



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

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Secretary

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Commissioner

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August 19, 2013

Christopher Whelan, Town Manager
Town of Concord
Town House
P.O. Box 535
22 Monument Square
Concord, MA 01742

Re: CONCORD – Solid Waste
755 Walden Street
Concord Landfill
FMF# 39182
Post-Closure Use – Solar Power Generating Facility
Approval and Authorization to Construct
Transmittal Number: X256217

Dear Mr. Reine:

The Massachusetts Department of Environmental Protection, Northeast Regional Office, Bureau of Waste Prevention, Solid Waste Management Section (MassDEP) has reviewed the application by the Town of Concord (the “Town”) for the post closure use of the Concord Municipal Landfill located at 755 Walden Street, Concord, Massachusetts (the “Landfill”). The application (BWPSW36, Post Closure Use – Major, Transmittal Number X256217) was prepared on behalf of the Town by Woodard & Curran, Andover, Massachusetts.

The application proposes the installation of a 1.75 megawatt (MW) solar photovoltaic power generating facility (“PV Facility”) on the Landfill. Included with the application are design plans for the solar array, an engineer’s report describing and supporting the design, and an O&M manual and storm water pollution prevention plan for care and maintenance of the facility.

The Town has entered a contract with Kearsarge Concord, LLC of Watertown, Massachusetts for the installation and operation of the PV Facility. Electric power from the facility will be purchased by the Concord Municipal Light Plant (CMLP).

The proposed PV Facility will consist of approximately 5,830 solar modules attached to aluminum frames. Four (4) inverters will convert the DC power from the modules to AC power for connection to the CMLP electric power grid at Walden Street.

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5751. TDD# 1-866-539-7622 or 1-617-574-6868
MassDEP Website: www.mass.gov/dep

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The solar modules will be supported by galvanized steel trays (ballast trays) placed directly on the existing ground surface. Concrete blocks (typically 4"x8"x16") will be placed on the trays to stabilize the panels from sliding and wind uplift.

Appendix G of the application presents an Operation and Maintenance Manual (O&M Plan) for maintaining the landfill following installation of the PV Facility. Environmental monitoring of the site will continue pursuant to the landfill's existing environmental monitoring plan.

MassDEP has determined that the application is administratively and technically complete and that, subject to the terms and conditions of this decision and permit, the proposed post-closure use complies with the applicable requirements of 310 CMR 19.000, the Massachusetts Solid Waste Regulations (the "Solid Waste Regulations"). The application demonstrates pursuant to 310 CMR 19.143(3) that the installation and operation of the solar PV facility as proposed and approved by this decision:

- Will not result in a disturbance of the Landfill cap that could cause an adverse impact to public health, safety or the environment;
- Will not impair the integrity or functioning of the final cover, the components of the containment system, the landfill gas control system, and the environmental monitoring systems; and
- Provides for the maintenance of the Landfill cap's storm water drainage facilities, basins, swales, and other erosion/sedimentation controls.

Therefore, in accordance with M.G.L. Chapter 111, § 150A and 310 CMR 19.143, MassDEP approves the application and issues this Post-Closure Use Permit subject to the Town's compliance with 310 CMR 19.000 and the following conditions, imposed by MassDEP pursuant to 310 CMR 19.043(1) *Items Subject to Conditions* and 310 CMR 19.142(7) *Additional Measures*. This decision is a Post-Closure Use Permit pursuant to 310 CMR 19.143 *Post-Closure Use of Landfills*.

Permit Conditions

1. The Town and Kearsarge Concord, LLC shall comply with this permit and the requirements of 310 CMR 19.000, including, but not limited to, the requirements established at 310 CMR 19.043(5) *Standard Conditions*.
2. The Town and Kearsarge Concord, LLC shall assure persons conducting activities¹ at the PV Facility and Landfill are familiar with the applicable provisions of this permit and the approved plans, and that all work performed at the Landfill complies with 310 CMR 19.000 and the applicable requirements of this permit.
3. Pursuant to 310 CMR 19.043(5)(a) *Duty to Comply*, this decision does not relieve the Town and Kearsarge Concord, LLC, or others, from their obligations to comply with all other applicable

¹ Activities include, but are not limited to, the construction, installation, operation, and maintenance of the PV Facility and the Landfill.

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federal and state laws and regulations including, but not limited acquiring applicable permits and approvals, including local permits.

4. Not less than seven (7) days prior to commencing construction pursuant to the application and this permit, the Town shall notify MassDEP in writing of the scheduled date of the commencement of construction at the site. In addition, the notification shall include:
 - a. The projected schedule for completion of the major construction milestones and the PV Facility;
 - b. The name and contact information of an on-site contact for the construction;
 - c. A health and safety plan for MassDEP's files that includes, but is not limited to:
 - i. protocols for monitoring for landfill gas (methane, hydrogen sulfide, etc.) as needed;
 - ii. protocols for modifying work practices if landfill gas is detected at levels of concern (action levels);
 - iii. instruction and training of all personnel working on the site regarding the potential health and safety hazards at the Landfill including, but not limited to those associated with landfill gas; and
 - iv. instruction and training of all personnel in compliance with the conditions of this permit and how to perform authorized activities in a manner that is not hazardous to public health, safety, and the environment.
5. The Town and Kearsarge Concord, LLC shall not commence construction of the PV Facility until it has provided the plans and notification to MassDEP and the Town of Concord Board of Health pursuant to Condition 4 above.
6. All construction work shall be completed and conducted under the supervision of an independent Massachusetts Registered Professional Engineer ("Engineer of Record") who shall have sufficient qualified staff on-site to provide field supervision and quality assurance/quality control for all construction activities.
7. The Town, Kearsarge Concord, LLC, and the appertaining Engineer of Record, are responsible to ensure that all necessary precautions are taken to protect the health and safety of workers and the general public during the construction and operation of the PV Facility and during its decommissioning.
8. All disturbance of the Landfill shall be limited to the proposed excavations and installations as depicted and described in the application and the approved plans and this permit. Kearsarge Concord, LLC and any other contractors performing work at the Landfill shall without delay notify the Engineer of Record or his/her on-site representative upon encountering or damaging the flexible membrane layer (FML) of the landfill cap.
9. If the FML of the cap is damaged the Town shall notify MassDEP without delay and in no case later than the close of business of the next business day after it becomes aware of the incident. This notification requirement is in addition to any other notification requirements required by statute or regulation including, but not limited to, 310 CMR 19.000 and 310 CMR 40.0000.

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10. The Town and Kearsarge Concord, LLC shall maintain copies of this decision and permit, the application, the health and safety plan, and documentation that site personnel have been trained pursuant to the health and safety plan at the site during construction of the PV Facility.
11. Pursuant to 310 CMR 19.043 Standard Conditions MassDEP and its agents and employees shall have the right to inspect the Landfill, any equipment, structure or land located thereon, to take samples, to perform tests, and have access to and photocopy records, and to otherwise monitor compliance with this permit and all environmental laws and regulations administered by MassDEP.
12. Notice of the landfill located on this site, including this approval, shall be recorded in the applicable Registry of Deeds and/or the Registry Section of the Land, as appropriate, pursuant to the requirements of M.G.L. Chapter 111, § 150A and 310 CMR 19.141.
13. Prior to commencing operation of the PV Facility, and in no event on or before ninety (90) days after the date of completion of the construction of the PV Facility, the Town shall submit for review and approval by MassDEP a construction certification report, as an application category BWP SW45 Alternative Review Process, that includes, but is not limited to:
 - a. As-built plans for the final as constructed PV Facility amended to incorporate all modifications and alterations, if any, made during construction;
 - b. A narrative, prepared by the Engineer of Record that discusses in part, any modifications made to the design of the PV Facility; and
 - c. Certifications by the Town and the Engineer of Record pursuant to 310 CMR 19.011.
14. On or before thirty (30) days after the date the PV Facility ceases operation, the Town shall submit to MassDEP an application pursuant to 310 CMR 4.00 and 310 CMR 19.000 for the decommissioning of the PV Facility and the restoration of the landfill cap and appurtenances thereto. The application shall include, but not be limited to, a narrative, plans and schedule for the decommissioning of the PV Facility and the restoration of the Landfill's cap and appurtenances²
15. MassDEP reserves the right to amend, modify, suspend or revoke this permit pursuant to 310 CMR 19.040 Department's Modification, Suspension, or Revocation of a Permit. This does not limit or restrict MassDEP from implementing any other applicable authority at the Landfill including, but not limited to authority pursuant to 310 CMR 40.0000.
16. This permit is effective on the date signed by MassDEP below, except as provided by the Notice of Appeal Rights below and 310 CMR 19.037(4)(b).
17. This permit shall expire on December 31, 2033, provided that MassDEP may amend the term of the permit in accordance with a modification pursuant to 310 CMR 19.039 or 310 CMR 19.040. The Town shall submit to MassDEP on or before August 30, 2032 either an application to renew the permit or notice of its intent to close the PV Facility. Wherein the Town elects to close the facility, the Town shall submit an application for the decommissioning of the PV Facility and the restoration of the landfill cap and appurtenances thereto pursuant to paragraph 14, above.

² Appurtenances include, but are not limited to storm water controls, landfill gas control structures, landfill gas and groundwater monitoring wells.

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18. The Town and Kearsarge Concord, LLC shall not deviate from this permit and the approved design plans. The Town shall notify MassDEP prior to any modification(s) of the design and of any significant changes in the project schedule. MassDEP may, at its sole discretion, require the Town to submit an application to MassDEP for review and approval for any modification/alteration to the design. In the event that MassDEP determines that a permit application is required for a modification; the Town shall submit such application to the MassDEP in accordance with the schedule specified by MassDEP.
19. The Town shall continue to perform post-closure activities at the Landfill pursuant to 310 CMR 19.142 *Landfill Post-closure Requirements* including, but not limited to, maintenance of the Landfill's cap to prevent growth of vegetation with root systems that could be detrimental to the cap, and to prevent erosion of the cap.

RIGHT OF APPEAL

The Town of Concord (the "Town") is hereby notified that it may within twenty-one (21) days file a request that this decision be deemed a provisional decision under 310 CMR 19.037(4)(b), by submitting a written statement of the basis on which the Town believes it is 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 (21) days after the Department's receipt of the request. Such a request shall reopen the administrative record, and the Department may rescind, supplement, modify, or reaffirm its decision. Failure by the Town to exercise the right provided in this section shall constitute a waiver of Town's right to appeal.

Appeal - Any person aggrieved by the issuance of this decision, except as provided for under 310 CMR 19.037(4)(b), may file an appeal for judicial review of said decision in accordance with the provisions of M.G.L. c. 111, s. 150A, and M.G.L. c. 30A, not later than thirty (30) days following the receipt of the final decision. The standing of a person to file an appeal and the procedures for filing such 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 decision by a court of competent jurisdiction, the decision shall remain effective.

Notice of Appeal – Any aggrieved person intending to appeal the decision to the superior court shall provide notice to the Department of intention to commence such action. Said notice of intention shall identify with particularity the issues and reason(s) why it believed the approval decision was not proper. Such notice shall be provided to the Office of General Counsel of the Department and the Regional Director for the regional office that made the decision. The appropriate addresses to send such notices are:

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

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Regional Director
Department of Environmental Protection
Regional Office
205B Lowell Street
Wilmington, MA 01887

No allegation shall be made in any judicial appeal of this decision unless the matter complained of was raised at the appropriate point in the administrative review procedures established in those regulations, provided that 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 public health or environmental impact of the permitted activity.

Should you have any questions relative to this application, please contact David Adams at phone number 978-694-3295.

Sincerely,

Sincerely,

*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.*

DCA
David C. Adams
Environmental Engineer
Solid Waste Management

JAC
John A. Carrigan
Section Chief
Solid Waste Management

JAC/DCA/dca

Enclosure: Fact Sheet

Cc:

Concord Board of Health
141 Keyes Road
Concord, MA 01742

Richard Reine, Director
Town of Concord
Department of Public Works
133 Keyes Road
Concord, MA 01742

Alan Benevides
Woodard & Curran
40 Shattuck Road
Suite 110
Andover, MA 01810

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Fact Sheet

Facility: Concord Landfill

Address: 755 Walden Street
Concord, MA 01742

Owner: Town of Concord
Address: Town House
22 Monument Square
P.O. Box 535
Concord, MA 01742

Solar operator: Kearsarge Concord, LLC
Address: 480 Pleasant Street, Suite B110
Watertown, MA 02472

Facility Number: 39182

Regulated Object Number: 172433

Permit Number: n.a.

Location³: 70° 20' 4" West Longitude 42° 26' 41" North Latitude
MSPCS: 213,631 mE 910,495 mN Mainland Zone NAD83
UTM: 308,025 mE 4,701,810 mN Zone 19

Size of site: parcel: 36.5 acres
landfill: 16 acres
Phase 1 solar array: 4.1 acres
Phase 2 solar array: to be determined

MEPA: Application does not trigger MEPA review thresholds.

Current Application:

Type: Post Closure Use - Major (BWPSW36)
Transmittal Number: X256217
date: June 7, 2013

Engineer of Record:

Woodard & Curran
40 Shattuck Road
Andover, MA 01810
Alan Benevides, P.E.

Capacity:

Phase 1: 1.75 MW DC
Phase 2: to be determined

Submittals as part of this application:

³ For reference only. Estimated from MassGIS.

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report:

Major Post-Closure Use Permit Application
CMLP Solar Landfill Project
755 Walden Street
Concord, MA
June 2013

plan:

CMLP Solar Landfill Project
Concord, MA
MAP/Block No. 11I/4039
June 2013

letter:

Woodard & Curran to MassDEP
July 18, 2013
Response to Comments

plan:

CMLP Solar Landfill Project
Concord, MA
MAP/Block No. 11I/4039
June 2013
Revised July 12, 2013 per Town of Concord & MassDEP Comments

Discussion:

The former Concord municipal solid waste landfill is located at the junction of Walden Street and Concord Turnpike (Massachusetts State Route 2). The site is abutted by property of the Commonwealth of Massachusetts⁴ to the south and east, Walden Street to the west and Concord Turnpike to the north. West of Walden Street is located further property of the Commonwealth of Massachusetts, and north of Concord Turnpike is located property of the Walden Woods Project Inc.

The landfill occupies the northerly portion of the site, covering approximately 16 acres. The landfill was closed to receipt of waste circa 2000 with construction of the landfill cap completed in 2001. Circa 2003 a municipal waste recycling facility was established at the westerly end of the site.

The Town is investigating the potential to establish a school bus storage and maintenance facility within an undeveloped area of the landfill site⁵. The two projects will not impact each other.

The current project proposes to establish a photovoltaic (solar) electric power generating facility (the “solar facility”) on the landfill. Power from the solar facility will be used on the Concord Municipal Light Plant (CMLP) distribution grid. With the exception of minor construction impacts during construction of the AC power line, the project will not impact or alter the Town’s recycling facility.

The solar facility is proposed to be developed in two (2) phases. The current application proposes construction of Phase 1 – consisting of approximately 5,830 panels covering approximately 4.1 acres. Four (4) inverters will be

⁴ Walden Pond State Reservation.

⁵ The location of the former stump dump south of the landfill, also formally the site of a cellular telephone communications facility.

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used to convert the DC power from the panels to AC power for connection to the grid. A separate application will be submitted for Phase 2 should the Town elect to proceed with Phase 2.

Within the landfill all equipment will be placed above the existing ground surface. Upon leaving the area of the landfill cap, the AC power line will transition to below ground until reaching the point of connection to the CMLP power grid.

For Phase 1, panels will be supported by galvanized steel trays (ballast trays) placed directly on the existing ground surface. Concrete blocks (typically 4"x8"x16") will be placed on the trays to stabilize the panels from sliding and wind uplift. The Phase 1 panels will be placed in areas with a maximum ground surface gradient of 15%.

Stability analysis of the design has determined a minimum Factor of Safety (FS) of 1.69 will be achieved under static conditions. A Factor of Safety of at least 1.03 will be achieved under seismic conditions⁶.

The array will be surrounded by a fence to prevent unauthorized access. The fence will be supported on the ground surface by a steel frame ballasted by concrete blocks at each post. The fence posts will not penetrate the ground surface.

Approximated 270 feet of new swale to intercept storm water will be constructed at the southeasterly corner of the landfill. Storm water intercepted by the swale will be diverted from Goose Pond (as currently discharged) to the exiting storm water infiltration basin south of the landfill.

With the exception of the AC power line to Walden Street, work is confined to within the landfill. No work will occur within a wetlands buffer zone. An erosion control barrier will be installed between the work area and Goose Pond.

An area of trees currently located on the landfill will not be disturbed by the array installation.

The panels will be located south of State Route 2 and will be angled away from the highway. Therefore, glare from the array, if any, will not impact highway traffic.

The Town is negotiating a ground lease with the solar facility operator. Pursuant to the lease, the operator will operate the facility for a period of 20 years, at which time CMLP shall have the option of purchasing the solar facility from the operator. The lease establishes an escrow fund for the decommissioning of the solar facility at the end of the lease (if the solar facility is not purchased by CMLP). The escrow fund will be funded by annual payments over the life of the solar facility. A separate Power Purchase Agreement (PPA) is being entered between the operator and CMLP.

⁶ Seismic loads as predicted pursuant to United States Geological Survey (USGS) Earthquake Hazards Program.