way alter the integrity of the Landfill cover system or the site environmental monitoring systems.
- B. Other Post-Closure Use** - The Permittees shall not use the Landfill for any post-closure activity other than that approved by this permit without submittal and Department approval of a Post-Closure Use Permit Application in accordance with 310 CMR 19.143: Post-Closure Use of Landfills.
- C. Inspection and Repair of Settlement Areas** - Prior to constructing the solar arrays, the Permittees shall survey any suspect settlement areas on the Landfill to determine the lowest spot. The Permittees shall then survey the surrounding area to find the “relief point” defined as the lowest surrounding area where ponded water would flow out. The elevation difference is defined as the “pond value”. Minor settlement shall be defined as a pond value of less than 12 inches. The Permittees shall correct any solar array area that has undergone minor settlement by the placement of additional vegetative support soil to promote runoff and shall reseed the area. The Permittees shall survey any area repaired and mark the location on a plan with the pond value. Any future settlement shall be recorded cumulatively. Any minor settlement repair may be done as routine maintenance, provided that the owner/operator reports the settlement to MassDEP and states its intent to perform repairs, and provides MassDEP with final survey (as-built) results and a summary write-up.

Major settlement is defined as a pond value of greater than 12 inches. When this occurs, the Permittees must repair the final cover system subject to MassDEP approval to prevent surface water ponding.

The Permittees must submit any proposal to remedy a major settlement repair 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 to and approved by MassDEP.

The Permittees shall provide for continued monitoring for potential differential settlement due to the Landfill Array during Facility and solar array operations along with established provisions for addressing and adjusting for such settlement within the Landfill cover system and/or the Landfill Array system.

- D. Additional Inspections and Monitoring** - During the first year of operation of the solar arrays, the Permittees shall perform inspections of the Landfill and the Landfill cover system beneath the Landfill Array on a monthly basis and also following major storm events. After the first year of solar array operation, the additional inspections may be included in the existing Landfill inspection and monitoring program subject to MassDEP approval. In accordance with 310 CMR 19.018 and 310 CMR 19.142(6), the inspections shall be performed by a Third-Party Inspector who is registered with the Department. The Permittees shall ensure that the inspection reports are emailed to James McQuade, Solid Waste Section Chief, MassDEP-CERO at james.mcquade@state.ma.us within fourteen (14) days of completion.
- E. Vehicles Operating on the Landfill Final Cover System** - Vehicles operating on the Landfill final cover system shall only operate on gravel access roads, except for low-pressure construction equipment, in accordance with the conditions of this permit. Low-pressure construction equipment operating off the gravel access roads shall limit turning on the vegetative support layer as much as possible. If MassDEP determines that the use of excavation equipment is creating the potential for damage to the Landfill's Flexible Membrane Layer (FML), 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 of the requirements of this permit prior to arrival, to avoid damage to the Landfill final cover system components. A list of low ground pressure equipment used and the pressure rating of each vehicle shall be indicated in the certification report required by Specific Permit Condition IV.K.
- F. Permanent and Temporary Roads and Low Ground Pressure Equipment** - The Permittees shall ensure that low ground pressure equipment shall not access the Landfill final cover system from permanent and temporary roads where the transition will result in excessive pressure and wear on the Landfill vegetative surface. The on-site engineer may construct ramps as necessary to accommodate the low ground pressure equipment.
- G. Integrity of the Final Cover System** - The Permittees shall limit all disturbances of the Landfill to the proposed installations on top of the vegetative cover of the capped Landfill that are described in the Application. No significant excavations or other penetrations shall be performed into the final cover system during construction or during operation and maintenance of the Landfill Array without

prior MassDEP approval. The Owner/Operator shall ensure that vehicles operating on the Landfill do not damage or compromise the Landfill final cover system integrity and that there are no penetrations of any kind of the Landfill final cover system.

H. Construction Precautions -

1. The Permittees shall take all necessary precautions to ensure that the proposed construction and maintenance work associated with the solar arrays does not damage the environmental monitoring network at the Landfill. Prior to the commencement of construction activities, the Permittees shall ensure that environmental monitoring locations are flagged for visibility and protective barriers are placed around such structures, as needed, to prevent damage by vehicles accessing the area. If any damage occurs to the environmental monitoring network components, the Owner/Operator or their contractor(s) shall notify James McQuade, Section Chief, MassDEP-CERO via telephone at 508-767-2759 within 24 hours and provide a written plan for repairs, including a schedule.

2. The Permittees shall take all necessary precautions to protect the Landfill storm water control system, including but not limited to swales, structures, and any and all conveyance systems. If any damage occurs to the storm water control system, the Owner/Operator or their contractor(s) shall notify James McQuade, Section Chief, MassDEP-CERO via telephone at 508-767-2759 within 24 hours and provide a written plan for repairs, including a schedule.

3. This Permit requires that any inverter/ transformer pad or appurtenances must be designed so as not to create a potential fire safety hazard. Potential design features may include but are not limited to the installation of fully sealed conduits, explosion proof connections, and fittings. The Permittees shall also ensure that utility trenches are designed so they do not act as a conduit for landfill gas migration.

4. All excavations and construction shall be supervised by a Massachusetts Registered Professional Engineer. The Permittees shall report any erosion problems, settlement problems, security or other issues observed at the Landfill to James McQuade, Section Chief, MassDEP-CERO via telephone at 508-767-2759 MassDEP and repair them immediately.

I. Array Setbacks - The Permittees shall maintain a minimum 5 foot radius buffer between the closest edge of the solar arrays and all landfill gas vents and stormwater drains.

J. Notification of Construction - The Owner/Operator shall notify James McQuade, Section Chief, MassDEP-CERO via email at james.mcquade@state.ma.us when

the post-closure use construction authorized by this permit commences and is completed.

- K. Certification Report** - Within ninety (90) days of completing the installation of the solar arrays, the Permittees shall email James McQuade, Section Chief, MassDEP-CERO at james.mcquade@state.ma.us a certification report. 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 associated with the project. The certification 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, applicable requirements and this Permit. The certification report shall include as-built drawings depicting all pertinent site features and the extent of the Facility, solar arrays and appurtenances thereto.
- L. Personnel Training** - The Permittees and their contractor(s) shall instruct all solar array construction and maintenance personnel regarding the potential hazards associated with landfill gas and shall instruct or give on-the-job training to all personnel involved in any activity authorized by this Permit. Such instruction or on-the-job training shall teach personnel how to comply with the conditions of this Permit to carry out the authorized activity in a manner that is not hazardous to public health, safety, welfare or the environment. Training shall be provided to workers conducting monitoring and maintenance activities for the Landfill regarding potential hazards associated with the solar arrays, including but not limited to electrical hazards.
- M. Health and Safety** - The Permittees and their contractor(s) are responsible for ensuring that all necessary precautions are taken to protect the health and safety of workers and the general public during construction, operation, and maintenance of the solar arrays.
- N. Proposed Inverter/Transformer Pad and Interconnection Equipment** - The Permittees shall ensure that a copy of the final design for the transformer pad and any other electrical and protective switchgear (interconnection equipment) for the solar array project is submitted to MassDEP for its files within 15 days of construction. The Owner/Operator and their contractor(s) are responsible to ensure that utilities/structures will not accumulate landfill gas during construction and operation of the solar arrays.
- O. Electrical Design Plans** - The Permittees shall submit electrical design plans stamped by a Registered Massachusetts Electrical Engineer to MassDEP for its files within 15 days of construction of the solar arrays. The electrical design, including the grounding design, shall meet applicable NEC and local electrical

code requirements including but not limited to the National Electrical Code (NEC), 2011 Edition, Article 690 – “Solar Photovoltaic (PV) Systems”. If any grounding rods are installed as part of the grounding system, the rods shall not be driven through the Landfill final cover system.

P. Landfill Gas Notification Requirements -

1. As specified in solid waste management regulations at 310 CMR 19.132 (5) (g): Gas Monitoring,

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

- a) take immediate action to protect human health and safety;
 - b) notify the Department’s Solid Waste Section Chief, James McQuade at 508 767-2759 within two hours of the finding; and
 - c) undertake the actions specified under 310 CMR 19.150: Landfill Assessment Requirements and 310 CMR 19.151: Corrective Action Requirements as required by the Department.
2. Pursuant to 310 CMR 40.0321(1)(a), 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 owner/operator shall notify the local fire department and MassDEP's Bureau of Waste Site Cleanup-Emergency Response Section at 888-304-1133 within two (2) hours of the exceedance.

Q. Post-Closure Environmental Monitoring - The Permittees shall maintain the existing and/or any future environmental control or monitoring systems for the Landfill in accordance with 310 CMR 19.133: Maintenance of Environmental Control and Monitoring Systems.

R. Site Security - The owner /operator is required to provide sufficient fences or other barriers to prevent unauthorized access to the Landfill. The owner/operator must continually monitor and evaluate the potential for unauthorized access to the Landfill and institute all appropriate measures to prevent unauthorized access during the post-closure period.

S. Decommissioning Plan - If the proposed solar array project is abandoned, during or after completion of construction, the Operator shall submit to MassDEP 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.

- T. Other Requirements** - The Permittees and their contractor(s) are responsible to ensure that the proposed work complies with all applicable local, state and federal codes, regulations and permits.

V. RIGHT OF APPEAL

A. Review of Decision

An applicant aggrieved by the Department's permit decision, within 21 days of the issuance of the Department's permit decision to the applicant, may file a written request, with the appropriate regional office of the Department, that the permit decision be deemed a provisional decision, and a written statement of the basis on which the applicant believes it is aggrieved, together with any supporting materials. Upon timely filing of such a request, the permit decision shall be deemed a provisional decision. Such a request shall reopen the administrative record, and the Department shall issue a final permit decision after the end of the comment period. **Failure by an applicant to exercise the right provided in 310 CMR 19.033(4)(b) shall constitute a waiver of the applicant's right to appeal.**

B. Right to Appeal

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 permit decision in accordance with the provisions of M.G.L. c. 111, § 150A and M.G.L. c. 30A no later than thirty (30) days following the date of issuance of the final permit decision to the applicant. Unless the person requesting an appeal requests and is granted a stay of the terms and conditions of the final permit decision by a court of competent jurisdiction, the final permit decision shall be effective in accordance with 310 CMR 19.033(3).

C. 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 the Department file number (Transmittal No. X266574) 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 at least five (5) days prior to the filing of an appeal:

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

and

MaryJude Pigsley, Regional Director
Department of Environmental Protection
8 New Bond Street
Worcester, MA 01606

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 a 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.

James A. McQuade
Section Chief
Solid Waste Management Program